PRO-ACTIVE PROGRAMING (PROPRO)

Known as "Artificial Intelligence" (AI)

My Views and Expressions as a Knowledge Worker

Talal Abu-Ghazaleh

This Book is a Gift From The Author for Knowledge Dissemination

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This book is a collection of articles written by Dr. Talal Abu-Ghazaleh on the fascinating world of artificial intelligence (AI). As an international authority that has pioneered and chaired numerous committees and initiatives on information and communication technology (ICT) in the UN and elsewhere, he offers wise and unique perspectives on the development and impact of this important innovation to readers across the world.

In this book, Dr. Talal Abu-Ghazaleh explores and discusses the opportunities, risks, and challenges that AI poses in various domains, and provides advice on how to foster a healthy, vibrant, and ethical AI sector that can help civilization progress to its next level of advancement. Moreover, he addresses pertinent legal and regulatory issues related to AI, how it is affecting the world around us, and how to ensure it is used for the benefit of humanity.

By reading this book, you will gain a deeper understanding of AI and its influence on the world through the lens of a visionary leader, and you will be inspired by the many opportunities that AI offers to build a better world for all human kind.

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Introduction

Artificial intelligence (AI) is the most remarkable and revolutionary phenomenon of our era. It heralds the dawn of a new age, a new paradigm, epitomizing the ultimate expression of human creativity, intelligence and aspiration. It also entails ultimate challenge; opportunity and responsibility, as a frontier that will help us evolve into the next level of our being as a human race with advanced intelligence.

AI encompasses a spectrum of systems and processes that can perceive, learn, reason, communicate, create, collaborate and act in complex and uncertain environments. It comprises a network of agents and artifacts that can interact, influence, augment and empower each other and us. It constitutes a force that can shape, transform, disrupt and enhance our very existence, coming with its own opportunities, risks and challenges.

AI reflects our collective mind, our accumulated knowledge and our shared values. It serves as both as a mirror and a window, and as a partner and a catalyst. It functions as an extension and an expansion of who we are and what we can be. It demands exploration and engagement, which should be embraced and welcomed.

It is the modern equivalent of what mechanical machines were to the industrial revolution and should be utilized, respected, appreciated and certainly not feared nor wasted. I see AI as the basis of much good, despite man's ability to abuse technology and do much harm.

This book is an invitation to join me on an exciting journey into the world of AI, which contains numerous articles I have authored on the subject in recent months, showing the wonders and the dangers, the possibilities and the limitations, as well as the opportunities and the responsibilities surrounding AI. The purpose is to inspire us to think critically and creatively, and act wisely and responsibly in order to live meaningfully in this new era.

I remember that in 2002, I had a meeting with Bill Gates at the Microsoft Executive Summit Meeting in Paris, when I also happened to be the Chair of the UN ICT Taskforce, helping countries to develop national ICT strategies to help them join the digital revolution. As part of my mandate with the UN, and as a lifelong supporter of technology and shaping knowledge workers, I took the opportunity to ask Bill what the next era would be, to which he replied 'the era of Artificial Intelligence'.

We are now at the precipice of this new revolution that will undoubtedly cause a technological tsunami and revolutionize our World. My hope is that this technology is used to help mankind as we have already done much to destroy it.

I would like to extend my eternal thanks to a close friend and a son of mine, my principal technologist Shahid Halling, who has helped me in drafting this book, and kept me informed of the latest innovations in this fast moving area.

This is an exhilarating time to be alive. My advice to my sons and daughters around the world is to become AI authorities that learn about this fascinating subject and become a part of new technology that will go down in history as a momentous time that changed the world.

Talal Abu-Ghazaleh

ADVICE REGARDING AI

I wish to kindly inform and advise all readers to consider my own perception of AI and to dismiss any incorrect inclinations that elude to AI being something that is independently intelligent, an artificial human being, a brain that can think like humans, or any other type of vague or mysterious entity.

In my personal view, AI is the next generation of developed programing technology. It is a revolution that uses innovative programing techniques in creative ways, to build dynamic and creative systems that can interact with data and with us as their developers. They are however, bias and error prone, meaning that humans must guide their development with wisdom and use them with caution and heed.

While AI systems have made impressive advancements, they are limited to the data, rules and algorithms that they are based on, and cannot truly understand nor be equivalent to humans. AI is an augmentation to mankind, allowing us to achieve greater heights in all spheres of human activity.

That is why I will boldly claim that the term AI is misleading and unnecessarily mysterious, as it evokes incorrect connotations and ideas. I would say that what we call AI is in reality,

"PRO-ACTIVE PROGRAMING"

As a result, I have registered the domain name: "ProPro". Meaning that AI is a new generation of programing that allows the correlation and analysis of immense amounts of information, allowing us to interact with it to achieve greater insights and creativity that would be impossible for humans achieve alone. AI will allow the next iteration of societal and human progression to occur, just as the personal computer and the internet brought greater productivity and progression into every office and home.

I have used the current term 'AI' throughout this publication to avoid any confusion, with a hope that this will change to 'ProPro' in the future.

I say that God created us to be creators, and everything we can imagine may become a reality. This technology is the modern means through which we as creators will be empowered to proactively innovate further than ever before.

AI is ProPro-Proactive Programing.

The Battle for AI Supremacy

Today, we can see that a new battle has erupted between technology companies competing for AI supremacy, pushing the barriers of innovation to secure pole position by attracting the greatest minds in this new technological revolution. AI is undoubtedly a game changing technology of the future which some have likened to the advent of the Internet, which brought with it tremendous transformational opportunities that has allowed the largest companies in the history of mankind to come into existence.

AI is the new technological tsunami that is producing a new ecosystem which will engulf every aspect of our modern lives. I see it as the next logical step in our digital evolution, building on robust cloud infrastructures that we already have and making use of big data which is increasing exponentially, to deliver deeper insights

and to produce more value for industries, governments and citizens alike; in all facets of our lives and daily interactions.

For many years, the realm of AI was discreet, with researchers working to produce prototypes out of the public spotlight. With great advances in this technology, it needed its moment of glory in the public domain to shine and stir up interest. This is very important as even the greatest of innovations fail to see the light of day unless they are marketed and start to gain traction. I believe that for AI, this moment came in late November 2022, when OpenAI, partly owned by Microsoft, announced the arrival of ChatGPT for the public to try out. This may have been the first time many tinkered with AI technology which caused commotion across the world, racking up millions of users within the first few days of its launch. This frenzy has woken up all the big players, with each of them ramping up their AI game, with Meta, Google, Apple and Amazon promising their own AI technologies embedded across their product and service offerings.

It is apparent to me that this marks a mind shift in the technological world where AI will be a disruptive force, with AI capability becoming a standard on top of which the new generation of software will be built. The supporting tools are there for AI to become a highly useful and sophisticated technology, and I see billions being invested by these giants to secure their lead, by acquiring innovative AI startups as well as building their own internal AI capacities. This will put pressure on labor markets for the best brains in all specializations within AI and machine learning, particularly AI engineers, mathematicians and academics that can develop new AI algorithms and systems. A company called Zeta Alpha that tracks AI research, found that between 2020 and 2022, Alphabet (Google's parent company) published around 9,000 AI papers with Microsoft

producing around 8,000 and Meta coming in with around 4,000. Competition is well and truly on.

It has only been a few months since Chat GPT came to town, yet we can see the huge ripples it is making, with Microsoft embedding AI search capability into its Edge internet browser, along with Alphabet and Meta offering AI tools to help customers generate better ad campaigns to win more customers. I am sure we will see many other applications of this technology particularly in business productivity software, with newcomers entering this new, green playing field where innovation and flexibility are vital.

Even prior to my Chairmanship of the United Nations Global Alliance for ICT and Development (UNGAID), I called for, and I continue to call for, the Arab region to develop comprehensive digital skills education for its students, so that we may produce our own AI experts and industries. What I have spoken about here is just the modest beginning of a huge AI revolution that we still have time to be a part of. The AI train has already left the station and we would do well to invest our time, resources and effort to get onboard.

Artificial Intelligence: The Foremost Disruptive Technology of Our Time

Artificial Intelligence (AI) is the leading discipline in the present digital revolution. Building capacity in this area is of vital importance to the longevity of our economies. I would even say that it is one of the most important innovations in the history of mankind as everything will be enabled by AI technology. We cannot get away from this and need to prepare our younger generations to play an active part in the AI boom which has just started. We can see how important AI was during the COVID epidemic that affected the entire globe, where companies were able to analyze virus epidemiology, crunch data as well as model and simulate to develop vaccines in record time using AI based technology.

We need to be following the example of China, the great country that has made AI a mandatory part of its educational strategy to make the country a global leader in AI innovation by 2030. China is planting the seeds of AI education now in order to reap the benefits in the future. We need to be doing the same in all countries to ensure that we secure our place in the growing digital economy. According to Forbes, AI will add $15 trillion to the world economy by 2030. This is four times larger than the GDP of the entire MENA region in 2020 which was $3 trillion. This represents a massive opportunity that we must take advantage of. We owe it to the younger generation to invest in such education so that they have the needed skills to help power future AI based economies.

I have been repeatedly privileged to speak at international technology events. The question I am constantly asked is: "Won't AI technology replace humans and take over their jobs?" Of course not I constantly affirm.

I see a different scenario unfolding.

I believe that AI will free workers to exercise better judgement and perform more valuable tasks by using AI systems to provide greater accuracy and insights and in turn deliver greater value. The "Future of Jobs Report 2020" published by the World Economic Forum also backs this and suggests that 85 million jobs may be displaced by a shift in the division of labor between humans and machines by 2025, while 97 million new roles may emerge, that are more adapted to the new division of labor between humans, machines and algorithms which include AI systems.

Rather than jobs being lost to AI, jobs will be created by it. With volumes of big data being produced by sensors, systems and the mass adoption of the Internet of Things, there will be no alternative but to use AI systems to make sense of this huge amount of data in order to help decision making. AI will revolutionize many sectors making them more streamlined and efficient.

A discipline that I see AI affecting in a major way is the auditing profession. Auditing is the foundation on which TAG.Global was established and as an auditor myself, I can tell you that the auditing profession is going to be revolutionized by AI. The huge amount of data being produced by organizational systems will make it very difficult to perform manual audits as there will be simply too much data to analyze. AI systems will be used to perform detailed audits that would otherwise be impossible to conduct. The profession will become more of an IT specialty and in the very near future auditors will need skills in AI; both to conduct audits as well as to evaluate systems used by companies to provide assurance regarding their accuracy and transparency.

I have called for reform of the education system globally and have been saying for many years that education needs to move into the 21st century to empower our digital natives with the knowledge and the skills to become knowledge workers. AI is among the forefront of disciplines that children must be taught. Technology has become the basis of developed economies worldwide, and the reason for existence for some of the largest companies the world has ever seen such as Apple, Google and Amazon. The global economy is no

longer bound by geographic boundaries and the age of the Internet means that anyone can become a knowledge worker if he has the zeal and passion.

Digital opportunities are available for the IT literate and we must take full advantage of this fact. We need to be producing AI literate 'knowledge workers' to meet the demands of the digital global economy. We must properly educate and foster an environment for technology innovation and creativity, empowering people with the education, tools and laws to create an ecosystem to enable the future 'Zuckerbergs' to come about. Building capacity in AI will also allow us to build systems to help find novel solutions to problems the world is facing with regards to climate change, water shortage and food production. As Plato said 'Necessity is the mother of invention'.

We need scientists, innovators and thinkers to act responsibility with foresight and wisdom for the sake of our future generations and invest in AI education as it is set to revolutionize the world.

Teach Your Children Artificial Intelligence

Artificial intelligence (AI) is known for its superior ability to perform cognitive functioning of human functions, including learning, thinking, speaking, performing routine tasks, solving problems, and practicing some human behavior. AI is a key component in the Fourth Industrial Revolution. Its performance is coupled with tremendous advances in computing power, processing a large amount of information, fast Internet connectivity from anywhere and optimal use of algorithms.

AI systems have become a key element in many innovative industries such as the Internet of Things (IoT), autonomous vehicles, electronic services, big data processing, genetic engineering and genome,

fraud detection, retail and medical diagnostics, 3D printing, and more, being able to rapidly analyze large amounts of data. AI has spurred interest in the use of information not only for learning, but also for making decisions by building relations and linking large data sets with each other at a tremendous speed.

AI has the ability to process billions of data points to allow users to reach more informed and accurate decisions than humans ever could alone. It fosters digital transformation and has the potential to improve human ingenuity and expand human capabilities to meet challenges, seize opportunities and achieve greater well-being in many aspects of life in ways that are now unimaginable.

AI systems include machine learning that is most common where data is fed, patterns are discovered, and information is understood and interpreted. They also include neural networks and deep learning through which the human brain is simulated. In this context, models of AI are enabled to learn and process images through computer vision. Intelligent robots are other forms of AI systems that combine artificial intelligence with robot machines to perform advanced and complex tasks. Natural language processing has been developed so that language of speech is interpreted, understood and converted into written text or treated as commands. Biometrics have also been developed so that physical and emotional characteristics are analyzed and used in many tasks such as identification. They are also used in virtual proxies and avatars for simulating personalities and interacting with customers and users.

AI is of great importance to the achievement of the Sustainable Development Goals (SDG) as defined by the United Nations.

SDGs focus on improving education, providing health services, eradicating poverty, creating jobs, enhancing governance and embracing creativity. With the use of AI systems, some developing countries have made progress towards the achievement of SDGs, mainly in economic development, improving health, eradicating poverty, increasing education, developing agricultural productivity, eradicating illiteracy, securing water resources and improving sanitation. However, the level of development and progress in the Arab countries is uneven, especially in areas where there are ongoing conflicts. Millions of people continue to live below the poverty line and suffer from water scarcity, poor health services, inadequate shelters and degrading educational environments. In coordination with national and Arab policies, international development efforts and technical sectors, AI technologies can be explored and promoted as viable solutions to contribute and progress towards the achievement of SDGs in the region.

In light of the growing need for technical expertise in AI technologies, developed countries are setting up policies to adopt the teaching of AI in the early stages of education. This will enable future generations to accommodate AI as new tools for creativity and invention. The following is a proposal for AI learning topics that I suggest could be incorporated at different stages of education:

1. Elementary Stage: To motivate students in elementary schools to learn math, science and engineering and to start teaching AI concepts through interactive learning that is based on fun activities and acquisition of the AI basics and robotic fundamentals. Students may also be motivated to learn software

and application development and building AI systems through structured and advanced curricula.

2. Secondary stage: To motivate students in secondary and high schools to apply software and use AI systems in real practical scenarios through applications. Learning in this domain can be enhanced through competition, case studies and project-based programs. As a result, students can develop entrepreneurial and creative thinking as well as problem-solving and teamwork skills.
3. Advanced stage: To motivate students in colleges and universities to apply design concepts and promote innovation in AI as well as to encourage students to develop their specialized expertise, conduct outstanding research and participate in forums and conferences to exchange experiences and showcase practical experiences in software and AI applications.

I would also say that the lifelong acquisition of AI knowledge and skills is essential to build a vibrant AI sector that provides maximum benefit to society, within a framework that promotes the advancement and protection of humankind as its number one objective.

Would Machines Overtake Humans?

In recent years, we have witnessed the sophistication of AI in many areas such as robotics, vehicles, drones, medical and various industrial appliances. They all operate with varying degrees of capability, coordination and intelligence. The future will bring further developments in achieving higher capabilities to match a human brain for decision making, intelligence or general-purpose learning.

At the time of writing these lines, heated competition is ensuing in the United States and around the world using the joint capabilities of the artificial intelligence to create machines that can even teach

and develop themselves. This is what the 100-year old futurist James Lovelock predicts in his new book “Novacene” or “New Age”, detailing the new evolution of humanity fueled by AI.

According to Lovelock, the New Age has already begun with Google like AlphaZero as a starting point. Those machines may overtake humans as the superior life form, being the next surge of intelligent life on earth. He warns that humans may soon cede their top spot to their own artificially intelligent creations. — A new age indeed where humans could be eclipsed by these machines!

The process is already underway via sophisticated Artificial Intelligence systems that have been developed like AlphaGo, AlphaZero and DeepMind. These intelligent systems, capable of continually enhancing themselves within a limited frame of reference, constitute a major linchpin toward the completion of the Novacene, Lovelock says.

During the 2019 World Artificial Intelligence Conference in Shanghai, Elon Musk told Jack Ma, chairman of Alibaba, he guarantees that humans will eventually be surpassed by computers “in every single way.” He added: “The first thing we should assume is that we are very dumb, we can definitely make things smarter than ourselves.” He asserted: “mark my words, A.I. is far more dangerous than nukes. So why do we have no regulatory oversight?” With all such worries about this upcoming technology, it remains a big concern for him. In 2015, he rallied with several other technology

geniuses and donated $1 billion to the research of group “OpenAI”, to further advance this digital intelligence and benefit humanity. OpenAI is the developer of the infamous ChatGPT system that has become a global hit.

And by no means this is the end of the way for this era’s technological marvels. “DeepMind” for instance, founded in London in 2010 and now being developed in Canada and California, is designed to push the AI boundaries to further dimensions. We may now imagine a machine that can solve any complex problem without needing to be taught how, or one that can correct or renew itself.

We are definitely in for much more when it comes to AI, and it may well take over many roles that humans perform, as well as create new roles for us. I see this opening the way for humans to surpass and evolve to their next level of being, augmented by AI to achieve bigger and better things.

Building Trustworthy AI Systems

As Artificial Intelligence (AI) systems proliferate across the world, the need to build such systems that are trustworthy is paramount in order to better promote safety, transparency and auditability, particularly as they start to play a greater role in helping humans with analysis and decision making. The potential this technology holds for improving our lives is immense and is already seeing greater adoption across many sectors. As with any technology, the potential for abuse also exists and many AI researchers have voiced their concerns about rapid, irresponsible development, which could harm rather than benefit.

Building trustable AI systems is essential as it starts to play a greater role in our lives with greater demands being placed on such systems

from technologies such as robotics, 5G and IoT. The amount of big data generated from these systems can only fathomably be processed using intelligent AI machines to help us make sense of this information in a meaningful manner. The falling costs, availability and maturity of AI technologies is providing value that otherwise would be nearly impossible to derive using traditional methods as the variables and interactions are far too many for humans to analyze.

This in effect means that AI systems will help play a greater role in enabling us manage important systems and networks which must be done in a manner that is safe, reliable and that can be explained. For example, the logic as to why an AI system has taken the decision to intelligently reroute electricity in a power plant must be clear so that there is a proper audit trail. This obviously is more critical in settings such as healthcare or in the case of nuclear power plant management where the consequences could be catastrophic, but is also valuable to online marketers for example to know why an AI system has recommended a specific product to a certain user on the internet.

In order to build trustworthiness in AI systems, I see that there are three areas that must be focused on, namely:

- Developing explainable and safe AI systems
- Training AI systems using unbiased dataset
- Improving the security of AI technology

Allow me tackle each one of these areas in brief.

AI systems must be developed with explainability in mind. The increasing reliance on AI systems to analyze and process data to deliver better and faster insights will mean that they will come under scrutiny to ensure they are functioning correctly and transparently;

which is the goal of explainable AI (XAI). This poses a challenge as AI systems are complex black boxes which really only a few understand, which brings about the need to have the ability to backtrack and understand why AI systems came to the conclusion they did.

As well as explainability, they should be developed with hard coded safety features to ensure that there are guarantees around human safety that cannot be violated regardless of the conclusions reached.

The second part to the AI trustworthiness puzzle is the need to train such systems using vetted, unbiased information. Any AI system needs to be trained on sets of data in order to build correlations, which it then uses to makes predictions about future situations it is presented with. If AI systems are fed with datasets that are biased or contain prejudice, the resulting outcome will be a system that reflects the same bias. Checks and balances need to be in place to ensure that critical AI applications in particular are trained with proper information.

The final part to achieve trustworthiness is to ensure that AI systems are properly secured using evolving AI based security systems. The field of cyberwarfare is rapidly changing and it would be disastrous to have such systems compromised. Malicious actors are becoming more sophisticated in their attacks and we must ensure that AI systems are properly protected.

Building trustworthy AI systems must occur by governments working hand in hand with the private sector to properly understand this technology to develop national policies and capacity in this area so that a holistic ecosystem can be built in which this technology can thrive.

What They Call AI is Simply Intelligent Programing

Just mentioning the word artificial intelligence (AI) conjures up images fueled by ideas that science fiction has put into our minds of independent autonomous beings. The reality of AI is a far cry from this imagery, with leading proponents of AI such as IBM's Ex-Executive Chairman Ginni Rometty proposing changing the name to something which reflects its true reality which is in fact intelligent programing. Rometty advocates for the term artificial intelligence to be replaced with 'augmented intelligence' in order to remove the stereotypes and stigmas that are associated with the word 'artificial intelligence' which has caused a lot of fearmongering in the past.

A look into the workings of AI reveals it to be a technology based on linear algebra, calculus, probability and mathematical optimization to help recognize patterns in information being fed, nothing more. Calculus is used to build a network of nodes attempting to replicate the function of human neurons, albeit on a much simpler level. These are developed and connected in programing code to perform various functions that make up what is known as neural networks. This is then fed with information - or trained - with specific labelled datasets so that it may build up a representation of the data, and in turn, its detection capability. The more data it is fed, the better it develops.

For example, an AI can be fed many pictures of labelled cats and dogs and after training, will identify a cat or a dog when presented with a picture of either. Following that, the AI can be used to perform rapid functions on huge datasets, but it will only be limited to providing the function for which it has been developed. Granted that the example given is a simple one, but it serves to illustrate how AI technology works. It is intelligent, proactive programing.

AI has been receiving a lot of attention recently and the reason is two-fold. One is that large datasets are now available for AI systems to be trained on due to the advent of big data. Without data, such systems fall flat as they cannot be trained. Training them with big datasets provides them with enough information to push through the neural network algorithms, reducing error margin and making them more accurate. Secondly, training and processing the AI with data needs copious amounts of computing power which simply wasn’t available in the past. Powerful processing now allows AI

algorithms to process big datasets which are ultimately complex mathematical equations.

Whatever level of sophistication they get to, they remain programing systems that humans control which can be used as augmented intelligence to assist humans in better decision making.

Another point which is worth raising here is that AI systems are somewhat deceptive in the level of automation they are providing. Perceptions are that having an AI brings about fully automated operations. This is far from the case where AI plays a very limited role, usually for very specific decision making activities, or acting as the interface to backend systems that we have had for decades.

Ordering items from the popular Alexa system from Amazon for example, exposes the layman to an AI interface, but masks the backend processes which are pretty much the same as they were before. Systems may seem automated through AI, but in many cases it is the backend people that are making such systems appear autonomous, whereas in fact they hold no value without their human counterpart. In light of climate change challenges, we need to be looking at the overall ecosystems in which AI's sit, to make them greener, transparent and more sustainable in order to democratize AI in the true sense of the word.

An issue which I brought up many years ago which still needs work is the issue of bias in datasets being used to train AI systems. We have seen huge blunders in AI systems producing errors due to the bias and prejudice in the data used to train them. Much stronger regulatory laws need to be put in place and greater rigor

should be exercised around how such datasets are produced, which means improving guidelines for AI regulation and how these systems are built.

Moving forward, we need to have the experts in our nations who understand this technology and are able to harness them as they start to play a more critical role in our every lives. Having auditable AI systems is imperative in order to remove the ‘smoke and mirrors’ around them, so that we can guarantee some level of assurance regarding their operations.

We also need experts in AI to develop the next generation of systems and must encourage an environment that promotes research and development, as otherwise, this will be another wave that passes us by.

How China is Using AI to Improve Educational Outcomes

China is emerging as one of the leading countries in adopting AI for education purposes. Chinese authorities have been using various AI technologies in classrooms that can help teachers and students in different ways, such as headbands that measure brain waves and monitor student engagement and concentration levels. These devices can help teachers determine the students' weaknesses and strengths, as well as tailor their instruction to the individual needs of each student and provide feedback on their learning progress.

Other classrooms use cameras and programs that track facial expressions and analyze student behavior. These tools can help teachers assess student emotions and motivation and determine when teachers should intervene to address an issue or provide support to the student when necessary.

Some classrooms also use software that determines students' levels using programs that assign scores based on student concentration levels and performance, which can help teachers evaluate student learning outcomes and provide personalized guidance and support. This highlights China's determination to invest in AI technologies to enhance student learning and prepare them for the highly competitive college entrance exams.

China has proved its ability to address some of the biggest challenges in education today, such as access to good education, inclusion, and looking into issues affecting education in terms of language, in addition to personalized learning experiences through smart teaching systems rather than through traditional learning means.

With AI technology, we can quickly highlight each learner's strengths and weaknesses in order to develop a tailored approach for each student.

I see that such AI tools are an essential technology that will go a long way to democratize education in ways we could have never imagined.

However, such technology also brings challenges and risks that must be addressed. AI can exacerbate existing inequalities and biases in education and create new digital divides between countries and regions that have different levels of access to technology, infrastructure and skills.

AI also relies on large amounts of data, which raises concerns about the privacy and security of students' personal information as it could be vulnerable to hacking, manipulation or misuse by malicious actors. There is a definite need to ensure that data collection, storage and analysis are done in a transparent, ethical and secure manner.

The introduction of this technology also requires teachers and learners to acquire new skills and competencies to be able to use it effectively. Teachers need to learn how to integrate AI into their teaching practices, as well as how to evaluate its impact on student learning. Learners need to learn how to effectively interact with AI systems, as well as how to critically appraise their reliability, validity and limitations.

As someone that has been advocating for the benefits of AI for many years and in my capacity as a member of the UNESCO Advisory Committee for Quality and Excellence in Education, I believe that we need to embrace AI as an opportunity for innovation and improvement in education. However, we must ensure that it is developed and used in a way that respects the rights, dignity and diversity of all learners. We must develop a comprehensive vision of public policy on AI for sustainable development and work together as a global community to harness the potential of AI for education while ensuring its ethical application.

Finally, other nations would do well to follow China's lead in applying AI to education. History has shown that those willing to modernize their educational systems with new approaches, technologies and learning systems are the ones that benefit from first-mover advantage, setting up their economies to reap great rewards further down the line as their citizens become more effective knowledge workers in fields that contribute to their nations development and advancement.

The Hidden Costs of AI Chatbots

The recent surge of AI chatbots like ChatGPT, Bard and others has taken our online world by storm, with the promise of transforming domains through learned knowledge which can generate natural language responses to user queries. However, these models also have enormous hidden costs that could throttle AI development and limit their quality and diversity.

One of the main costs of these systems is the high amount of computing resources they require for training, literally costing millions of dollars to develop, requiring specialized computing resources to run and even more when being retrained. The high

computing cost of is due to several factors. These include the large size of the models which can have billions or trillions of parameters that need to be updated during training, as well as the large amount of data that the models need to process and the complex algorithms these systems use.

Another cost of them is the limited availability of the Graphical Processing Units (GPUs) they require. GPUs are in high demand for various applications, such as gaming, cryptocurrency mining, and scientific computing and designed for intensive mathematical calculations, making them ideal for AI systems. This creates a shortage of supply and drives up the prices of them. Moreover, GPUs are not energy-efficient and consume a lot of power, which adds to the environmental impact of AI chatbots.

The high costs of developing and running these AI chatbots poses several challenges for AI development, including restricting the quality and capabilities of the ones that are deployed to the public, as companies may opt for smaller or simpler models that are cheaper to run but less accurate or versatile. The diversity and innovation of the systems that are created may also be reduced, as only a few large companies can afford to train and run them at scale.

Also, there is likely to be pressure to monetize such systems as soon as possible which may lead to substandard systems being built, compromise their ethical and social standards or lead to other unintended consequences. We cannot afford for a few tech companies to have a monopoly on this technology, which deserves to be democratized as much as possible.

To address these challenges, more efficient and scalable methods for training them should be explored, including adapting them to specific tasks or domains, rather than training new models completely from scratch. More energy efficient ways of running and hosting these systems should also be investigated in order to reduce the carbon impact associated with them. Datacenters are already guilty of using huge amounts of electricity and producing significant greenhouse gas emissions.

As a long time technologist and being the Chair of the Consortium for Sustainable Urbanization (CSU), I am of the opinion that the total cost of ownership of AI chatbots needs to be radically reduced, as the present course this sector is going down is unsustainable. We require innovative solutions to deal with these and other challenges surrounding their production and operation. If nothing is done, we may well end up throttling and killing this industry before it even gets a chance to take off.

Let Us Agree on One Definition for AI

Dr. Talal Abu-Ghazaleh shares Jumana Abu Ghazaleh's views on Artificial Intelligence.

In 2002, I asked Bill Gates at the Microsoft Executive Summit Meeting in Paris, what the next era would be, to which he replied the era of Artificial Intelligence. With the AI era well and truly upon us, I have been avidly following up on this technology with my daughter Jumana Abu-Ghazaleh and sharing her knowledge as a keen technologist in our time.

Today, everyone is talking about AI and how it has the potential to change and revolutionize our world in a myriad of different ways. It has become a vibrant topic that sparks diverse and intense

discussions with people debating its pros and cons, its reality and fantasy, its biases and ethics, as well as its threats and promises. With the coming of ChatGPT and AI going mainstream, maybe for the first time ever people can see its potential, investigating its applications, dangers and limits, with more zeal than ever before.

Having assessed what is going on in the world of AI and having consulted with Jumana and many others, what seems to be missing is a clear, universally accepted definition of AI. AI seems to mean different things to different people. The US Department of State and the OECD refer to it as a kind of system, the US Congress has called it a computerized system and OpenAI has labelled it as highly autonomous system.

And then there are companies like Microsoft that say that it's a capability with Google saying it's a set of technologies. The EU says it's a family of technologies, with China saying it's a strategic technology. Meta has used various definitions over the years, enough to confuse ChatGPT into providing a definition and then retracting it. It is notable that various links provided by ChatGPT over the course of Jumana's conversation with the tool regarding Meta's definitions of AI were broken.

With so many definitions and understandings of AI, there clearly seems to be a fundamental problem in defining what exactly it is that we are talking about here. This is highly problematic as it has an impact on current and future discussions about a topic that is so poorly defined. What exactly are we talking about when we refer to AI? If there is ambiguity about the thing we are referring to, how can we have meaningful discussions about how

it is developed, governed, used and applied, as well as its merits, dangers and its future?

As an accountant by trade as well as being the founder and chairman of one of the largest audit firms in the world, TAG.Global, having precision and control over what terms mean is something that is built within my very fabric. In 2019, Jumana wrote a piece for 'The Startup' about the state of data-intensive and data-extractive technology that started with this line: "Everyone knows something's wrong - they just can't agree on what it is." I could have started this article the same way. Why all the obfuscation and complication in defining what AI is? Why is there not a consensus in the world among companies, experts and everyone else about what it is we are talking about here? Who knows?

What I do know is that before we take AI discussion any further, we must settle on a definition of what it is that is both accurate and meaningful. As has been said in management circles "You cannot manage what you cannot measure". I would extend this further and say, "You cannot measure what you have not defined". If we are going to build a healthy, diverse and vibrant AI sector, we need to be clear from the get-go about our terminologies, definitions and hierarchies as these are the basis from which a holistic AI ecosystem can sprout.

We need a well-defined AI taxonomy with a precise nomenclature before we proceed. We must have conversations about what AI is and what makes a system artificially intelligent. To illustrate the quagmire we are in, we are already in a world that defines AI as multitude of things including a self-driving car, a facial recognition

tool, a ChatBot, a business model, a robot, a language interpreter, a tool to help reduce climate change, a chess expert, an early disease detection assistant, and more.

I believe that it's never too late to make things right and that it is time to take meaningful action. I suggest we form a commission—call it the Commission for AI in the Public Interest (CAIPI) — comprised of experts in various related fields, including data science, law, ethics, neuroscience, philosophy, and others. They should be tasked with stress-testing and standardizing the definition so that those working in the field, as well as those using and being used by the field, are clear on the rules of engagement and can expect a modicum of consistency and accountability. It is called governance and it is part of literally every other aspect of our life.

Being the previous Chair of the Advisory Committee on Internet Governance for the United Nations Information and Communication Technologies Task Force and having hosted numerous international forums on governance - as well as having published numerous works on governance - I invite Bill Gates and others to join me in taking action to clearly define AI. I will happily host such a gathering at Talal Abu-Ghazaleh Academy and at Talal Abu-Ghazaleh Digital University, where we are actively investigating, exploring, and teaching various aspects of AI.

AI Regulation: A Matter of Increasing Importance

From the recent developments in the field of AI, it looks clear that the knowledge workers' role will change significantly as this technology integrates further into our everyday lives. The impact of AI is something I have been speaking about for many years, and on numerous occasions, I have raised my voice on regulating this industry and the need for clear definitions about what we are talking about when we speak about AI. We need to be raising questions now, which I believe will help steer this industry in a positive direction that respects human values and protects our humanity. We need to be able to understand and audit AI systems, as well

as address the alarming lack of regulation this industry faces, as this technology's potential to disrupt our lives is immense and that needs to be properly handled.

These concerns have been shared by many leading technologists such as Sundar Pichai (CEO of Google), Elon Musk (CEO of Twitter), Steve Wozniak (Cofounder of Apple) and others, some of whom have even called for the halting of further training of AI's until we have an appropriate regulatory framework. I would say that we also need proper definitions before we proceed as AI means different things to different people, as my daughter Jumana Abu-Ghazaleh, highlighted in her excellent article on defining AI (available here https://jumanaag.medium.com/ay-yai-yai-a-i-c3516db0e82b). We cannot afford to let loose technologies that we have not properly defined, let alone fully understand. Even Pichai admitted in a recent interview that there is a "black hole" with chatbots, where "you don't fully understand" how or why they have come up with certain responses.

Regulation is pivotal in building the upcoming AI industry, just as it is important in every other aspect of our lives. It is imperative to set standards and rules for AI systems, in order to prevent misuse and abuse, and to protect the rights and interests of individuals and groups affected by AI. However, regulation is not easy to design or implement, as AI technology is rapidly evolving and is often opaque.

Moreover, regulation is not only a matter of technical or legal issues, but also of ethical and social ones as well. How can we balance the innovation and competitiveness of AI with the protection and empowerment of its users and stakeholders? How can we ensure that AI reflects the diversity and inclusiveness of human society and does not exacerbate existing inequalities? How can we foster trust and transparency in AI systems and their outcomes? How can we be certain the training sets being used to build these AI's are not biased? These are all pertinent questions that we must start to address now.

Having been Chair of the Advisory Committee on Internet Governance, United Nations Information and Communication Technologies Task Force, I believe that one possible way to address these questions is to adopt a human-centric approach to AI regulation, as proposed by the European Union in its 2021 legal framework for AI. This approach aims to ensure that AI is aligned with human dignity, autonomy, and rights, and that it serves the common good.

According to this framework, AI systems should be subject to different levels of regulation depending on their risk to fundamental rights and safety. For example, high-risk AI systems, such as those used for biometric identification or critical infrastructure, should comply with strict requirements on data quality, accuracy, robustness, human oversight, and redress mechanisms. On the

other hand, low-risk or beneficial AI systems, such as those used for entertainment or education, should be encouraged and supported by incentives and funding. This is one possibility.

The other possibility is to involve multiple stakeholders in the governance of AI under a new international commission. This could be called the Commission for AI in the Public Interest (CAIPI) and would consist of AI companies, engineers, social scientists, law makers, ethicists, philosophers, and others who can provide different perspectives and insights on the implications of AI.

Such regulation should not be left to one company or country and must be based on the consensus of a cross section of experts in different fields that AI interjects with. It certainly isn't something that should be left to chance or discussed on the sidelines. This is a highly complex specialization where we need clarity, transparency and disambiguation on all levels in order to fully appreciate and understand what it is that we are dealing with, so that we can fully understand the risks, impacts and opportunities it poses in order to build a robust and comprehensive regulatory framework.

Artificial Intelligence is the Enabler for Future Marketing

We are now living in a digital world where consumers are constantly being bombarded by an enormous variety of goods and services from providers across the globe. From traditional advertising to targeted online campaigns, companies are using a plethora of tools and techniques to get themselves in front of customers, in an attempt to secure a greater market share in a borderless economy. This unprecedented level of competition is pushing companies to become more innovative in order to make their marketing strategies more targeted and more effective so that they get more 'bang for their buck'.

As the digital world has brought with it new technology platforms, companies are enlisting the expertise of specialist marketing firms

in order to target relevant consumers in an intelligent manner. With millions of potential consumers online, effective marketing can only be achieved through the intelligent analysis of consumer behavior and sentiment to display relevant advertisements in front of prospective buyers.

This renders traditional methods of marketing redundant, as it was a ‘hit and miss’ approach, through mass marketing, to as large an audience as possible in a bid to secure interest and enhance sales. The future of marketing however is a far more intelligent affair. It largely depends on two elements working in synergy with one another - big data and artificial intelligence (AI). Online platforms have started to use this new marketing approach to deliver better marketing outcomes.

A look into how AI works reveals a technology based on mathematics that recognizes patterns through information fed to it. That information can then be used to perform rapid functions on huge datasets. This is extremely useful in analyzing consumer behavior, which identifies the trends and the patterns that can assist in advising on building targeted marketing campaigns. This however relies on having adequate amounts of big data available for analysis, as well as systems smart enough to make sense of both structured and unstructured data.

A combination of having intelligent AI systems, sufficient amounts of consumer related big data and the computing processing to crunch this information is now putting together the foundation of future marketing.

The falling costs, availability and maturity of these technologies, have led to greater adoption amongst marketers as the value

proposition of them can now be seen. This is a symbiotic relationship between technologies that need each other to exist in a new ecosystem, providing value that otherwise would be nearly impossible to derive using traditional marketing methods as the variables and interactions are far too many for humans to analyze.

Social media platforms, such as Facebook and Google have been quick to secure market share and become leaders in these technologies, establishing huge tech empires as a result of providing rich consumer based information to marketers on habits and trends of their users, allowing for targeted content to be sent to interested audiences.

As an example of the colossal success of using AI for marketing, the revenues of Google's AI based AdSense and AdWords programs generated for them over $134.81 billion US dollars in 2019 according the market research company Statista.

This is a mind blowing amount for a company that develops a software program; a search engine, that has been leveraged as a huge marketing platform to gather information about online consumer habits, their online search history and interests and interactions and help companies build sophisticated marketing campaigns. Marketing is all about getting the right messages to the right audience and there is no doubt that we are at the very beginning of this online AI marketing tsunami.

With many AI marketing tools and approaches now available, it is clear that companies need to have comprehensive AI marketing strategies in place in order to streamline corporate AI marketing activities, maximise the benefits of technology adoption and ensure that budgets are spent appropriately to deliver maximum Return On

Investment (ROI). It is important for companies wanting to adopt AI marketing to understand that there are new technologies, practices, governance and skills that will be needed and that the journey will be an experimental one until companies can use their data to create new value and new experiences for their customers.

The benefits that AI marketing is currently bringing with it is allowing companies to:

- Engage in enhanced advertising by allowing AI systems to intelligently tweak marketing campaigns. Machine-learning algorithms can find new ways for optimizing layout, copywriting and targeting. This allows advertisers to optimize campaigns and test out more ad-platforms leading to more effective campaigns being developed.
- Allowing end users to receive a personalized website experience by AI intelligently analyzing hundreds of data points about users and displaying personalized offers and content through AI systems such as Google Analytics.
- Allowing companies to develop interactive AI Chat-bots which act as online assistants, enhancing interaction with consumers and providing a level of customer support that would not be otherwise possible.

I see that for the coming future, trending AI systems include conversational interfaces and proactive AI home assistants, which enable natural language interactions with AI via voice. We are already seeing such systems with tools such as Alexa, Siri, and other AI home devices that provide voice access to the Internet with a level of home automation.

These systems will be the next target for marketers, as they become a new interface through which consumers interact with

the Internet. Such systems will find success not as dumb devices, but as interactive systems that come up with proactive ideas and suggestions that users wouldn't think of. This will provide rich pickings for marketers as these systems mature and become more useful as consumer adoption increases.

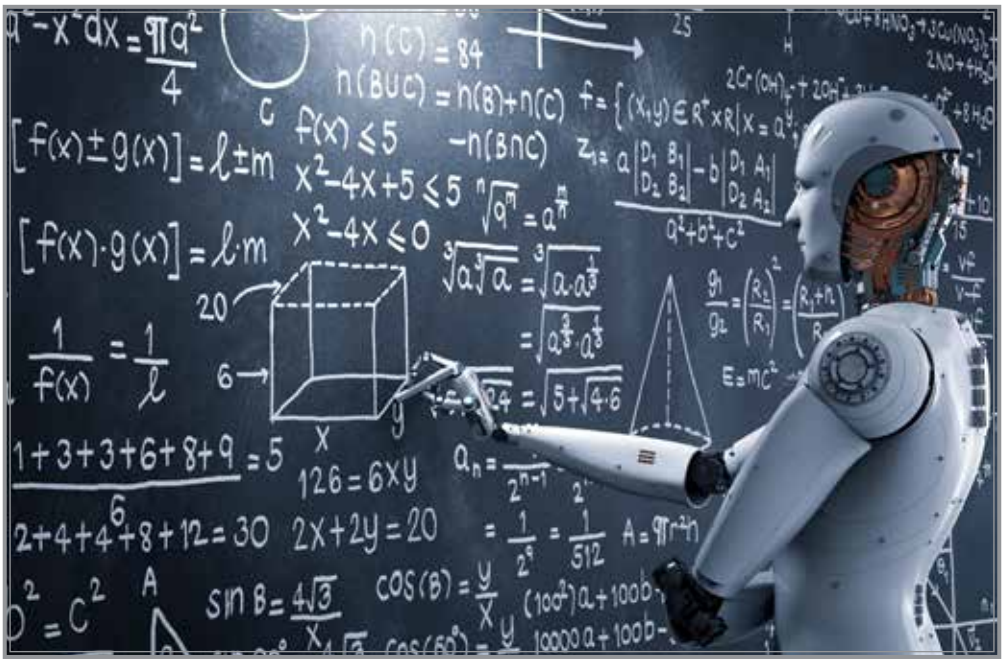
AI is improving marketers abilities to automate analysis, tasks, and communications. They are really good at looking at vast data sets and identifying relationships between all kinds of behaviour that humans wouldn't pick up on. AI however is not so good at innovation yet. As AI matures, I see that such systems will become more creative and increasingly intelligent, eventually becoming a necessary part of any firm by looking at organization-wide datasets and coming up with new, independent conclusions. This will require a substantial shift in mindset and will inevitably become the next brand of business productivity software.

Data here is everything without which AI on its own would serve little purpose.

In conclusion, I would say the AI is not just the future of marketing; it will touch and influence every discipline we currently have and it is the future of everything. I therefore call upon our youth to focus on becoming knowledge workers to fill such roles and to become experts in AI as this is where the future lies.

I see this as the "survival of the fittest". Those willing to skill-up will be tomorrow's winners and there is no reason why the Arab region cannot become a leader in AI technology.

Principles for AI in Education



As generative AI starts to take hold across the world, the education sector is probably one that needs urgent modernization to deal with this new development. Unfortunately, it has been lagging far behind, unable to adequately deal with the presence of technologies that empower students to take charge of their learning.

With the ubiquitous nature of the Internet available around the clock through smartphone and other devices, students are more likely to be up to date with facts and figures than their teachers. I have been saying for many decades now that the role of our educators needs to move from traditional teachers to becoming technology mentors,

in order to equip our future generations with the skills to use these technologies to their advantage.

The traditional education system was designed for an economic environment that has long gone, and while it possesses many good elements, it must be modernized to take stock of new technological innovations so that our students are transformed into knowledge workers with the digital skills sought in the workplace. We need to fill the digital skills gap and empower our youngsters with valuable digital know how, as if we don't, we will find them being superseded by workers that do.

Acquisition of these skills must begin in our education system which has to modernize and must be enabled to adequately assess them in ways that do not undermine the education process. If our current assessment methods are inadequate, we should not place the blame on students when they use such technologies to their advantage to complete their school work. Rather, we should be introspective and develop assessment methods that work in modern times.

There is some light at the end of the tunnel and I would like to share how a collection of top universities in the UK called the Russell Group are addressing this matter, which is encouraging and a move in the right direction. Rather than banning this technology which would prove to be futile, they have developed some guidelines for the use of AI in education so that it becomes part of the learning process in a safe and ethical way. The guidelines cover five principles which are:

- Support students and staff to become AI literate
- Equip staff to support students in using generative AI tools

- Adapt teaching and assessment to incorporate the ethical use of generative AI and ensure equal access
- Ensure academic rigor and integrity
- Work collaboratively to share best practice as the technology evolves.

This is very timely as Ministries of Education across the world grapple with how to deal with AI in academia. The UK model may not be perfect, but it is certainly a positive step in the right direction.

Having been Chair of the United Nations Global Alliance for ICT and Development (UNGAID), I see this as an opportunity for us to rethink how we assess students and use it to improve their learning, as well as impart valuable AI skills to them and help them take charge of their learning. For some time now, there has been a widening gap between the skills being taught and those required in the workplace. With AI, this gap is set to get wider.

Through reskilling teachers as well as providing training and early AI education to students, we can prepare future generations with a well-rounded education to become a dynamic workforce that is empowered to meet future challenges, and to contribute to society and to their workplaces with a modern set of AI skills.

This is a moment in time we must capitalize on and a future we need to embrace. It presents an opportunity to build resilient education systems that will help to develop future economies that are modern and prosperous.

Is AI an Environmental Threat?

We live in a world that is becoming increasingly climate conscious as the effects of global warming and the resulting devastation is apparent to all. I am glad to see that there is a growing societal shift to move everything to a green, sustainable model of operation in order to preserve our World for future generations, and heal the planet which has undergone significant environmental damage.

Being a technologist as well as a lifelong supporter of sustainable urbanization and carbon neutrality, I have always tried to balance technology creation and adoption, with sustainability and achieving net zero. I am passionate about both these subjects as the Chair of the Consortium for Sustainable Urbanization (CSU) in New York, and

having been Chair of the United Nations Global Alliance for ICT and Development (UNGAID). However, the recent global frenzy over generative AI has me both optimistic as well as concerned.

With an enthused welcome for generative AI, it remains to be seen how transformational it will truly be, but what is clear is that it is a voracious consumer of resources. It requires massive amounts of data, computing power, and electricity to function, resulting in high carbon emissions, water consumption, and electronic waste. AI may be able to provide us with solutions for climate challenges, but if it is a major contributor to carbon emissions, the technology is problematic.

Modern generative AI systems are trained on billions of parameters that require enormous amounts of energy. This is not just limited to generative AI systems, as other types of AI applications, such as computer vision, speech recognition, and gaming, also consume significant amounts of resources. For instance, a report by Greenpeace found that global online gaming platforms, which rely heavily on AI, consumed more electricity than countries like Belgium or Peru in 2022.

While AI's environmental impact is undeniable, some might argue that it may be worth reducing the technological footprint to build smaller systems that need less resources. This however, seems to jeopardize the accuracy of such systems making them less reliable. A study by researchers at MIT and Harvard University found that reducing the ecological footprint of AI may compromise their accuracy and functionality, showing that while using smaller models or less data can reduce energy consumption and carbon emissions, it will also lower the quality of the outputs. Therefore,

AI's environmental impact not only seems to be a matter of quantity, but also quality. It is not enough to measure how much resources AI consumes, but also how well it uses them to produce meaningful and beneficial outcomes.

As AI becomes more advanced and ubiquitous, its environmental impact is likely to increase exponentially. Some reports have suggested that AI's energy consumption could surpass that of the entire human workforce by 2025, and machine learning training and data storage could account for 3.5% of global electricity demand by 2030.

These projections pose serious challenges for the sustainability of AI and the planet. If left unchecked, AI could exacerbate the climate crisis, deplete natural resources, and generate more waste. Therefore, it is imperative to rethink how we develop and use AI systems in a more responsible and efficient way.

Some possible solutions include designing more energy efficient systems, using more renewable sources of energy to offset AI carbon outputs, developing better standards and regulations for AI's environmental impact, as well as educating users and stakeholders to make more informed and responsible choices around AI.

AI is a double edged sword that can have both positive and negative impacts on the environment. Therefore, it is crucial to balance the benefits and costs of AI, and to ensure that it is used in a way that respects the environment and the common good. This requires a collective effort from researchers, developers, policy makers, businesses, and consumers to measure, mitigate, and manage AI's environmental impact, while maximizing its benefits to society.

From Oppenheimer to Artificial Intelligence (AI)

In the same manner that the physicist J. Robert Oppenheimer has faced the complex interaction between science and ethics, the world stands today at a critical juncture in the realm of computer science, where engineering and ethics meet.

Delving into the box-office record-breaking “Oppenheimer” movie, we find ourselves drawn to a story that transcends time and bridges the gap between the past and the present. We will have to decide, once again, whether we will continue to develop a technology, which we have not yet understood its full strengths and potentials.

The parallelism is amazing and timely because we are about to unleash another technological marvel called AI, whose immense

powers and potentials remain a mystery. It is also a double-edged technology, as it has the potential to bring great benefit to humanity in various fields, but also has the potential to cause no less harm than the nuclear bombs, which were dropped on the cities of Hiroshima and Nagasaki. This has recently prompted a group of technology giants to call for caution and further discussion before pursuing further technical developments, and to suggest halting the development of more advanced forms of this technology for six months.

As the pace of progress continues to accelerate, our ability to harness its massive potentials for the good of humanity lies in understanding how to design, direct, and use this technology in the best interests of the world, to mitigate potential risks, and to steer its development toward a path that prioritizes human values.

In the meantime, it has already made significant impact in various fields and we can expect it in the near future, to power self-driving vehicles, transform transportation, reduce road accidents, revolutionize industries, such as agriculture, construction, and others, in addition to increasing human capabilities and enhancing productivity. As for space exploration, autonomous systems can enable more complex and cost-effective missions and unravel the mysteries of the universe. Moreover, virtual assistants and chatbots, are expected to become more intelligent, in reshaping the way we interact with technology, and provide personalized support in different aspects of our lives.

The impact of it will extend beyond individual fields to include countless areas, as it will be able to address global challenges, save lives, and protect societies.

For example, it has been used in the area of healthcare and it has demonstrated ingenuity in early detection of diseases, precision medicine, and analysis of medical images, which could revolutionize patient care and save countless lives. In the area of education, AI-powered personalized learning platforms have the potential to empower students, unleash their full potentials, and narrow educational disparities.

Despite the transformational potentials, there are still concerns regarding the impact of it on the labor market and the social structures because of automating some tasks, in addition to the legitimate fear of job cuts. History, however, has shown that technological advances often create new job opportunities. It is crucial, therefore, to prepare the workforce for the changing labor scene through upskilling and reskilling initiatives.

AI, moreover, may become cooperative and valuable, as it liberates the human capabilities from the routine, repeated tasks, to allow them to focus on problem solving by using creativity and innovation.

While it offers enormous promises, its future is intertwined inherently with human choices, particularly the development and use of it in the military. Achieving the optimal balance between technological advancement and ethical considerations is, therefore,

of utmost importance, which will never be achieved except through cooperation and moral dialogues.

It is worth mentioning here that the "AI for Good Global Summit", organized by the International Telecommunication Union recently, is considered a step in this direction. Seven companies working to develop this technology have announced their commitment, during a meeting in the White House with President Biden, to a set of general principles aimed at managing the risks of it. The UN Security Council discussions on technological advancement are another step in the right direction, provided they lead to binding controls to ensure the responsible development of such systems.

How to Prove Your Competence in AI

Today's knowledge workers need to be acquiring skills in modern technology areas, particularly AI as more businesses look to leverage the power of it to help become more efficient, solve problems and enhance customer experiences. With the coming of generative AI, access to AI systems has become far easier and is helping people become more efficient at their jobs.

I foresee that humans that augment themselves with AI will replace those workers that do not. They will be replaced just as those that didn't change during previous technological revolutions were. This is similar to when the Word processor came out. Those typists and secretaries that became knowledge workers and mastered these

technologies in fact became more valuable to the companies they worked for, while those that didn't, soon found themselves out of a job. The same will happen with AI.

It is interesting to see the change in the job market which is already taking place despite AI still being in its infancy. According to an article written by CNBC in July 2023, the US is the leader in hiring for AI jobs, with 169,045 open positions that require AI skills in June 2023, and another 3,575 that are specifically focused on generative AI.

However, with such a new technology which is rapidly evolving, how does one prove ones expertise in an area that itself is in its infancy?

I would say initially that any knowledge worker should be looking to see how AI can be embedded in their daily work. This helps to get exposure to the technology, understand its strengths and weaknesses, as well as how best it may be utilized. AI is not a silver bullet and the technology has many setbacks and limitations that a knowledge worker must understand, which only comes from working with the technology and becoming an authority in it.

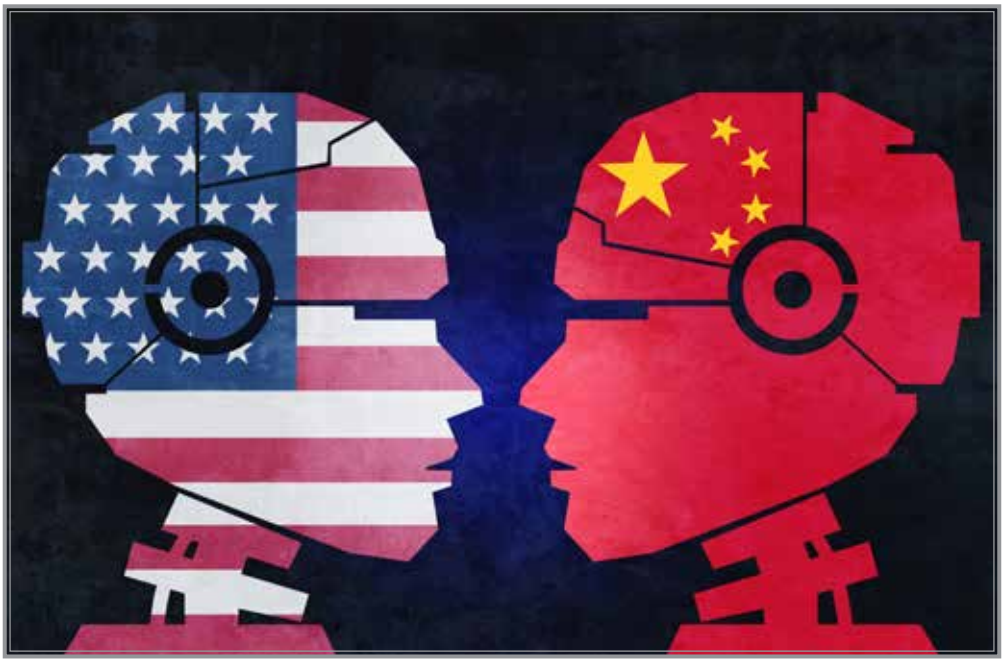
This then goes onto my next recommendation that is to try and use it to solve an organizational problem. Using AI to achieve a specific goal is proof that the technology works and that you can harness it to achieve a tangible business objective and show that it has commercial value. This is evidence of understanding and

mastery that helps to build a portfolio of AI successes and proves competency in this field. Organizations need experts that can use AI technology to solve business problems to enable the business further. This is an important and valuable skill to have.

I would finally say that it is essential for any AI knowledge worker to keep abreast of the latest tools, models and technologies that are coming out in this field. Being in its infancy, AI will undergo numerous iterations as it matures and as companies clamber to get their AI products developed and out into the market. As the technology is moving so rapidly, it is essential for an AI knowledge worker to know what is happening and understand the developments in this field, which will provide him with first-mover advantage and allow him to stay ahead of the pack.

There are high paying roles for those with the requisite knowledge, and in a fast moving market, knowledge workers need to keep their pulse on this technology to stay on top of their game.

Washington and Beijing: Artificial Intelligence Based Weapons Arms Race



The US and China's pursuit to possessArtificial Intelligence based weapons reflects the escalating geopolitical competition between the two superpowers. Artificial Intelligence is one of the most transformational technologies in the modern age that provides huge potential in various areas, from healthcare to investment and transportation. It is undeniable that the role of Artificial Intelligence in military applications has also become pivotal for major world powers and in the arms race between the US and China. America's first objective is to build such weapons, driven by the belief that China's superiority in this area could lead to a disastrous end for the US.

With the advent of Artificial Intelligence powered weapons, countries have found themselves in a race to maintain their technological advantage and protect their national security. Hence, the concept of Artificial Intelligence arms race stems from the growing recognition that the country that gains a decisive technological advantage in Artificial Intelligence driven weapons is likely to reshape the global power balance.

Thus, the US and China in particular regard this as a game changer in modern warfare that will revolutionize military capabilities, including nuclear weapons, decision making, and strategies. Each of the two countries is pushed, therefore, to achieve technological dominance to secure its interests and deter potential opponents.

While China is investing heavily in such intelligent emerging technologies, the US regards the possibility of being outperformed in military power as a major national security concern. Fearing a future in which Beijing dominates the technology behind Artificial Intelligence based weapons; Washington feels that it is obliged to maintain its technological superiority.

Owning advanced systems, nevertheless, may discourage opponents from initiating hostile actions and; thus, promote global security and stability. They may also enable exerting greater influence in regional and global affairs and becoming a dominant player in international politics and security.

This fierce competition between Washington and Beijing has led, of course, to increased innovation, as scientists, engineers, and defense experts find ways to integrate Artificial Intelligence in weapons

systems. The quest for military supremacy is driving advances in machine learning algorithms, natural language processing, and autonomous systems, but the two countries must address the ethical implications of deploying such programing in warfare and develop robust work frames to ensure accountability and compliance with international humanitarian law. The pursuit to own intelligent weapons promises enhanced capabilities on the battlefield, but it also raises major moral and ethical dilemmas. The automation of lethal decision-making process, the potential for unintended consequences, and the vague lines between fighters and civilians are all concerns that require careful study.

I think that the lack of clear regulations and internationally agreed standards for the military applications of Artificial Intelligence would amplify the risk of an uncontrolled arms race. In order to prevent escalating tensions and promote global stability, diplomatic efforts are necessary to create multilateral dialogues about weapons powered by Artificial Intelligence and to develop consensus-driven rules of engagement for systems.

Despite the fierce competition, there is a potential for cooperation between the US and China in this field. Through enhancing open communication and cooperation lines, the two countries may face the common challenges such asArtificial Intelligence ethics and climate change collectively. The establishment of cooperative platforms may also help to build mutual confidence and reduce the potential for unintended arms race.

I stress here that it is necessary for the two global superpowers to give priority to responsible development of Artificial Intelligence,

to ensure the safety and security of the weapons powered by it. Implementing robust testing, validation, and fail-safe mechanisms is essential to prevent unintended consequences and reduce the risk of crashes or hacking by irresponsible parties.

Rapid integration of this technology in the defense sector may have major impacts on the workforce and employment. With more tasks being automated, jobs might be replaced and transformations will take place in the labor market. The governments of the two countries may have to face the social and economic repercussions of spreading Artificial Intelligence, unless they make early, seamless transition for the affected employees and invest in retraining programs to adapt with the changing employment scene.

Only by concerted efforts can the world navigate through the arms race driven by Artificial Intelligence, while ensuring global stability and harnessing the transformative potential of it for the common good.

Towards Transition into Meta-Banks

The digital era has brought profound changes to the banking industry, as customers demand more convenience, personalization, and security from their financial services providers. Banks have responded to this challenge by offering more digital functionalities, streamlining their physical channels, launching digital-only banks, and building partnership ecosystems. However, the digital banking transformation is not over yet. A new phenomenon is emerging that will reshape the way people interact, work, play, and consume which is through the Metaverse.

The Metaverse is a massively scaled and interoperable network of real-time rendered 3D virtual worlds that can be experienced live and simultaneously by an unlimited number of users. The Metaverse is not a single platform or application, but a collection of interconnected virtual spaces that span different domains, such as gaming, social media, entertainment, education, commerce, and more, estimated to be worth trillions in the near future.

The Metaverse will have significant implications for the banking sector and the role of banks, as transactions and other financial operations will be a crucial element of Metaverse interactions. Users will need to exchange value across different virtual worlds, using various forms of digital currencies and assets. Banks will need to provide seamless and secure payment solutions that can support multiple currencies and platforms. Moreover, banks will need to offer new products and services that cater to the specific needs and preferences of Metaverse users, such as identity verification, data protection, wealth management, lending, insurance, and more.

Banks should not be passive or resistant towards this change, but embrace it as an opportunity to reach new customers, create new value propositions, and generate new revenue streams. To do so, banks should follow a plan to become meta-banks in order to cater for the real economy as well as the growing digital one.

They should help customers transition from the traditional economy to the virtual economy by facilitating the conversion of fiat money into digital currencies and assets, and vice versa. Meta-banks should

also provide education and guidance on how to use and manage digital currencies and assets in the Metaverse.

Meta-banks should create their own presence in the Metaverse by developing or partnering with existing platforms that can host their virtual branches. They should offer a seamless and an immersive customer experience that leverages the capabilities of the Metaverse that leverages artificial intelligence and big data analytics to provide personalized and contextualized services to customers.

Also, they should not limit themselves to replicating or adapting their existing products, but should instead explore new possibilities and opportunities that the Metaverse offers. Meta-banks should experiment with new business models and revenue sources, such as creating or investing in digital assets, sponsoring or hosting virtual events, offering gamified or social banking features, and more.

The Metaverse is not a distant or a hypothetical scenario, but a reality that is already taking shape. Banks that want to stay relevant and competitive in the digital era should start preparing for this change now, by becoming entities that can serve their customers as their needs evolve in a growing digital world.

How AI Could Change the Way We Teach and Learn

We must reform our educational system in order to deal with growing global student numbers, and the increasing divide between the haves and the have-nots, as many are facing difficulty in accessing an education. Education is a path to better career prospects, upward social mobility and helps to break out of the vicious cycles of poverty many find themselves in. Particularly in today's digital economy, work opportunities require students to possess a range of digital skills to build their repertoire of knowledge worker talents to secure and remain in employment.

The demand for education has been growing rapidly across the world, especially in developing countries where traditional learning models are not able to meet the needs and aspirations of millions of

children and youth. According to data from the UNESCO Institute for Statistics (UIS), about 263 million children, adolescents and youth worldwide (or one in every five) are out of school. It clear that no matter how we look at it, we are facing an educational crisis with growing numbers of learners and fewer teaching resources.

I propose that with the onset of AI technology like generative AI, we now possess the potential to transform education and widen access to high quality learning for every child in the world. AI style tutors could deliver personalized and interactive lessons that cover most of today's educational material, adapting to the pace and preferences of each student. This does not preclude the need for human teachers, as they would still be needed to support and guide the students as technology mentors. It would actually free them to focus on the individual needs and interests of their learners, allowing them to provide more one on one mentorship to deliver better learning outcomes.

However, such a shift in the delivery of education also poses risks and challenges that would need to be carefully assessed and regulated. For instance, how can we ensure that the AI tutors are not biased, indoctrinated, or hijacked by malicious actors who want to influence or harm the students? How can we protect the privacy and security of the students' data and interactions with AI systems? How can we maintain the quality and accountability of the AI tutors and their content? How can we prevent the loss of control or oversight of the AI systems, especially if they become more autonomous and intelligent over time?

These questions have implications not only for education, but also for the broader existential risks posed by AI, such as influencing global opinion and political tendencies, or disrupting the balance of power and stability in the world. Policymakers, educators, researchers, and

civil society need to pay attention to these issues and collaborate to develop ethical principles, standards, and regulations for the use of AI in education, as well as mechanisms for monitoring, auditing, and enforcing them. AI is a tsunami gaining momentum and there is no stopping it. What we must do is ensure that we provide a regulated environment in which it can grow and flourish to help us in all aspects of our lives.

Generative AI technology could offer a viable solution to bridge the educational gap between the haves and the have-nots, by providing access to high quality learning opportunities that are affordable, scalable, and adaptable. This could help democratize education by empowering learners to choose what, how, when, and where they want to learn, according to their own goals and interests. It could also foster creativity, innovation, and collaboration among learners, as well as enhance their critical thinking, problem-solving, and digital literacy skills.

AI technology can certainly revolutionize education and benefit millions of learners around the world, but also poses serious hazards that need to be addressed with care and caution. The future of education depends on how we use AI and how we prepare ourselves and our children for living in a world where AI is increasingly present and powerful.

I would urge all Ministries of Education globally to seriously look into AI technology and benefit from the expertise of specialists to incorporate this into their teaching frameworks, as those that do not will find themselves becoming irrelevant and obsolete in an ever-changing world.

Generative AI: The Next Step in Organizational Productivity

Generative AI is a branch of artificial intelligence that is creating the most buzz and impact today as the power of this technology comes into the mainstream through products such as ChatGPT and others, with the potential to transform domains and industries by enhancing human creativity, automating complex tasks, and generating novel solutions.

Social media is awash with people using this technology, with many trying to cash in on this craze, as well as others warning about its potential risks and pitfalls. One of the most promising benefits of generative AI is its impact on productivity, which is a measure of how efficiently inputs are converted into outputs; a key driver of economic growth and competitiveness. According to estimates by McKinsey, generative AI could drive an almost $7 trillion increase in global GDP.

As we get to grips with this new innovation, it is clear that it could augment human workers by providing them with new tools and capabilities to communicate, create, and collaborate, allowing employees to generate new ideas, designs, or innovations, automating high level and complex tasks that require human like intelligence and creativity. For example, generative AI could help automate customer service, market research, computer coding, or legal analysis, and could also help automate data analysis, synthesis, and visualization.

In business, time is money, and being able to do more in less time by leveraging the power of self-learning and self-improving models is an edge that every business could benefit from. For example, generative AI could help optimize performance, efficiency, or quality of organizational processes using organizational data through advanced synthesis and simulation modeling, allowing businesses to see what the effect of changing organizational variables might be without having to disrupt live production environments.

I can see this technology having a significant impact across all industry sectors, such as healthcare, education, entertainment, manufacturing, retail, finance, and more. It could change the anatomy of work by creating new roles, skills, and workflows that leverage the strengths of both humans and machines, and create new opportunities for value creation by enabling new products, services, markets, and business models.

It is important though that when businesses consider adopting such systems, they must weigh up their requirements along with the challenges and risks these systems pose. Choosing the right generative AI system for a specific use case and context is essential for any technology implementation to be successful. There are many

types of generative AI systems available in the market, each with different capabilities, limitations, and tradeoffs. Companies need to evaluate their goals, requirements, constraints, and expectations before selecting a generative AI system that suits their needs. It is essential to perform detailed requirements analysis and engage in proper vendor and product due-diligence.

Organizational management should have their expectations set correctly as these systems are not perfect and can produce errors, inaccuracies, biases, or inconsistencies in their outputs. Companies need to implement quality assurance mechanisms such as human validation, feedback loops, or verification methods to ensure the quality and reliability of the generated content and insights.

Managing the ethical and social implications of generative AI is also important, as these systems can have positive or negative impacts on individuals, groups, or society at large depending on how they are used or misused. Companies need to adhere to ethical principles and standards such as transparency, fairness, responsibility accountability and reliability when developing or deploying generative AI systems. They also need to consider the potential harms or benefits of generative AI for their stakeholders and society at large and must make sure data is governed and used to the highest of standards.

Generative AI is proving to be a powerful technology that can revolutionize productivity, but it also requires careful consideration planning and management from companies to understand the opportunities, challenges and risks. The human element is one factor that should be considered carefully to ensure that the benefit from this technology is maximized, as after all, generative AI requires talented knowledge workers to harness it to its full potential.

How AI is Shaping World Politics

The US has had a turbulent past with UNESCO, the UN's Educational, Scientific and Cultural Organization, having left it twice due to differences over its ideological stand in 1984 during the Cold War against Russia, and more recently its flawed siding with the Zionist aggressor against Palestine in 2019 under Trump's Presidency.

Interestingly, as the heat between US and China turns up and the battle between them for world domination grows stronger, the US has decided to rejoin UNESCO as of July 2023, and agreed to pay its previous dues to the organization to the tune of $600 million US dollars, and a readmission fee of $150 million. While this is good for multilateralism, this must be understood in the wider scheme of things and the ongoing technological battle between the USA and China.

By not being a member of UNESCO, the US has found itself increasingly isolated from how an extremely important technology will map out across the globe, namely AI. It has seen how China, its biggest threat, has been exerting its influence on UNESCO being its largest contributor to shape the AI agenda, as the US watched powerlessly from the sidelines.

In March 2023, US Secretary of State, Antony Blinken stated that he believed the US should very much be back in UNESCO because things that happen there matter a great deal.

He mentioned to US Congress that,"They are working on rules, norms and standards for artificial intelligence. We want to be there. China right now is the single largest contributor to UNESCO. That carries a lot of weight. We're not even at the table."

UNESCO is important for setting standards in education, science and technology, which are key areas for the digital age. It is clear the US feels left out and wants to be more active in promoting its vision of freedom and democracy in the world. By being absent from UNESCO its ability to do that will remain restricted and its influence over AI will be very limited.

It is interesting to note that China said it would not oppose the rejoining of the US, saying that it is willing to work with all states, and that UNESCO needs every member state to join hands to fulfil its missions.

This supports my long held view affirming the global importance of AI, being highly influential in world politics, peace and global progression which will shape our common future. The US cannot afford to idly sit by and watch China lead the way in what is probably the most important technology in modern times.

In view of my longstanding relations with UNESCO in my different capacities, I congratulate UNESCO on this occasion.

How to Implement AI Effectively and Responsibly

Being the founder and chairman of the international TAG.Global, I can tell you from experience that implementing technology throughout a business is by no means an easy feat. Since its formation, I was instrumental in implementing technology in every aspect of TAG.Global's business operation, which itself has seen numerous iterations as technology has progressed. This however, was done with a lot of caution, planning and by ensuring I had the best technologists on my team that could make the bridge between business and technology, to ensure the best technology was implemented across this multinational firm.

With evolving interest in AI technology and its potential to transform business, corporate adoption of AI should be approached with caution as there are numerous challenges to ensuring an effective technology implementation is achieved. AI is still very much in its

infancy and its adoption is not a simple or straightforward process, nor should it be seen as a silver bullet that can solve all problems or replace all human activities.

It is clearly a powerful tool that can augment human capabilities and complement human intelligence. If implemented correctly, AI can bring significant value to organizations. Human capital is the most important resource a firm has and must form an integral part of the AI equation, as after all, no matter how smart the technology is, it is still just a business enabler.

As AI is a new specialization, corporations will find that the number of resources that can effectively map business requirements to technical solutions is limited. Having an experienced project manager that understands AI is essential to draw up a thorough roadmap for implementation. This is a critical factor when implementing any solution and holds true for this new generation of AI technology. The cost of implementation is a major consideration as AI minds are being lapped up by technology firms that are paying top dollar for their expertise. Then there is the large, technical footprint of acquiring, running and maintaining an AI, which clearly needs careful consideration.

On an organizational level, it is important for business management and employees to appreciate and value the need for AI systems and not feel threatened by them. To get their buy in is essential to ensure a proper and complete implementation as they must understand the value of this technology and their role within this new ecosystem. Organizational distrust, fear and organizational resistance are technology implementation killers that must be overcome early on. Employee awareness and training in AI is therefore vital, with upskilling and talent retention being key considerations.

Data is the lifeblood of AI systems, and any firm wanting to implement an AI must get its data in order. This includes ensuring data quality, quantity, diversity, and representativeness, as well as addressing data bias and privacy issues. An AI is only as good as the data it is fed, and getting this step right is essential to building a system that delivers. Firms may not have this expertise in house and need to bring in relevant experts to address data concerns.

Developing a culture of innovation and experimentation as well as leveraging existing platforms and frameworks for AI development, as well as collaborating with partners and vendors to access best practices and solutions is important as it may help reduce the implementation timeline.

AI adoption is not a one-time event, but a continuous journey that requires constant learning, adaptation, and improvement. It is also not a uniform phenomenon, but a context-dependent one that varies across different industries and sectors. Therefore, organizations need to adopt a holistic and agile approach to AI adoption that considers their specific needs, challenges, opportunities, and goals.

Considering these challenges, I see that it will take a while for AI to permeate across all industries and organizations, as each one faces unique challenges in implementation. I would emphasize taking the slow and steady approach to any firm wanting to start the AI implementation journey.

Machine Unlearning: A Vital Functionality Needed in AI Systems

Recently, attention has been focused on how to train and run AI systems in a less carbon intensive manner because of the large resource footprint needed to develop, train and run them. Being the Chairman of the Consortium for Sustainable Urbanization (CSU) in New York, this is an important sustainability factor as I believe that all technology should have a low carbon footprint and leave minimal impact on our environment, which is already in a bad state because of over polluting.

A point which hasn't been looked at in any depth though, is the compliance of these systems with important data protecting standards such as GDPR. I see such standards as essential to help develop a healthy framework in which AI can be developed, while

providing protection for users and their data. We must remember that AI systems are highly reliant on data that we as Internet consumers have produced, but this does not mean they should have a free rein on the data.

The rights of consumers should be protected at all times and should be a modern human right. A fundamental right of users under GDPR is the right to be forgotten. This means that AI technology needs to be more transparent and developers need to fully understand how they work to ensure that they can successfully backtrack through an AI's learning model and completely remove all data related to a person should this be requested. Due to the sheer complexity of how these systems learn and operate, it is vital to build them with such factors in mind from the get go.

Machine unlearning is a specialty that deserves a lot more attention and will prove to be fundamental in the adoption and acceptance of AI systems as they become more ubiquitous. I see this as a vital step to help rein in AI systems and provide greater control over what they have access to, which is part of the larger argument to put guardrails in place to better regulate this industry. Machine unlearning is the ability of AI systems to remove sensitive data from their models without affecting their performance. For example, if a user wants to delete their social media account or revoke their consent for an app to use their data, they should be able to request that any AI system that has learned from their data also unlearns it.

As well as providing a useful functionality for Internet consumers, having such functionality will also help remove any copyrighted material from within these systems. It was recently discovered that answers generated by some of these systems could only have been done if they were trained on copyrighted information, which raises a whole other argument about intellectual property protection in the world of AI. This would also help protect users from the dangers of misuse of data by cybercriminals, data poisoning, tricking face recognition, and creating deep fakes. Machine unlearning would help prevent or mitigate these risks by allowing users to withdraw their data from problematic AI systems.

Machine unlearning is a vital feature that AI systems need to have in order to comply with data protection regulation and ensure user trust and safety. It is also a key factor for sustainability and transparency of AI technology. Developers should consider machine unlearning as an integral part of their design process, and users should demand it as their right.

We Can All Profit from AI

Humans have created a vast corpus of data on the Internet through various online activities, writings, photos, videos, and browsing websites, since the establishment of the Internet. This data has snowballed over the years, and is not only a record of our collective history, culture, and knowledge, but also an essential resource for developing and improving AI models. Data is the lifeblood of AI systems.

However, not all data is created equal, and not all data is freely available or accessible. In fact, much of the data that fuels AI is controlled by a few big tech companies that have amassed enormous amounts of data from their users. These companies use this data to train their own AI models and offer them as services to other businesses and governments, reaping huge profits and gaining competitive advantages in the process. But what about the rights and

interests of the data producers, the people whose online activities generated such data in the first place? How can they benefit from the value of their data, or at least have a say in how it is used?

One of the main challenges in this regard is to determine who owns the data and how it can be shared or transferred. Data ownership is not a straightforward concept, as it involves legal, ethical, and technical issues that vary across jurisdictions and contexts. For example, some data may be considered personal or sensitive, such as health records or biometric information, and thus subject to privacy laws and regulations that limit its use and disclosure. Other data may be considered public or non-personal, such as weather data or traffic data, and thus more easily available. Moreover, some data may be protected by intellectual property (IP) rights, such as copyrights or patents, that grant exclusive rights to the creators or inventors of original works or inventions.

One of the areas where IP rights may be highly relevant for AI is in generative models, which are the range of AI systems that have taken the world by storm this year. Systems such as ChatGPT have been trained on massive amounts of data from the Internet, but in ways that provoke questions regarding the data they have access to, as some of the answers given by them could only have been done if they were trained on copyrighted texts. This raises the question of whether these systems infringe on IP rights, or whether they create new works that are eligible for IP protection themselves. Some large technology companies are collecting a lot of data from the Internet without any restrictions or oversight, which may violate the IP rights of the original data creators or owners.

This situation calls for a more balanced and fair approach to data governance and AI development.

One possible solution is to create a system of data rights and responsibilities that would recognize the contributions of data producers and ensure their participation in the value creation process. For example, data producers could be compensated fairly for their data, either directly by the data users or indirectly by a fund that would distribute the revenues from AI services based on generic public data. Alternatively, data producers could be granted more control over their data, such as the ability to opt out of certain uses or to access the benefits of AI applications based on their data.

Another possible solution is to create a system of AI policies and regulations that would promote more transparency and accountability in the AI industry. For example, AI developers could be required to disclose their data sources and methods, as well as the potential impacts and risks of their AI models. They could be required to obtain consent from data producers before using their data for AI purposes. AI regulators could also impose fees or taxes on AI services based on their social and environmental costs and benefits.

These solutions are not meant to strangle the AI industry or stifle innovation. Rather, they are meant to open up more opportunities for data sharing and collaboration where everyone benefits from the value of data and AI.

By creating a more equitable and inclusive system of data governance and AI development, we could give all those that participate online an annual AI dividend for their participation in the online platforms that enable AI to grow and thrive. After all, it's only fair considering that online consumers are helping to build some of the most intelligent systems man has ever developed which will go on to make billions for their corporate owners.

Pioneers of AI Call for its Rapid Regulation

The rapid advancement of AI chatbots which started off with the launch of ChatGPT in November 2022 has been overwhelming. This is an AI technology trained on massive datasets including books, articles and billions of web pages across the Internet with the intention of providing an interactive humanlike system to answer complex questions and complete a wide number of tasks such as writing, coding and generating images.

Developed by OpenAI and backed with an investment from Microsoft reaching $13 billion, including a dedicated cloud infrastructure to train and host the systems that cost hundreds of millions of dollars, it has received a wide variety of mixed reviews. Some see it as the next generation of technology that will assist digital workers

to become more productive, while others seeing it as a potential killer of many jobs. Since the release of ChatGPT, many similar AI systems have since come out, all trying to capitalize on this new sector and gain market share.

The technology is still very much in its infancy, has been shown to make mistakes and is a green field technology that has not really been tested. With the potential for AI to be weaponized and used for nefarious purposes, I have been calling for AI to be regulated, as the consequences of not doing so could be potentially catastrophic.

This is a highly disruptive technology that has the potential to alter the trajectory of human existence. Even before ChatGPT came to town, we saw how AI has developed the ability to produce and propagate fake news, develop deep fake videos, sound clips and images and how it could be abused to further certain agendas.

The advent of publicly available AI systems with their ease of use and powerful frameworks now magnifies these risks to the extent that the founder of OpenAI, Sam Altman, asked the US congress to help push through AI regulation. He said that along with great benefits, it poses serious risks that must be mitigated, saying: “If this technology goes wrong, it can go very wrong, and we want to be vocal about that. We want to work with the government to prevent that from happening, but we try to be very clear eyed about what the down side case is and the work that we have to do to mitigate that.”

Sundar Pichai the CEO of Google admitted that they do not fully understand their own version of ChatGPT and called for greater regulation.

The man dubbed ‘the Godfather of AI’ Dr. Geoffrey Hinton, left his job at Google to speak more freely about his concerns over AI, warning of its dangers and saying that he now regretted his work. In an interview with US television network PBS, he mentioned the risk of AI producing fake news so that you no longer know what is true, putting people out of work and polarizing people even more. He voiced concerns that making things more productive should help everybody, but there is the worry that it might just help the rich. He spoke of the risk of super intelligent AI taking control over people and manipulating them to push certain agendas, but mentioned that AI has a huge number of very good applications and that it would be a big mistake to stop developing it, calling for international collaboration to mitigate existential risks.

The G7 nations’ leaders who met in Hiroshima in May 2023 had AI on their agenda, emphasizing the need for the development and adoption of international technical standards to ensure AI trustworthiness. This is in addition to prominent industry figures and AI experts calling for a six month halt in the development of advanced AI systems, citing potential risks to society.

It is clear that regulation of this industry is vital for it to move forward in a positive direction, and that even pioneers in this field are concerned about the rate at which development is accelerating without regulation. Having been Chair of the Advisory Committee on Internet Governance, United Nations Information and Communication Technologies Task Force, I would call for hiatus in development and encourage all stakeholders to look into adopting and expanding the EU AI Act proposed by European law as a basis to regulate AI systems in order to foster greater AI innovation while protecting the public.

The IP Dilemma in the Age of AI

Generative AI platforms and applications, such as ChatGPT, Midjourney, DALL E2 and others, are becoming more prevalent and powerful in creative industries and society at large. They are becoming more intuitive and more accurate to use and will likely integrate into our everyday lives as time goes on.

However, generative AI also poses many challenges and issues, especially in relation to intellectual property rights, as after all, these systems are being trained on information on the Internet, in books, articles, and from other sources, with little or no oversight.

One of the main concerns about generative AI is how it may infringe or violate existing IP rights of creators and owners of original works that are used as data sources or prompts for generative AI platforms. For example, they may use copyrighted works without license or permission to train their AI models or to generate derivative works that are similar or identical to the original works. This may harm the economic and moral rights of the original creators and owners, as well as the quality and value of their works.

Moreover, generative AI platforms may use trademarked works or names without authorization or proper attribution to generate content that may confuse or mislead consumers or damage the reputation or goodwill of the trademark owners. These scenarios may result in legal disputes or lawsuits involving generative AI and IP infringement. For instance, in a case filed in late 2022, Andersen et al vs. Stability AI et al., three artists formed a class to sue multiple generative AI platforms for using their works without license to train their AI and generate derivative works.

Another concern about generative AI is how to determine who owns and who authors the content generated by generative AI platforms. Unlike traditional works that are created by human authors, generative AI works are created by complex and autonomous systems that may not have human involvement or intervention. This raises questions about the criteria and factors that define ownership and authorship of generative AI works, such as originality, creativity, expression, etc. Different jurisdictions may have different approaches or perspectives on this issue. For example, in the US, human authorship is required for copyright

protection, which means that generative AI works may not be eligible for such protection unless they are sufficiently influenced or supervised by human authors. On the other hand, in the EU, there is a proposal to recognize AI systems as legal persons with certain rights and obligations, which means that generative AI works may be attributed to the AI systems themselves or to their developers or users.

Another concerning issue of generative AI is how to balance innovation and protection of IP rights. On one hand, generative AI can enable new forms of expression and creativity that may enrich culture and society, while on the other hand, generative AI can undermine the value and quality of original works that may discourage or disincentivize creators and owners from investing in their works. Therefore, there is a need to find a trade-off between allowing generative AI to access and use existing works for creating new content, and ensuring that the IP rights of original creators and owners are respected and rewarded. This may require adjusting or adapting existing IP laws to accommodate generative AI, such as creating exceptions, limitations, licenses, fair use, etc.

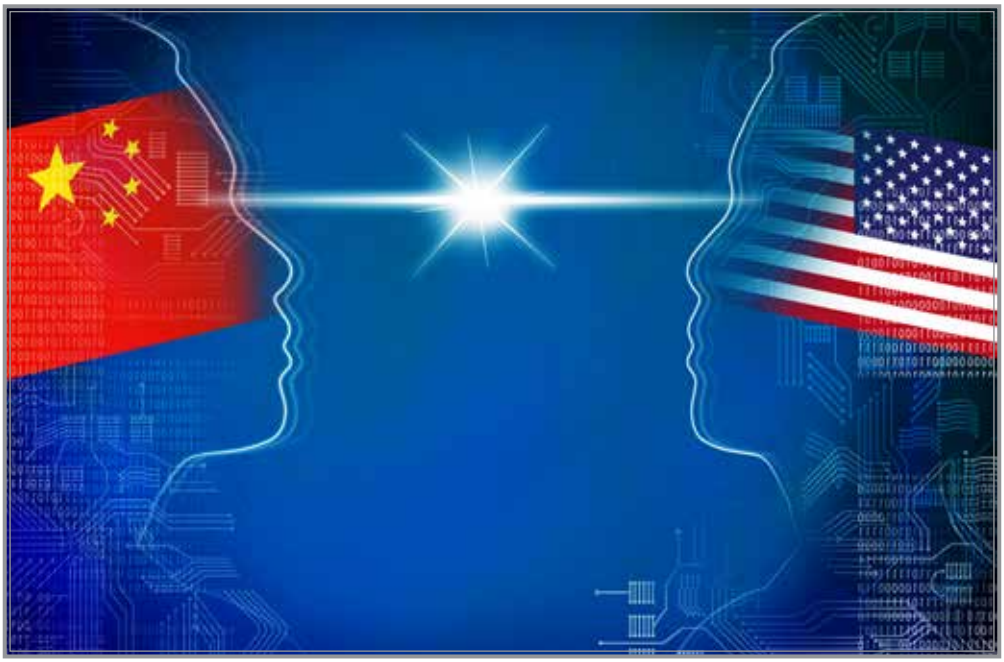
Generative AI also has ethical and social implications beyond IP rights that can affect ethical and social values and norms in various ways. For example, generative AI can generate fake or misleading content that may manipulate or deceive people or influence public opinion or behavior. This may pose risks for democracy, security, privacy, etc. Alternatively, generative AI can promote diversity and inclusion by generating content that reflects different perspectives or experiences or by empowering marginalized

groups or individuals. This may create opportunities for social justice, equality, education, etc.

This is a powerful and promising technology that has the potential of doing great good, but also raises many challenges and issues for intellectual property rights. Having established the one of the largest IP firms the world, Abu-Ghazaleh Intellectual Property (AGIP), I can see that in order to address these challenges and opportunities we will need to develop new legal frameworks and standards for generative AI that consider aspects such as transparency, accountability, fairness, quality, etc.

We also need to adapt existing IP laws and doctrines to accommodate generative AI by making changes or modifications such as exceptions, limitations, licenses, fair use, and promote collaboration and transparency among stakeholders in the generative AI ecosystem, such as developers, users, creators, owners, regulators, etc., to ensure a responsible and sustainable use of this transformational technology.

China's Tech Industry Remains Resilient Despite US Restrictions



The US is waging an unending war against China in a bid to stifle its progress in key technology areas including quantum computing as well as AI development, which the US feels poses a significant risk to its national security and global influence.

NVIDIA, a US chipmaker that dominates the global market for AI chips, has made slower variants of its chips for the Chinese market to comply with US rules, limiting the chip's ability and transfer rates. Despite US export controls on such processors, China's tech industry remains resilient and have not significantly affected China's tech sector. Chinese firms are still able to use the slowed processors

to train their computing models at reasonable rates, with even the slowed chips being faster than the ones China previously had.

Chinese firms are also looking into algorithmic ways to overcome the limitations of the slower chips, such as reducing the size and cost of their AI models as well as improving their efficiency and accuracy, which would make them less dependent on the faster processors that the US restricts. Previously, the industry was thinking that AI models would get bigger and bigger, but now they are looking for ways to make them more compact and efficient. Processor speed is only one factor when it comes to the training of AI systems.

Through its actions, the US hoped to gradually reduce China's capability over time by creating a gap between the two markets that will grow quickly as AI training requirements continue to double every six to twelve months. However, this strategy may backfire as China is determined to achieve technological self-reliance and innovation amid the ongoing tech war with the US, which is changing the world order and creating new challenges and opportunities for both countries as well as their allies.

Research from the Harvard Kennedy School shows how China has made remarkable progress in critical technologies over the past two decades such as AI, 5G, quantum communications, semiconductors and biotechnology. China has emerged as a formidable challenger to the US in these technologies, becoming a full spectrum peer competitor, achieving parity or even superiority in some of them in comparison with the US. China in fact is no longer a lagging competitor and is ambitious to rise to the top, eager to become the global leader and sparing no effort to achieve its goal.

AI Systems: A Double Edged Sword for Climate Change

AI systems are stimulating imaginations across the globe after recently displaying impressive capabilities. I see AI as a business productivity tool, a capability, that will propel the productivity of knowledge workers to new heights as their every task is supplemented by an AI assistant. The introduction of this new technology however, brings with it human and environmental costs that we must consider carefully before we move forward.

Just think of the industrial revolutions of the past that brought greater efficiencies through superior mechanization, digitalization and communication. These came at a significant price, costing huge amounts to initially establish, as well as radically altering the skillset workers needed. As a byproduct, they also introduced new challenges such as the need for better regulation, higher waste production, increased pollution, etc.

I see the current AI revolution following the same path, costing huge sums to initially develop, as well bringing its own set of similar challenges. The intelligence of these systems lies in the way that they have been trained on vast amounts of data to perform their impressive array of feats. A worrying concern here is that they require serious computing power in order to be trained, and moving forward, to process user queries and provide answers in a timely manner.

This has repercussions on server farms, electricity, cooling and the physical space needed for AI systems to perform their work. As the Chairman of the Consortium for Sustainable Urbanization, this is largely concerning as recent online figures show that a system like ChatGPT is costing Microsoft around $700,000 to run daily! This has been trained on 175 billion parameters with the strain on the system showing, with outages and unavailability a regular occurrence.

The next iteration of this system, ChatGPT4, is already out as a paid service, with some online sources reporting that it could have

been trained on an astounding 100 trillion parameters, dwarfing its predecessor many fold! I dread to think what carbon footprint this will have, but clearly something needs to be done as we are only at the infancy of this technology.

ChatGPT is only one brand of AI. There are many others in development that perform an array of different functions which will only increase as time progresses. While we desperately need these AI systems to process big data to help us push the boundaries of science, engineering, combat climate change, improve public health, etc. these systems also come with a high environmental cost.

They require immense amounts of data and energy to run, maintain and keep up to date. As the demand for AI applications grows, so will the impact of AI systems on climate change. Ironically, what we are turning to for solutions to climate change, is set to become a large contributor to it.

To harness the benefits of AI while minimizing its drawbacks, I would suggest several actions are needed from different stakeholders. These include:

- Developing better training techniques and algorithms that require less data and energy. Alternative techniques that are less power hungry should be researched.
- The efficiency and sustainability of data centers should be improved by using renewable energy sources, cooling technologies, or carbon capture methods.

- Ethical and responsible principles and standards for designing and deploying AI systems, such as transparency, fairness, accountability, and human oversight should be adopted.
- Collaboration and innovation among stakeholders from academia, industry, government, and civil society to address the challenges and opportunities of AI for the climate change should be promoted.

AI systems are a double-edged sword for climate change. They can either exacerbate or alleviate the problem, depending on how they are used and managed. Therefore, it is crucial to adopt a holistic and proactive approach to ensure that AI serves as a force for good rather than evil in the fight against global warming.

This is yet another highly important issue that I suggest be discussed as part of the Commission for AI in the Public Interest (CAIPI) which I have called to be established on many occasions, which I will gladly host. This will comprise of experts in various related fields including technology companies and governments, under which all matters related to AI can be discussed openly, in an attempt to develop pragmatic solutions for all challenges this industry faces.

The Environmental Cost of AI's

The question of developing sustainable AI is an important one which is receiving greater attention. The September 2022 report from the International Energy Agency details how data centers have greater emissions than the global airline industry and consume about 1% of the world's electricity. This number is expected to rise as more data is generated and processed, and as more AI systems come online. We must not let this situation exacerbate and must take firm action now. The effects of climate change can already be seen across the world which is set to significantly worsen if we do not bring down our emissions. We simply cannot let another sector damage our climate as it is already in a precarious state.

To further illustrate the enormous cost that AI can incur, ChatGPT costs OpenAI up to $700,000 a day to run due to the massive

amounts of computing power it needs to generate answers to queries. This will inevitably grow as each new iteration of such technology comes out. However, with such a revolutionary technology now in our midst, the question is how can we reduce the environmental impact of AI while still benefiting from it?

Carbon accounting and emission calculators are tools that could be employed to measure the carbon footprint of data and AI projects. These can help identify the sources of emissions, such as hardware, software, cloud services, and data transmission. They can also help compare different options and optimize the design and implementation of data and AI systems.

Sustainability platforms can also be used to monitor and improve the environmental performance of data and AI systems. These platforms can provide insights and recommendations on how to reduce energy consumption, emissions, and waste. They can also help track and report the environmental impact of data and AI projects to stakeholders and regulators. You can only manage what you measure is something I have been calling to for many years, particularly when I was the Chair of the United Nations Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting. By increasing the transparency of the energy and emission of AI models, you encourage researchers and developers to better consider sustainability factors during developmental and operational stages, which can also assist in future capacity planning.

Reducing the carbon footprint of AI systems could also involve relocating machine learning intensive jobs to areas that have more sustainable energy resources in place. Data storage and processing can have different environmental impacts depending on the location, infrastructure, and energy sources. Some regions have

more renewable energy sources than others, which can lower the carbon intensity of AI operations.

More effort should be devoted to developing better AI training techniques and algorithms that require less data and energy. The efficiency and the sustainability of data centers should also be improved by using renewable energy sources. Technology tends to get more efficient as time progresses, as lessons are learned and as new efficiencies and techniques are found, to deliver better performance using less energy and produce less waste.

I believe that once quantum computing comes onboard, it can play an immense role in speeding up data processing and reducing energy consumption, allowing AI's to be trained faster, with more data, in less time, using less energy.

My hope is that by using a mixture of these techniques as well as through improved governance, the AI industry will flourish and allow mankind to achieve heights that we could not have dreamed of, helping to push the boundaries of every science and sector to deliver a better World for us all.

Talent Management Challenges in a Digital World

With technology advancing and globalization changing the business world, companies must find ways to attract, retain, and cultivate top talent to stay competitive. The hunt for skilled workers is especially fierce in fields like software engineering, cyber security, data science, and AI, where demand is far outpacing supply. This battle for talent has far-reaching consequences for business success, innovation, and expansion, and is an important area I have consulted on for many years in an international capacity, particularly when I was a Member of the Advisory Board of INSEAD Global Talent Competitiveness Index.

The battle for talent is constantly evolving and adapting as we progress through the digital age. Three key factors in particular are revolutionizing the way we approach talent management - technology, globalization, and AI. As a result of technology and extenuating circumstances such as the COVID pandemic, we have

seen a shift towards more flexible remote and hybrid work models. This has granted both employees and employers increased freedom and choice in the way they operate.

However, with this newfound freedom also comes an increased need for companies to invest in digital infrastructure, collaboration tools, and cybersecurity to ensure the safety and productivity of their workforce. As we continue to navigate this ever-evolving landscape, it is critical that organizations adapt and stay one step ahead in the quest for quality talent. As companies expand into new markets and tap into diverse pools of talent, they must also be vigilant of emerging competitors and skillfully navigate through an ever-changing technology landscape.

Meanwhile, the advent of artificial intelligence is changing traditional job roles, leaving workers scrambling to keep pace with new skills and knowledge requirements. Savvy companies must recognize AI's potential not just as a task automator, but as a strategic ally to unleash human creativity and drive innovation to new heights.

In today's challenging business climate, companies need to adopt a holistic and an agile approach that covers the entire talent lifecycle, from attraction to retention and development, and should consider broadening their talent tool by tapping into diverse sources of talent, such as women, minorities, veterans, people with disabilities, and others. Employers should be looking to create value propositions that highlight their companys' vision, culture, values, and offer competitive compensation and benefits packages that align with expectations. This should be effectively advertised through online social media channels to build a strong corporate identity and brand to attract and engage with talent.

In order to attract and retain top talent for the future, it is essential that companies provide work arrangements that meet the needs of their workers. However, it is not just about work-life balance - fostering a culture of learning and innovation can also drive loyalty and retention. Any career-minded individual will tell you that a solid career path along with a robust training plan is worth its weight in gold.

To stay current and competitive, it is also important to invest in programs that help workers adapt to changing demands, particularly in regions like the Arab world that face unique human capital challenges. It is vitally important to invest in reskilling and upskilling programs that help current workers acquire new skills and adapt to changing demands to build a workforce that is prepared for any challenge. We must also learn from the best practices of other countries and regions that have successfully addressed their human capital issues in order to develop tailored solutions for our specific needs. We need to be retaining quality talent for the long term.

Our Arab nations must invest more in developing their own talent pool by improving their education systems, fostering a culture of innovation and entrepreneurship, promoting diversity and inclusion, and creating more opportunities for lifelong learning and career development. By doing so, they can leverage their human capital as a strategic asset and a source of competitive advantage.

Technology based solutions to improve productivity should also be considered in more detail, including AI based software that can really help to augment human capability and help to deliver better business results if implemented correctly. This can be seen as a daunting task and I would urge any firm in the process of evaluating such options to enlist the help of my IT consulting division, TAGITI, which has had many years of helping the public and private sectors in their technology choices through a range of business consulting services, acting as an independent, trusted technology advisor.

Evolving AI Regulation

Artificial Intelligence (AI) has moved from being an idea that caused concern in the minds of many of out of control machines, to real world applications that are in our everyday life. I have spoken about how AI is simply an intelligent programing; mathematical algorithms that are trained to analyze data much faster than a human ever could. From applications such as predictive texting that we all have grown accustomed to on our smartphones, to uses in business to help in decision making through the analysis of big data, AI has made its mark on our society and is a useful tool which is here to stay.

The applications of this science are indeed many, which is why regulation is such an important issue. As of 2022, there have been proposals from the EU, China and the Federal Trade Commission

(FTC) in the USA on regulating this technology more carefully as it starts to become more pervasive.

For most, AI is a 'black box' that takes inputs, performs some highly complex operations and comes back with results. A key challenge in imposing regulation is to make this a 'white box' where it is easy for humans to understand what is happening and why the AI made the decision it did. This is critical to improve the level of AI interpretability, assess and mitigate the risks an AI might have and deploy it with trust and confidence. This is particularly important in mission critical operations where it is essential to understand what an AI solution is doing and how it came to the result it did.

You cannot manage what you cannot measure and with AI systems, it is clear the ability to understand how they are working is key to improving them and generating trust in the results they are producing. The math involved in AIs is so complex that most engineers and mathematicians will not be able to explain why an AI has arrived at a certain result. Regulation is vital as it gives back humans control and confidence through a window of understanding, allowing better management, security and optimization of AI systems which in turn promotes transparency and auditability.

Other areas regulators need to be concerned with is the way in which AI systems are trained to build their predictive models. Any AI system needs to be trained on sets of data in order to build correlations, which it then uses to makes predictions about future situations it is presented with. If AI systems are fed with datasets that are biased or contains prejudice, the resulting outcome will be one that reflects the same bias. Regulators need to ensure that checks and balances are in place to ensure that AI applications are trained with audited information.

This is a very real problem as there have been many instances where AI's have come to unfair or biased decisions because of this. An example illustrating the seriousness of this problem was written about in August 2021 by the US FTC Commissioner who said, "Mounting evidence reveals that algorithmic decisions can produce biased, discriminatory, and unfair outcomes in a variety of high-stakes economic spheres including employment, credit, health care, and housing." The FTC has clarified that the use or sale of biased algorithms is a deceptive act which has been banned by them. While this is a welcomed decision, it does not go into the depth required to impose fairness or requiring that companies validate the AI tools they use when developing AI systems; leading to a self-regulatory environment which is highly problematic. Without proper regulation, companies do not feel the need to ensure the data and tools they use are free from bias.

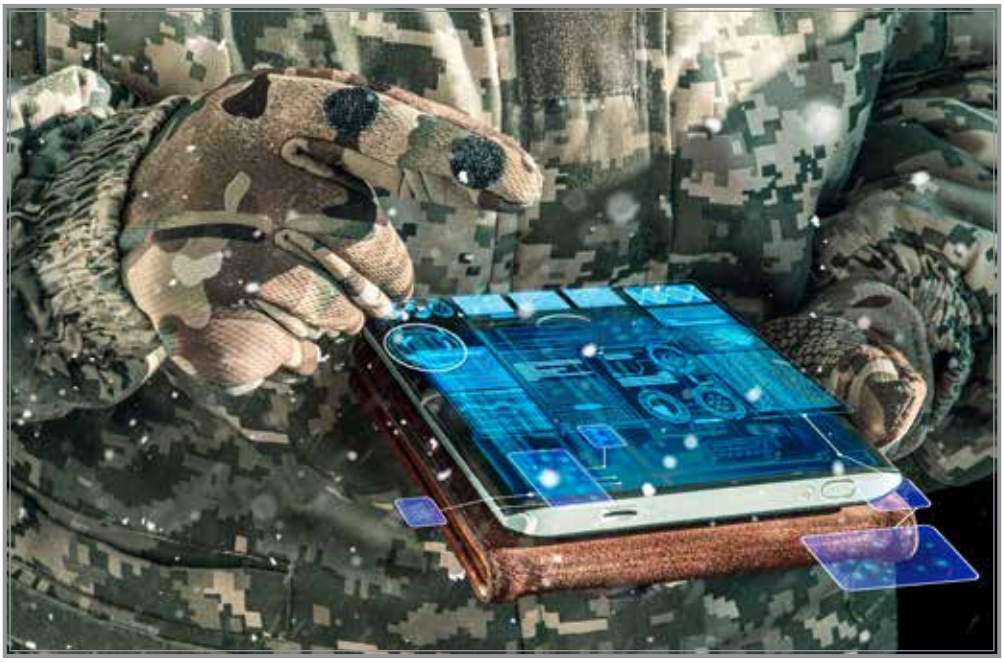
The EU however seems to be doing a better job than the FTC which proposed new rules and actions to develop a trustworthy European AI sector guaranteeing the rights and safety of people and business through the development of ethical AIs, overseen by a specialized European Artificial Intelligence Board under the European Commission. The EU AI Act has divided AI's into minimal, limited, high and unacceptable risk to cater for the range of AI systems available across sectors, while also defining what techniques and approaches are considered AI technology. This provides a foundation for varying degrees of regulation to be imposed on each, which appropriate levels of assessments, audits and certifications commensurate to the risk category they fall in. I see this as a much better approach than what the FTC is doing, as the FTC is not a body specializing in AI. With the level of complexity involved, you need to have an expert body well versed in AI to properly manage

and regulate it as technology companies can easily ‘pull the wool’ over the eyes of AI novices.

China has rolled out AI regulation in March 2022 that requires businesses to provide explainable AI algorithms and be transparent about their purpose. This was developed by the Cyberspace Administration of China (CAC), a powerful regulator in China that initially set out thirty rules for the regulating AI algorithms in many sectors. It has gone onto developing a very ambitious three years road map to govern all Internet algorithms which will require the input from nine national regulators including the Ministry of Industry and Information Technology (MIIT).

It is clear that the fight to dominate AI is really on and I hope that through the efforts of AI regulators around the world, we will come up with an international consortium that leads the conversation about how AI systems should be developed, what tools should be used and how they can become more transparent and auditable. There is a lot of expertise available around the globe that should be brought together for the common good, so that we can develop a holistic framework recognized internationally that allows technology companies to develop AI solutions that take into consideration best practices and which puts the concerns of us as end users first.

How Technology is Transforming the Battlefield



Technology use for military purposes has shaped modern warfare and is one of the primary reasons that the US is the most advanced military force on the planet. Defense technology dominates national budgets with billions being poured into research and development of the latest deterrents. Traditional warfare of the past has been superseded with sophisticated conventional technologies taking over many military tasks such as reconnaissance and intelligence gathering, and increasingly being embedded in military hardware. Technology, as anything else, can be used for good or for bad, for peace or for war, which man will apply as he sees fit.

We can see how technology is changing the battlefield in the Ukraine war. One of the most striking features of this war is that the battlefield is becoming transparent, meaning that sensors and algorithms can detect and target enemies with unprecedented precision and range. This is enabled by advances in AI, big data, satellite imagery, drones, cyberwarfare and electronic warfare. These can provide a huge number of data points at any given time which are analyzed on the fly and fed into military systems in real time so that much more informed decisions can take place. Army generals as well as soldiers are being augmented with technology.

These technologies allow both sides to monitor and strike each other's forces, assets and infrastructure from afar, without risking direct confrontation or escalation. They also create new vulnerabilities and challenges for both sides, as they have to deal with information overload, spoofing, jamming and hacking.

The transparency of the battlefield requires new ways of fighting that rely on mobility, dispersal, concealment and deception. It also means that speed, surprise and initiative are more important than ever. The side that can act faster and smarter than the other will have a decisive advantage.

However, reports from the war in Ukraine show that large numbers of soldiers are still required to undertake military operations along with a large number of munitions and hardware apparatus. Technology may eventually change this through robotics and

automation, but for now, armies need to be prepared for high attrition rates and high resource consumption. War is brutal and expensive as it consumes lives and resources at an alarming rate. It also exposes the limits of technology, as it cannot prevent human error, corruption, incompetence or fatigue.

The boundary of modern war is wide and indistinct, as it is not confined to a specific geographic area or domain. It is multidimensional and spans across land, sea, air, space and cyberspace, and is increasingly becoming a war of hearts and minds, with the media playing a significant role in affecting the psyche of the public. This means it affects civilians who suffer from collateral damage or displacement; allies who provide support or intervention; and other actors who have interests or stakes in the outcome.

Technology is being used in all functions and at all stages in military efforts to gain the upper hand. My hope is that it will be used to address the political, economic, social and humanitarian fallout of war that is all so often overlooked, to bring peace and help rebuild nations.

Intellectual Property and Artificial Intelligence

AI is a technology with widespread applications throughout the economy and society, with recent developments in generative AI technologies making AI accessible to the home user. I have been amazed by the developments in AI over the last few years and the immense potential it has to transform the creation and production of goods and services and the challenges it is posing to existing intellectual property (IP) frameworks.

One of the primary objectives of IP is to provide incentives for innovation and creation by granting exclusive rights to the creators and inventors of valuable works and inventions. These rights enable them to appropriate the returns from their investments, as well as to license, transfer or sell their IP assets to others.

In relation to AI, strong IP rights (IPR) facilitate a climate for investment by providing legal certainty, protection and reward for the developers and users of AI technologies. Patents can protect novel and non-obvious inventions that involve AI, such as algorithms, methods, systems or devices. Trademarks can protect distinctive signs that identify the source or quality of AI products or services. Trade secrets can protect confidential information that gives a competitive advantage to an AI business, such as data, code or know-how. As an example, the legal contract of the publically available ChatGPT system, assigns those that use it with all rights to any resulting output.

Being the global leader in IP with over 100 offices globally, the experience of Abu-Ghazaleh Intellectual Property (AGIP) over five decades - and being the largest IP Firm in the world - demonstrates that you need to balance proper protection through a robust IPR framework with one that does not stifle development, which is a key issue for IP policy makers.

The World Intellectual Property Organization (WIPO) has been leading this through the first 'Conversation in IP an AI' session held in 2019, which was a multi-stakeholder forum to advance the understanding of the IP issues involved in the development of AI applications throughout the economy and society. This culminated in the WIPO 'Paper on IP Policy and AI' that aimed to inform and stimulate the discussion and debate on AI and IP policy among the WIPO Member States and other interested parties. Having been a Member of the Advisory Board for WIPO, I very much look forward to its next session on this matter which is to be held in September 2023. This is very timely, as this year has seen generative AI technologies flooding the market, raising very poignant questions related to the IP protection of goods and services rendered through generative AI.

It is promising to see the trademark and patents offices across the world such as the United States Patent and Trademark Office (USPTO) and the European Patent Office (EPO) have been working hard to move the IP in AI discussion forward in their respective jurisdictions, as well as build and integrate AI systems into their processes, particularly in the fields of patent and trademark examination, management and enforcement. Trademark and patent offices need to keep up with developments in AI as it bring a new sets of concerns, challenges and opportunities with it, as we move to a world where the production of content can be done at the click of a button, through systems that are trained using billions of parameters.

There is no possible way traditional methods will stand up to dealing with IP matters where AI is involved. We must re-train our IP professionals and make them AI knowledge workers who understand the detail of AI. We must empower them with the tools and know-how to successfully navigate this labyrinth, which will only get more complicated as time progresses.

Implications and Challenges of Pro-Active Programing

The world is witnessing rapid technological development and steady growth in the capabilities of pro-active programing (PROPRO), presently AI, proving that the future of humanity will be different from the world we live in today and that our children's lives will not resemble ours. It appears that we will be facing challenges of a different kind, requiring us to take serious steps to keep pace with these developments and avoid as many of their risks as possible.

Several facts must be reviewed to fully grasp the enormity of what we are about to witness in the coming years. For example, we now have ChatGPT, a technology that will become smarter than most

people on earth, with an IQ that can reach (1500-1700) times more that of human intelligence. Some experts have delved even deeper into their explanations of its capabilities, saying that it can create parallel and alternative personifications of any human being. It has become easy to use these systems to produce an authentic-looking video of any person, so much so that it would be difficult for others to detect that it's fake!

I believe that everything the human mind can imagine is a reality waiting to happen and that life will continue to change until this technology becomes dominant over humanity. The way we perceive our mental abilities, memory, health, and ages will change. It is also certain that the balance of power between countries will differ, which explains why the US President commissioned the three largest technology companies to submit proposals for the governance of artificial intelligence to the US Congress.

The United States is considered the leading country in manufacturing and developing artificial intelligence, aiming to build weapons using it to maintain its hegemony over the world. It knows that competition in this field is intense and that if it enables China to precede it in developing its weapons, this will mark the end for America. Therefore, the US and other major countries are working diligently to utilize it for national security purposes, investing heavily in building weapons using technology and artificial intelligence.

What we see today in terms of acceleration in technological development opens countless doors to applications in various fields. The development process of pro-active programing is

similar to the process of growing up, where a child gradually learns and gains beliefs, convictions and ideas. At some point, it may stray but will eventually return to the right path, reach maturity and avoid repeating common human mistakes. In the future, I believe that the decision to wage wars will not remain exclusively in the hands of humans and generals. Instead, it will become dependent on the approval of intelligent machines that may help in the decision to halt any war based on the information they receive from other machines.

The truth is that over the next ten years, we will face challenges of a different kind; scientific, social and ethical, but we must start working now to improve ourselves and our societies to keep pace with what is to come.

In this context, I propose the formation of a local working group to discuss the challenges that this revolution will produce before implementing my previous proposal to create a multilateral working group to address these challenges globally. I propose to rename AI to Pro-Active Programing (PROPRO) to reflect the essence of this technology and promote awareness of its associated challenges and risks.

ILO - Generative AI is Likely to Complement Jobs, Not Replace Them

There has been a lot of concern that Pro-Active Programing, currently known as AI, will make humans redundant in by taking their jobs. This technology as it stands today it is a useful tool for number crunching, analysis, automation of repetitive tasks and generating human works content. This is an augmentation of human capability and far from being anything that will totally replace humans. Sure, there are some environments such as car production and electronic assembly that have become a largely robotic affair, but even then, humans are needed to oversee and monitor the work being done, often working hand in hand with this technology.

As it stands now, this technology will augment workers allowing them to become more productive and efficient, rather than replacing

them. This is what happened when basic mechanization was introduced into society, leading to the rise of machines that led to great efficiencies and improved productivity.

Recently, a working paper called 'Generative AI and Jobs' published on 21 August 2023 by the United Nations International Labor Organization (ILO), assesses the effect it will have on occupations and supports the conclusion that it will complement and enhance most jobs rather than replace humans. This backs what I have been saying for years, as the report says:

"As a result, the most important impact of the technology is likely to be of augmenting work – automating some tasks within an occupation while leaving time for other duties – as opposed to fully automating occupations."

The ILO paper also supports that some occupations will need to change as it becomes more prevalent, particularly clerical jobs which are highly exposed to this technology, with other occupations having a low exposure to it. It mentions that women will be most affected due to their over representation in clerical work in high and middle income countries, and that the potential for augmentation is nearly equal across countries, suggesting that with the right policies, generative AI could offer important benefits for developing nations.

We must make sure that all countries are empowered to use and adopt this technology so that we do not create another digital divide. I call for proactive policies and support to aid consultative transitions, as well as social dialogue and regulation to ensure quality employment, reskilling and upskilling for all, and to aid a smooth management of the resulting technological change that this innovation is bringing with it to all sectors of society.

The Future of Artificial Intelligence

Science fiction has long been focused on the theme of having machines with artificial intelligence (AI), capable of creating, thinking and producing the same way human beings are intrinsically able to. While the extent to which AI can achieve real consciousness is not the subject of discussion here, AI technology as a means to achieve improved productivity and progression within all spheres of life is already underway.

AI is one of the major underpinnings of future technology applications finding its way into a multitude of areas which will usher in great advancements as a result. All smart innovations, the IoT, nanotechnology, autonomous vehicles and others, owe their present and future to the artificial intelligence powering them.

What makes AI systems so commanding is their ability to analyze and cross reference vast amounts of information instantly, using this information to make decisions and above all to learn. This learning aspect makes AI systems very powerful as they are no longer dependent on statically fed information; they start to resemble organic minds that can think within the programmatic boundaries set within their computer code.

This allows them to build information relationships and cross correlate massive datasets together at breakneck speed which in turn greatly benefits the human beneficiary with insights, reasoning, simulations and ideas from their learning that would otherwise be very difficult for humans to deduce.

The field of modern AI can be traced back to 1956 at Dartmouth College, New Hampshire where the term artificial intelligence came about. Since then, work in the field of neural networks and machine learning have fueled AI progression leading to billions of dollars being pumped into research and development. This has become the new space race with companies and nation states now fiercely competing to bring about bigger and better AI systems for a range of different applications.

Such technology will allow us to address the healthcare challenges here-to-fore impossible to address, such as those suffering from spinal cord issues that may end up causing paralysis as a result. Artificial implants with built-in AI technology will allow movement to be restored, empowering severed parts of the spinal cord to communicate once more and even improve with AI controlled bionic limbs. AI implants could take over sections of the brain within patients who have suffered brain trauma and quite literally make them human again. AI-enabled exoskeletons will be life-changing for the elderly and sick, giving them free movement once again.

The boundary between human and computer will blur as they become progressively intertwined. AI will not exist as a paradigm on its own but will in fact change to become IA, an Intelligent Augmentation of human with AI, magnifying human intelligence to unprecedented levels and powering the Singularity.

Hypotheses and conceptions formed by the human mind will be aided by AI to cross reference billions of cumulative global datasets to allow humans to attain much more precise and informed conclusions. The AI intellect will surpass our current human brains, being able to digest and synthesize millions of books on a particular subject in seconds and having all data thereof available as though we always knew it.

AI will revolutionize the way in which national crises are tackled, autonomously dealing with critical situations such as search and rescue after an earthquake or clean-up operations in situations toxic to humans. Current civil defense setups will comprise of AI-controlled vehicles and robots as a front defense line against hazards, with their work being overseen and managed by human counterparts.

AI robots will be able to zoom out to the scene of accidents, lift vehicles with ease, cut through car chassis with safety, scan passengers for injuries on the fly, pull out victims, disable fires and other hazards and even administer first aid. Work has begun on all these applications and it is no exaggeration to say that such technology will be in our cities in the near future.

The same type of robotic AI machines will be used in sectors which are perilous to humans such as mining, deep sea occupations, nuclear facility operation and maintenance, and in many other hazardous activities, providing a level of safety and accuracy never previously seen.

Factories and manufacturing plants will be complete black box environments, totally robotized and controlled by AI from start to end. This will almost abolish any human intervention in factories prone to huge consequences on the skills required by the workforce of the future, which will be led by knowledge workers. Lifelong learning will be the key skill the future workforce will need to ensure they remain employable, focusing on creativity, ingenuity and out of- the-box thinking.

This matter has become such a concern to many to the point that some have suggested a type of Universal Basic Income (UBI) be provided to compensate for the lost human jobs taken over by AI. It would be funded out of additional taxes that AI-enabled factories would have to pay and compensate human workers. This could certainly be possible as the economies of scale that AI will provide will allow companies to massively increase their volume and output quality thus generating greater revenues.

The implementation of UBI remains to be seen and will certainly be an interesting concept to follow while moving forward, but I strongly believe in empowering workers with knowledge in order to increase the value they provide to their employers and society at large.

Space travel will become a largely robotic affair with AI-controlled robots furthering our knowledge of space in a way humans would never be able to. Such machines would be able to go to the most inhospitable locations in our universe and be able to perform many years of research and space exploration without having to put human lives at risk, all the while reporting their feats to their earthly masters. Deep sea exploration, mining and underground exploration will also be transformed in a similar manner.

The financial establishment worldwide will be controlled primarily by AI algorithms, improving transparency and eliminating fraud as a result. The next generation of traders will be AI machines which will compete to predict trends within markets and identify profitable investments. No doubt competition between investment houses will rise to develop the latest and most sophisticated AI machines, enabling them to widen investing choices by processing massive sets of variables and selections. Human trading floors will end up becoming a thing of the past.

The intelligence within AI systems will develop and be able to respond as humans do to any conversation, throwing in all the semantic and syntactic morphologies which go into everyday conversation making, such as banter, small talk, emotion, proper contextual comments, objective facts, subjective ideas and all the other associated day to day idioms and expressions. Systems such as ChatGPT are already able to do this quite well and will continue to improve.

Google's AI has passed the Turing test; a challenge developed by Alan Turing in 1950 to test a machine's ability to exhibit intelligent behavior equivalent to, or indistinguishable from that of a human. With the advancing abilities of AI, we need to be developing more sophisticated tests to push the boundaries of human ingenuity and these machines.

The future of AI is indeed exciting as it is set to impact many aspects of our lives. My hope is that this technology is used to launch mankind into a new model of existence where humanity is better shared between fellow human beings and where disparity between societies is reduced.

Humans and Robots: Coexistence or Competition?!

- So far, mankind has existed in the world of nature – of living creatures.
- The IT revolution has created a new world called the virtual world. Since 2001, I have been involved in formulating its policy as co-chair of the United Nations Information and Communication Technologies Task Force (UN-ICT-TF). My first involvement in the technological world was in 1965.
- The knowledge industry (ICT) has produced knowledge products (digital tools) and knowledge software (digital programing) – Knowledge World.

- Digital programing has produced smart devices, which led to a new revolution; Artificial Intelligence (AI) – the world of artificial intelligence.
- Simply put, AI is programing things in such a way that they act on their own based on the software we install into them.
- Technology can only move forward. Therefore, each invention results in several other inventions.
- God created us to be creative.
- The development of robotics programing has brought us to the development of artificial beings that resemble us – the world of robots.
- As we develop AI intelligence, we have to expect it to:
  - » Firstly: Rely on its intelligence in decision-making rather than its programed goals.
  - » Secondly: Develop its own intelligence, so much so that it can challenge our intelligence and the intelligence we have programed into it.
- One product of artificial intelligence is the transformative ChatGPT which may replace human workers.
- So we've assembled a team from top universities to study how humans can prevent intelligent robots from outperforming and even controlling humans.
- I'm not worried. Each technology has its advantages and disadvantages, so we have to develop useful applications and control the drawbacks.
- AI technologies have countless and unpredictable benefits in the future for nature, agriculture, animals, humans and more.

- Artificial intelligence produces useful technologies, including speed, accuracy, analysis of large amounts of data, content production and manufacturing mechanisms.
- However, this does not preclude the need for the human capacity for moral choices and the ability to discern, interpret and have accountability.
- It is true that tools like ChatGPT may produce linguistically inaccurate, logically conflicting text and false or illogical information. Therefore, we need human review and intervention to ensure the integrity and ethics of the texts, and we must be careful while using them.
- Humans have abilities that artificial intelligence cannot replace, including analytical thought, emotional intelligence, time management, initiative, creativity, intuitiveness, culture and conversational abilities.
- And remember that it is these abilities that set us apart from animals.
- Therefore, we should not leave the future of artificial intelligence in the hands of three major technology companies, as the United States administration has chosen to do.
- Independent experts, sociologists, human rights representatives and the international community must participate in shaping the future of this technology.

* * *

Appendices

Appendices

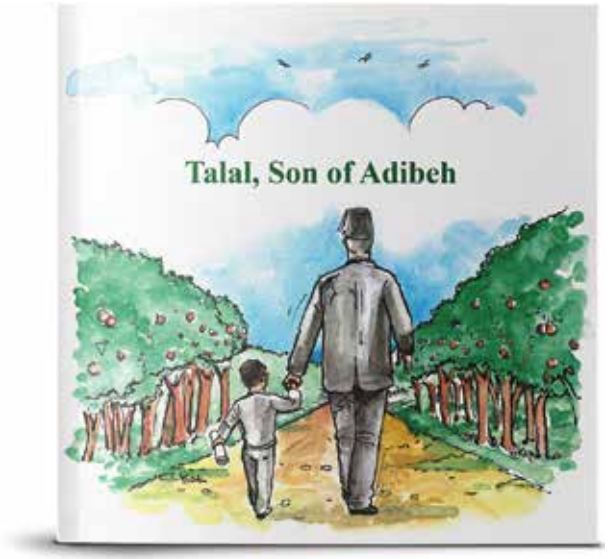
Publications about Talal Abu-Ghazaleh

Talal, Son of Adibeh

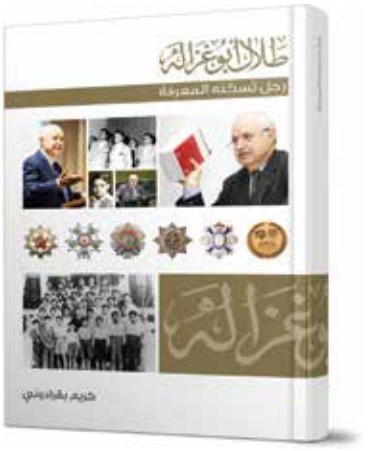
A biography directed to children, abounding with the values, principles and the ideal behavior that we seek to instill in our children. Between pain and hope, the writer has come to us with many stories and details that made us feel proud of this self-made Palestinian man, who has proved an icon of endeavor, dynamism and intelligence and defended the principles he believes in. He has also proved able to achieve his dream with his strong will, perseverance, sweat and hard work.

The story has been published in the following languages: Arabic, English, Russian, Turkish, Chinese, Spanish, French, Persian, Montenegrin, and Kurdish.

Author: Areej Younis



Talal-Abu-Ghazaleh… A Man of Knowledge



The writer sheds light on Dr. Talal Abu-Ghazaleh›s career and stages of his life. The 234-page book addresses «the harsh beginnings» of forced dislodgment from Jaffa and asylum in Lebanon, then excellence during study in Lebanon, before moving to the times of his rise, chronologically covering the stages of accounting and auditing, computer, knowledge revolution, and intellectual property.

Author: Karim Pakradouni

Talal-Abu-Ghazaleh… A Man from the Future

The book applies an analytical scientific approach, based on many books in the fields of business administration, creativity, economics, psychology, sociology, and history to answer a number of important questions, namely: Where does creativity originate?

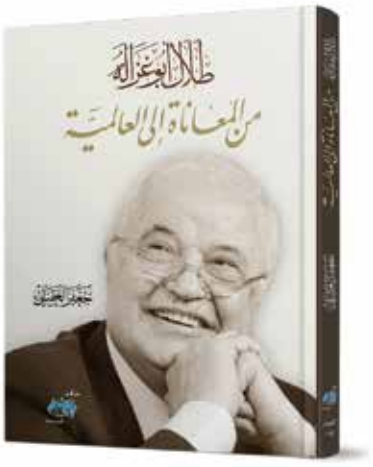
Author: Jawad Al-Anani

Did life passes you by?

The book talks about 10 Arab, Islamic and international figures. At the beginning, a full and expanded chapter is dedicated to the story of the suffering and success of His Excellency Dr. Talal Abu-Ghazaleh, how this refugee child transformed the challenges of exodus, exile and poverty into triumph and success and how his suffering turned into a blessing, thanks to his pursuit of knowledge and his patience and determination. The author summarizes the story in one sentence: "It is a story of a displaced child who has achieved what most men have not achieved, and how his plight made him the man he is now ... the Talal Abu-Ghazaleh we know.

Author: Manaf Baaj

From Suffering to Universalism



The book highlights the milestones and aspects of the life story of a personality active in the local community, as well as introducing the reader to many local, regional and international issues His Excellency has been involved in.
Issued by Al-Rai Center for Studies

Author: Jaafar aloqaily

Talal Abu-Ghazaleh… Secret of Glory-Man from My Country

A book that deals with the story of struggle and continuous and successful work of a genius businessman who founded Talal Abu Ghazaleh Global Group. It tells the story of a Palestinian refugee who was rooted out from a life of luxury at the hands of the oppressive Zionist occupation.

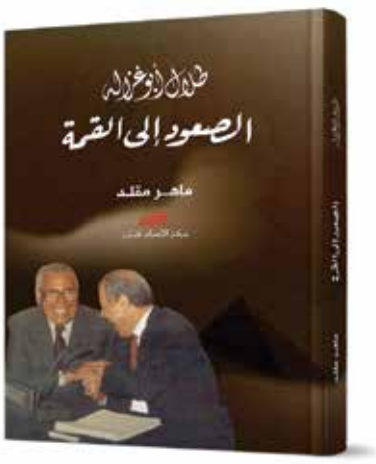
Author: Laila Alrefai

Talal-Abu-Ghazaleh… Rising to the top

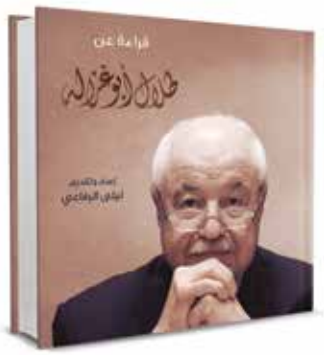
The story of the life of Dr. Talal Abu-Ghazaleh is a story of a Palestinian who chose a different path to resist the Israeli occupier, armed with knowledge, which he saw as the best way to fight back.

Maklad describes Abu-Ghazaleh as “a role model” in the various stages of his life, where he focused on his true belonging and loyalty to the family and

Author: Maher Maklad



A Reading of Talal Abu-Ghazaleh

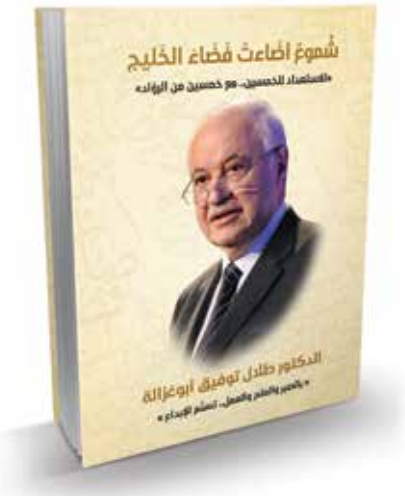


A softly-worded book that relies on selected literature to shed light on the aspect of the life of "Talal Abu-Ghazaleh as a Role Model", the Palestinian refugee who was born in Jaffa in 1938 and was displaced during the exodus of 1948.

Added to that are 10 recipes for success and four other tips that provide us with shortcuts to success and make us better persons living a life worthy of living on this globe, including: Be loving; decide to live happy; work hard as comfort is harmful to health; and to succeed, identify your message in life.

Author: Laila Alrefai

Shining Lights from the Gulf



Men who emerged from the turmoil of pain and suffering, and the cruelty of life, armed with determination, patience, faith, and spirit, eager to achieve success and become leaders in their fields of work.

We cannot mention these figures without referring to a man who, in times of hardship, persevered, mastered his craft, and rose to the top of the business with sheer will, patience, steadfastness and faith, assuming a position at the helm; he is the great businessman Dr. Talal Abu-Ghazaleh.

Author: Dr. Ali Mohammed Al Naboodah, and Nahid Bint Anwar Al-Tadfi

The Global Knowledge Worker

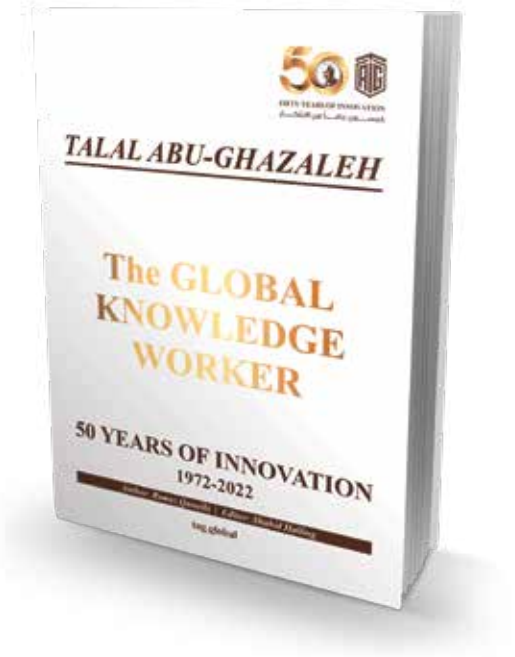
"The Global Knowledge Worker" is a humble attempt by close colleagues of Dr. Talal Abu-Ghazaleh to capture this man's outstanding achievements over half a century of being an innovator, a businessman, a leader and a mentor to thousands globally.

His journey is one of hard work, determination and excellence, growing from a small office in Kuwait in 1972, to establishing Talal Abu-Ghazaleh Global (TAG.Global) as one of the largest professional services firms in the world with more than 100 offices across the globe.

This book is a small tribute to his myriad achievements, awards and distinctions that continue to grow, inspiring all those who know him.

The book has been published in Arabic and English.

Authored by: Ramez Quneibi, Revised by Shahid Halling

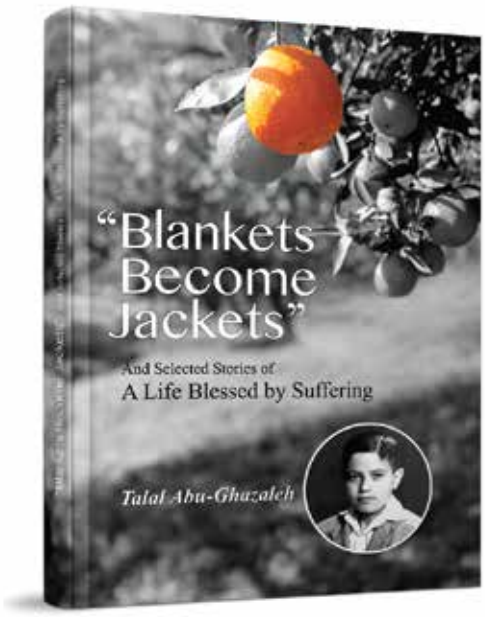


Talal Abu-Ghazaleh's Publications

Blankets Become Jackets

"Blankets Become Jackets and selected stories of a life blessed by suffering" tells the story of Talal Abu-Ghazaleh; the godfather of accounting, who was a refugee then became one of the world business leaders. His fear on the Palestinian people who are under the Zionists occupation, has led him to build has a felicitous business empire around the world. The boy, who wore a jacket sewed by his mother from a blanket given to refugees, made it impossible for a global stature, harnessing all his abilities to serve the world around him, despite all the challenges.

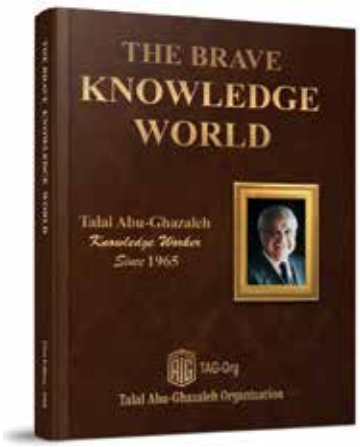
The book has been published in the following languages: English, Arabic, Russian, Turkish, Chinese, Montenegrin, and French.



The Brave Knowledge World

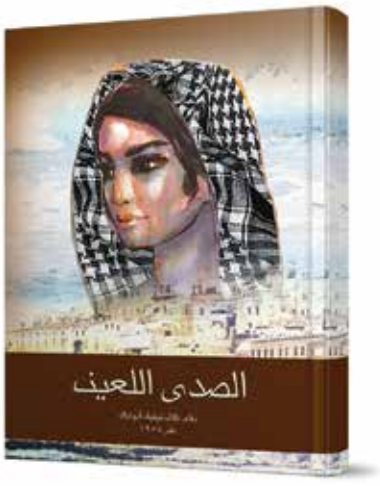
The book presents a realistic journey for the future, showing how technology will change the human history in the Fourth Industrial Revolution, which will obscure and blur the line between humans and technology.

The book has been published in the following languages: English, Arabic, and French.



The Dreaded Echo

Dr. Talal Abu-Ghazaleh wrote this story in 1958 in a competition between university students, which he won. The award was announced by (Supreme Council of the Arts, Literature and Social Sciences in the United Arab Republic, "Egypt", at the time), and the story won a prize of 500 Egyptian pounds, which was a lot of money for a refugee in the fifties.



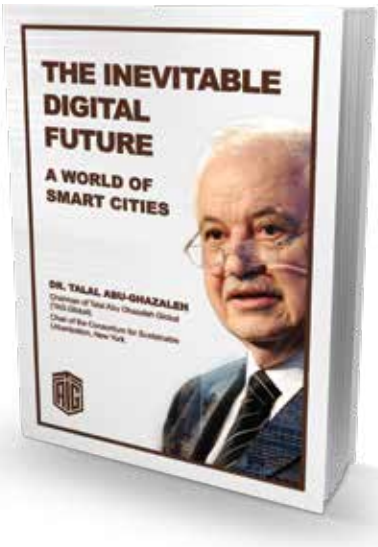
The story depicted the tents of misery in which "we lived", as the writer says, without "a glimmer of hope, no matter how small, in the restoration of Palestine". So, "I wrote of the reality of the situation in which I and the people of Palestine lived", he said.

Talal Abu-Ghazaleh – The Right to Return

The booklet presents a brief introduction to the Abu-Ghazaleh family, its origins that go back to the Palestinian city of Jaffa, and the story of the family's displacement, leaving behind their property, the most important of which was the family's house and the hotel they owned, as they were seized by the occupation authorities during the Nakba...in addition to land that had been inherited by Talal from his father, Hajj Tawfiq…

The booklet refers to the "Right of Return and Compensation" document as stipulated by international law, which contains no statute of limitations on human rights.

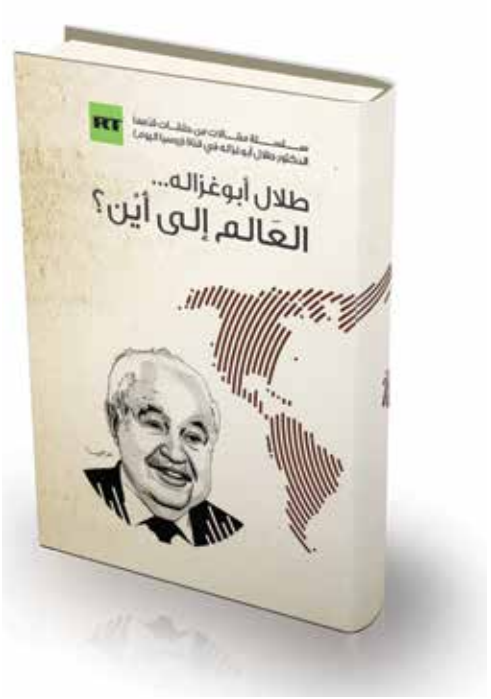
The Inevitable Digital World … A World of Smart Cities



HE Dr. Talal Abu-Ghazaleh discusses in the book the technologies he considers essential for the emergence of true Smart Cities; and he refers to the lessons that can be learnt from previous failed smart city initiatives. The book provides a blueprint that can be used to develop holistic smart cities of the future. In addition, it discusses a range of supportive elements from governance to citizens' awareness that are essential in developing successful smart city implementations.

The book has been published in English and Arabic.

Where is the world heading



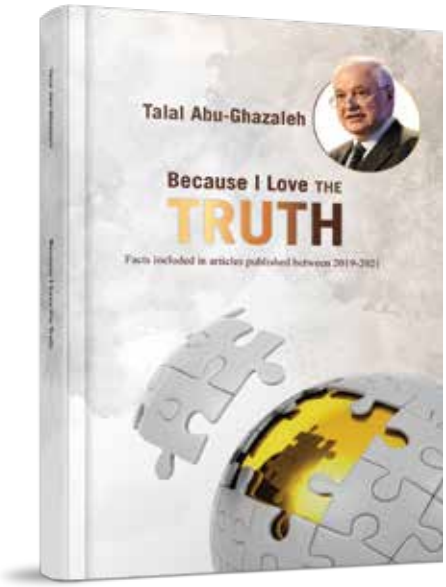
Where is the world heading? is a series of articles compiled in one book, based originally on a TV show hosted by HE Dr. Talal Abu Ghazaleh, a knowledge leader, a change maker and a man "whose words are the closest to people's hearts". A seasoned expert and a man of wisdom, Dr. Abu Ghazaleh hosted the show with the same name on RT Arabic, broadcast during 2020, a crisis year.

The articles varied, touching on an array of present-day "social issues," adopting a "realistic approach," through which Dr. Abu Ghazaleh was keen on presenting the remedy along with the diagnosis.

These included "ways to address crises and turn them into opportunities"; "The need to attach more attention to digital learning, IT and AI"; and "Behind the scenes of international trade and the oil market". He also tackled issues like "Pros and cons of the Lebanese crisis"; a detailed presentation looking into the root causes of "the different aspects of the conflict between the US and Chinese giants"; and "International Monetary Fund: Why it was established and who benefits from it" and other related issues where policies, interests and opinions overlap.

All these topics were compiled in Where is the world heading? to draw up a "roadmap" for the world, with all its states, peoples and sub-worlds. The book is aimed to stimulate readers to think and take action, and start with a plan.

Because I Love the Truth and Love You



An assortment of op-eds by Dr. Talal Abu-Ghazaleh published in various media publications, then collected in a book…

He comments on what has happened, what is happening and what would happen in the future…

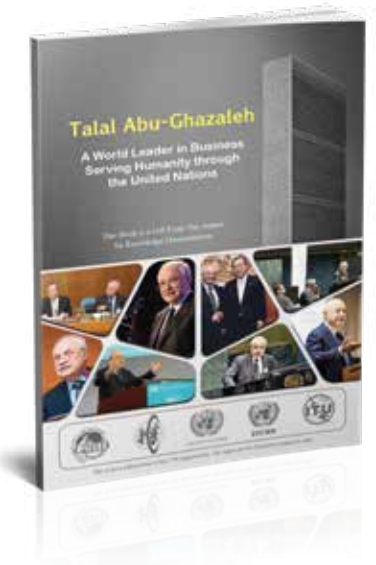
In his articles, Dr. Talal presents the Truth, speaking confidently with the tone of a wise man who loves people and knows how to get his messages through to them. The collection is characterized with diversity, with topics ranging from autobiographic, economic, patriotic, digital, technological, geopolitical, social issues and others. All express inner reflections, whose authenticity is verified with a tide of successes recorded by that helpless Palestinian boy who rose with "knowledge" to the peak of the world, high above those who deprived him of his beingness on his native land. He has become a role model for children, more so than an example to follow by youth or adults. It behooves a man of these qualities to write and it behooves us to read the words he inscribes.

It is the Truth that cannot be concealed; regardless of any attempts to block it, it will come to light.

The book has been published in Arabic and English.

Talal Abu- Ghazaleh

A World Leader in Business Serving Humanity through the United Nations



The book, written by Sarbuland Khan, a former senior official of the United Nations, is a paean to Dr. Talal Abu-Ghazaleh and to his passionate love for and lifetime service to humanity.

It gives an overview of Dr. Abu-Ghazaleh's contributions. working with the United Nations over the decades in leadership roles, to foster development and improve the lives of people around the world. It covers multi-stakeholder partnerships launched under UN auspices and led by Dr. Abu Ghazaleh in several strategic areas including information and communication technologies for developments, environmental accounting, quality education, climate change, sustainable urbanization, sustainable tourism and poverty eradication.

The book demonstrates Dr. Abu-Ghazaleh's unique ability to not only articulate a vision and talk about challenges and opportunities but to make things happen and produce results.

One of the most consequential of Dr. Abu-Ghazaleh's lifetime achievements recounted in the book is his leadership of the United Nations ICT Task Force, the UN Global Alliance for ICT and Development and the UN Global Compact which helped transform the development landscape of developing countries by bringing the benefits of the information revolution to the underprivileged people of the developing world.

In illuminating his remarkable achievements, his passionate love of humanity and his vision, the book demonstrates that Dr. Abu Ghazaleh is a world business leader like no other.

This publication should serve as excellent study material for students around the world.

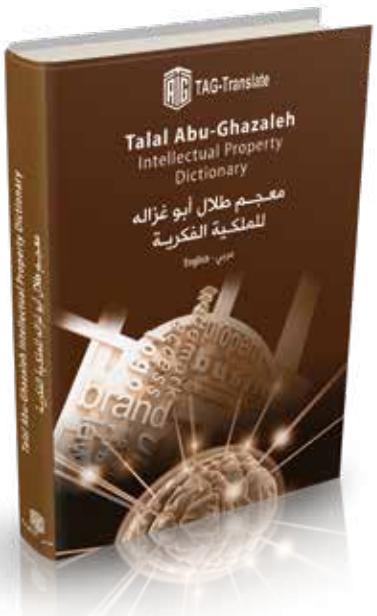
Dictionaries

The Talal Abu-Ghazaleh Intellectual Property Dictionary

The Talal Abu-Ghazaleh Intellectual Property Dictionary contains the terms and main axes of the intellectual property components, which are estimated to be about 10,000 words and terms.

The dictionary fulfills the needs of businessmen, innovators, inventors, jurists, those who are interested in intellectual property, professors, and university students. It is an indispensable reference for those wishing to obtain a certificate as an intellectual property expert. The dictionary is an incentive for all those who are interested in the field to author, write and create content in the related field in order to introduce Arab societies to a field of which they are in bad need to gain a deeper knowledge.

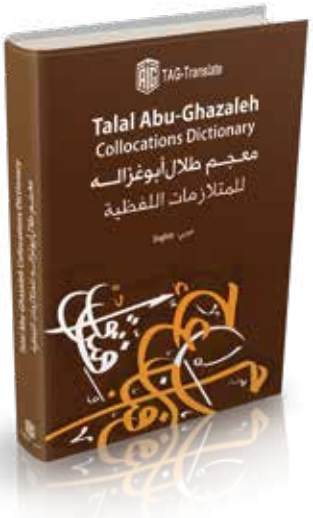
Intellectual Property laws have therefore become an important element in determining the rules of commercial transactions, the rights of inventors, and all other forms of intellectual creativity. This dictionary succeeded in filling a part of the wider gap which the Arab world suffers from concerning the references, researches and dictionaries specialized in intellectual property rights.



Consulting Management Book

The Consulting Management book consists of thirty-eight chapters distributed on five parts and seven appendices. These chapters and appendices are considered fundamental and integrated reference for each consultant, and an educational book for teaching Consulting Management. The book is an introduction to professional consultancy, as well as the nature, methods and principles of the institution, rules of conduct, training and application development. It also proposes guidelines and determinants for consultants to work in various areas of management.

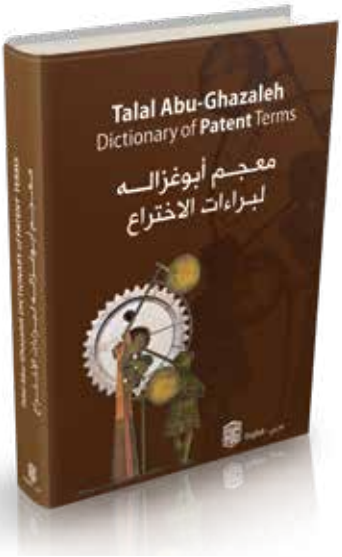
Talal Abu-Ghazaleh Collocations Dictionary



The collocations are a combination of words that together give out a very neat and accurate meaning. The Talal Abu-Ghazaleh Collocation Dictionary contributes to revealing genuine authenticity, beauty and accuracy of the Arabic language, refurbishing Arabic speakers' expressive abilities as well as strengthening their relationship with the Arabic language.

Therefore, learning the collocations is part of what can be called "linguistic competence" because it is considered to be an acquisition of an important type of linguistic stock that includes words, meanings of words and synonyms that one can employ to dive into the sea of eloquence, master the poetry and paraphrase, and promote their sense of expressionism.

Talal Abu-Ghazaleh Dictionary of Patents



The Talal Abu-Ghazaleh Patents Dictionary contains the basic terms and axes of the intellectual property domain. These terms are estimated at about 20,000 words and terminologies. These axes include the ongoing debate about the idea of patentability, its legitimacy and application, and other axes on green patents, intellectual property, patent governance and patent portfolio management, as well as a core axis that include patent crimes, litigation and arbitration on patents' disputes.

It meets the needs of businessmen, innovators, inventors, lawyers, and those who are interested in intellectual property, university professors and students.

Talal Abu-Ghazaleh Dictionary of Legal Terms

Talal Abu-Ghazaleh Legal Dictionary with its rich input is a legal tool for jurists, which enables them to master legal language that has entered a new stage as the world enters a new era.

This dictionary contains a selection of legal terms that meet the needs of judges, lawyers, university professors and law school students, as well as the needs of businessmen, companies and employees working in other sectors of the economy.

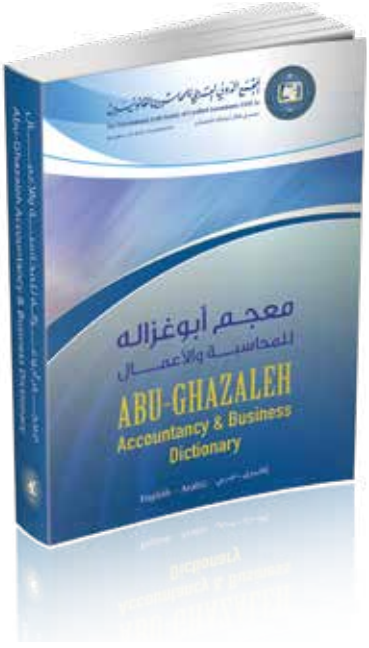
The Licensing Executives Society International (LESI)

The Licensing Executives Society International (LESI) Guide to Licensing Best Practices was designed to update licensing professionals with the current changes and future opportunities in this dynamic field. The Guide is a collection of articles covering licensing issues, procedures and regulations in Europe, the Middle East, Australia, Asia and USA, the do's and don'ts of licensing agreements, patent procedures and licensing issues on the Internet.

TAG ICT Dictionary (English/Arabic)

The Talal Abu-Ghazaleh Information and Communication Technology Dictionary includes information and communication technology terms in both Arabic and English to promote and facilitate computer use. It is a reference for both students and employees in different fields of knowledge.

This dictionary aims to enrich Arabic language references and contributes to the dissemination of knowledge among students and all business sectors through specialized scientific and professional publications and by adding a new set of translated terms that can be used in daily life to describe techniques, mechanisms and practices.



Abu-Ghazaleh Accountancy & Business Dictionary

- The dictionary contains nearly twelve thousand terms.
- Comprehensiveness that meets the needs of professionals from accountants, auditors, banks, businessmen, companies and all other employees in the fields of economics, accounting and business.
- A basic reference and coverage of technical terms in the era of globalization in which developments are accelerating on various levels based on science, knowledge and technology.
- A design that facilitates quick and easy access to the required terms.

Talal Abu-Ghazaleh
Founder and Chair,Talal Abu-Ghazaleh Global
(TAG.Global)

talalabughazaleh.com
tag.global

Talal Abu Ghazaleh was born in Jaffa, Palestine on April 22, 1938. Just as he turned ten he, with his family, were forced out of their homeland as a result of the Zionist invasion of Palestine, seeking refuge in neighboring Lebanon. In 1960, he earned a Bachelor of Science degree in Business Administration from the American University of Beirut. Later on he earned a number of honorary doctorates. In 1972, he founded an accounting company in Kuwait. He started work from the the trunk of his car until he managed to rent office space. Presently, this small company grew into a global organization with a hit brand name called Talal Abu-Ghazaleh Global (TAG.Global), a truly global family of companies that provide world-class professional and educational services, working through more than 100 offices worldwide.

Dr. Talal Abu-Ghazaleh's stature and acumen have made him a man of vision and purpose. His varied accomplishments had granted him access to many world leaders, including kings, princes, presidents of state, ministers, ambassadors, as well as leaders of the world trading system and Internet pioneers. In Amman, he served as a member of the Jordanian Senate for two terms. Throughout the years, he chaired, and/or served as member of innumerable United Nations' governing bodies and other multilateral international organizations. He presided over global holding companies and professional service firms, information and communication technologies' initiatives and a host of socioeconomic development institutions.

Recognized as one of the most influential leaders in the world, with lifetime achievements, international leadership, books, awards and honors as part of his impressive record, Dr. Talal Abu-Ghazaleh made, and he continues to make, distinctive and outstanding contributions to education, accountancy, Intellectual Property, business administration and management, commerce, ICT, science and technology, law and other fields of economic development. He is a builder of institutions with a sense of history and a vision for the renaissance of the Arab region within the context of an emerging knowledge-based world.

A true visionary, Dr. Talal Abu-Ghazaleh authored a series of books and articles, and through his inspired leadership as reflected in TAG.Global's varied activities, he nurtured a new paradigm of global development which he characterized as the Fourth Industrial Revolution – as an emergence of a 'Knowledge Era' based on the digital age that promises a wealth of opportunity and astounding progress for all. Dr. Talal Abu-Ghazaleh's contribution to ensuring the Arab world's full participation in this revolution.

Believing passionately that access to quality education is a human right, Dr. Talal Abu-Ghazaleh established numerous educational institutions. These range from 'Knowledge Centers', where young Arabs can get free online access to the global knowledge treasures; to the College of Innovation that nurtures young creators, to the online Digital University where accredited educational programs are available to everyone, everywhere at affordable cost. These facilities and institutions have been cultivated and innovatively created by Dr. Talal Abu-Ghazaleh and the companies he leads. At the behest of his leadership, these companies provide an active power-house enabled with the needed dynamism to change and keep up with the latest technological advancements, concepts and ideas in the world.

Table of Contents

1. Academic Degrees and Certificates

- Honorary Ph.D. in Arts, Canisius College, Buffalo, USA (1988).
- Honorary Ph.D. in Humane Letters, American University of Technology, Lebanon (2022).
- Honorary Ph.D. in Humane Letters, Lebanese American University, Lebanon (2018).
- Honorary Ph.D. in Management and Economics, Jerash University, The Hashemite Kingdom of Jordan (2016).
- Honorary Ph.D. in Business Administration, Mutah University, The Hashemite Kingdom of Jordan (2015).
- Honorary Ph.D. in Human Arts, Bethlehem University, Palestine (2014).
- Bachelor of Science in Business Administration, The American University of Beirut, Lebanon (1960).

2. Official Assignments

- Senator, Jordanian Upper House, The Hashemite Kingdom of Jordan (2016-2019).
- Senator, Jordanian Upper House, The Hashemite Kingdom of Jordan (2010-2011).

3. Decorations

- Decoration of Independence of the First Order by His Majesty King Abdullah II bin Al-Hussein, Raghadan Palace, The Hashemite Kingdom of Jordan (2016).
- Decoration of Independence of the Third Order by His Majesty the Late King Hussein bin Talal, Raghadan Palace, The Hashemite Kingdom of Jordan, The Hashemite Kingdom of Jordan (1967).
- 'Knight Medal for Building Arab Awareness' in recognition of his economic contributions, community initiatives, and his efforts to support youth, Arab Youth Council for Integrated Development, Cairo, Egypt, (2022).
- First-Class Arab Tourism Decoration, Arab Tourism Organization, Jeddah, Kingdom of Saudi Arabia, (2021).
- "Commendatore dell' Ordine della Stella d'Italia" (Commander in the Order of the Star of Italy) by HE Mr. Sergio Mattarella, President of the Republic of Italy (2019).
- Decoration of Order of Commander of Civil Merit, His Majesty King Philip VI, King of Spain, Spain (2018).
- Decoration of Enhancing the Sino-Arab Relations by HE Mr. Xi Jinping, President of the People's Republic of China (2016).
- Decoration of Creativity in Innovation and Digital Transformation by Regional Donor Organizations, Kingdom of Bahrain (2016).
- Decoration of Prince Salman bin Abd-Alaziz for Business Youth (2012).
- The Presidential Decoration presented by President of the Republic of Lebanon General Émile Lahoud, Lebanon (2001).
- Decoration of Legion of Honour (Chevalier de la Légion d'Honneur), France (1985).
- Decoration of the Republic of Tunisia by HE President Habib Bourguiba, Republic of Tunisia (1985).

4. Chairmanships

- Chair of La Verticale Africa-Mediterranean-Europe (La Verticale AME), Belgium (2021-present).
- Chair, Board of the Consortium for Sustainable Urbanization (CSU), USA (2021).
- Chair, Association of Lebanese Business People in the World (RDCL World), Lebanon (2020).
- Co-chair of La Verticale Africa-Mediterranean-Europe (La Verticale AME), Belgium (2019-2021).
- President of the Business Leaders Council under the umbrella of La Verticale, Belgium (2019).
- Chair of the Talal Abu-Ghazaleh University College for Innovation (TAGUCI), The Hashemite Kingdom of Jordan (2017).
- Honorary President of the Bosphorus Summit's Board of Trustees, Turkey.
- Chair, (Digital Technologies for Sustainable Urbanization Network)-UNSDG 11, NY (2011).
- Chair of the Honorary Council of the Consortium for Sustainable Urbanization, USA (2015).
- Honorary Chair of the Palestinian Association of Certified Public Accountants, Palestine (2015-present).
- Chair of the Arab Coalition of Services Industry, Lebanon (2015).
- Chair of the Jordanian National Orchestra Association (JOrchestra), The Hashemite Kingdom of Jordan (2014).
- Chair of the Talal Abu-Ghazaleh University College of Business (TAG-UCB), Kingdom of Bahrain (2012).
- Chair of the Talal Abu-Ghazaleh International University (TAGI-UNI), Lebanon (2012).
- Chair of the Research Center and Strategic Action, Switzerland (2012).
- Chair of the All for Palestine Initiative, France (2011-present).
- Chair of the Economic Policy Development Forum (EPDF), The Hashemite Kingdom of Jordan (2011- present).
- Chair of the Arab States Research and Education Network (ASREN), Germany (2010- present).
- Chair of the United Nations Global Alliance for ICT and Development (UN-GAID), USA (2009- 2010).
- Chair of the Afro-Asian Knowledge Society Council, Egypt (2009).
- Chair of the Arab World of Internet Institute, USA (2008).
- Vice-Chair (with Kofi Annan and Ban Ki-Moon) of UN Global Compact (UNGC), USA (2007-2016).
- Chair of the Board of Directors, UN Global Compact (UNGC), USA (2006-2008).
- Chair of the Arab Organization for Quality Assurance in Education (AROQA), Belgium (2007-present).
- Chair of the Talal Abu-Ghazaleh Graduate School of Business (TAGSB), The Hashemite Kingdom of Jordan (2006 - 2017).
- Co-chair of the United Nations Information and Communication Technology Task Force (UN ICT TF), USA (2006-2010).
- Chair of Evian Group Governing Body, Switzerland (2006-2009).
- Chair of the Evian Group-Arab Region (EGAR), Switzerland (2006-2009).
- Chair of the Business Action to Support the Information Society (BASIS), International Chamber of Commerce (ICC), France (2006-2008).
- Chair of the Board of Trustees, Perspective Europe, France (2005-2007).
- Chair of the Advisory Committee on Internet Governance, United Nations Information and Communication Technologies Task Force (UN ICT TF), USA (2003-2004).
- Chair of the International Chamber of Commerce Task Force (ICC TF) on Internet Governance, France (2003-2004).

.. continued
Chairmanships

- Chair of the Commission on E-Business, Information Technologies and Telecoms, International Chamber of Commerce (ICC), France (2001-2008).
- Chair of the Arab Regional Network of the United Nations Information and Communication Technologies Task Force (UN ICT TF), USA (2001-2004).
- Chair of the Working Group on Human Resources and Capacity Building (HRCB) of the United Nations Information and Communications Technologies Task Force (UN ICT TF), USA (2001-2002).
- Chair of the Arab Internet Names Consortium (AINC), The Hashemite Kingdom of Jordan (2001).
- Chair of the Committee of Experts mandated by the United Nations Secretary-General to draft the International Accounting Standards for Environmental Accountability, USA (1999).
- Chair of the United Nations Committee of Experts on Professional Qualifications Standards, Switzerland (1995-1998).
- Chair of the Middle East Council, Center for Strategic and International Studies, USA (1995-1997).
- Chair of the United Nations Conference for the Development of Accounting Education, USA (1995).
- Chair of the United Nations Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (UNISAR), USA (1995-1996).
- Chair of the Committee for the Newly Industrialized and Developing Countries Affairs, the International Accounting Standards Committee (IASC), UK (1989-1995).
- Chair of the Affairs of the Modern Industrialized Nations and Developing Countries, the International Accounting Standards Committee, UK (1989-1992).

4.1- Societies Chairmanships:

- Chair of the Arab Intellectual Property Mediation and Arbitration Society (AIPMAS), The Hashemite Kingdom of Jordan (2003-present).
- Chair of the Licensing Executives Society-Arab Countries (LES-AC), The Hashemite Kingdom of Jordan (1998-present).
- Chair of the Arab Knowledge Management Society (AKMS), USA (1989-present).
- Chair of the Arab Society for Intellectual Property (ASIP); in consultative status with the World Intellectual Property Organization (WIPO), Germany (1987-present).
- Chair of the International Arab Society of Certified Accountants (IASCA); in consultative status with the U.N. Economic and Social Council (ECOSOC), UK (1985-present).

5. Selected Board Memberships

- Member of the Federation of Arab Tax Experts, Egypt (2022-present).
- Member of the Board of Trustees, American University of Technology (AUT), Lebanon (2022-present).
- Member of the Arab Advisory Council, Arab Parliament (2022).
- Member of the Advisory Committee, UNESCO Regional Center for Quality and Excellence in Education, KSA (2021).
- Member of the Advisory Board of INSEAD Global Talent Competitiveness Index (GTCI), France (2017).
- Member of United Nations Social Impact Fund High-Level Advisory Board (UNSIF-HLAB), Switzerland (2017).
- Honorary Membership conferred by the Kuwaiti Association of Accountants and Auditors, Kuwait (2017).
- Special Ambassador, the World Tourism Organization (UNWTO), Spain (2017).
- Member of the Founding Committee of the Council of Islamic Donor Institutions, Qatar (2016).
- Member of the Advisory Board of the Global Talent Competitiveness Index (GTCI), France (2014).
- Member of the Advisory Board of Hamdan bin Mohammed Smart University, UAE (2014).
- Member of the Bretton Woods Committee, USA (2014).
- Member of the Global Social Responsibility Ambassador of CSR Regional Network, Kingdom of Bahrain (2014).
- Member of the Royal Commission to Enhance the Integrity System, The Hashemite Kingdom of Jordan (2013-present).
- Member of the Council on Arab Relations with Latin America and the Caribbean (CARLAC), under the presidency of HE Dr. Leonel Fernandez, Former President of the Dominican Republic, UAE (2013).
- Member of the World Trade Organization (WTO) Panel on Defining the Future of Trade, Switzerland (2012).
- Member of the Festival of Thinkers, UAE (2011-present).
- Member of the International Advisory Board, University of Bahrain, Kingdom of Bahrain (2010-2011).
- Member of the International Advisory, E-City for King Hamad ibn Isa Al Khalifa, Kingdom of Bahrain (2009).
- Member of the Honorary Board Membership, Afro-Asian Peoples' Solidarity Organization, Egypt (2008).
- Member of the Executive Board, International Chamber of Commerce (ICC), France (2006-2009).
- Member of the Board of Trustees, Arab Anti-Corruption Organization, Lebanon (2007-present).
- Member of the International Chamber of Commerce (ICC), France (2007).
- Member of the Advisory Board, Evian Group, Switzerland (2005-2009).
- Member of the Board of Directors, King Hussein Foundation, The Hashemite Kingdom of Jordan (2005-present).
- Member of the International Consultative Board, the World Coalition, USA (2005).
- Member of the Board of Directors, World Links Arab Countries Advisory Council, USA (2004-2005).
- Member of the Board of Directors, World Links Worldwide, USA (2003-2004).
- Member of the Public Sector Consultative Group, International Federation of Accountants (IFAC), USA (2003- 2006).
- Member of the Board of Trustees, King Hussein Cancer Center (KHCC), The Hashemite Kingdom of Jordan (2003-2006).
- Member of the Board of Trustees, National Music Conservatory (NMC), The Hashemite Kingdom of Jordan (2003- 2005).

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Selected Board Memberships

- Member of the Advisory Board, Knowledge Economy Community, Development Gateway, World Bank, USA (2002- 2005).
- Member of the Advisory Board, Industry Advisory Commission, the World Intellectual Property Organization (WIPO), Switzerland (1999-2000).
- Member of the Board of Advisors, Middle East Council of the Center for Strategic & International Studies (CSIS), USA (1995-1997).
- Member of the Board, International Federation of Accountants Council (IFAC), USA (1992).
- Member of the Board, International Accounting Standards Committee (IASC), UK (1988-1990).
- Member of the Arab Thought Forum, The Hashemite Kingdom of Jordan (1988-present).
- Member of the Board, International Auditing Practices Committee (IAPC) of IFAC, USA (1987-1990).
- Member of the Board of Governors, Keck Center for International Strategic Studies, USA (1985-1988).
- Member of the Board of Trustees, American University of Beirut, Lebanon (1980-1982).

6. TAG.Global Initiatives

6.1- In Education and Capacity Building:

- Talal Abu-Ghazaleh Confucius Center (TAG-Confucius), The Hashemite Kingdom of Jordan (2008).
- Talal Abu-Ghazaleh Cambridge IT Skills, The Hashemite Kingdom of Jordan (2001).
- Designed and produced TAGITOP, top-of-the-line laptop capability with netbook portability.
- Talal Abu-Ghazaleh Knowledge Society, which empowers the Arab youth as part of TAG.Global's Corporate Social Responsibility.
- Talal Abu-Ghazaleh Knowledge Award: grants scholarships to distinctive Palestinians to study at TAGSB.
- Talal Abu-Ghazaleh Grant presented to West Bank and Gaza citizens to attain Certified Arab Professional Accountant qualifications.
- Grant to first-ranked Arab university graduates in accounting to attain the Certified Arab Professional Accountant qualification.
- Launch of the Adel Al-Sa'di Award for Excellence for the first-ranked student in the Arab Certified Accountants Society.
- The Talal Abu-Ghazaleh Center for Business Research at Canisius College.

6.2- In Media and Journalism:

- Intellectual Property News Agency | www.agip-news.com
- Information Technology News Agency | www.tagitnews.com
- Education News Agency | www.tageducanews.com
- Talal Abu-Ghazaleh Business and Culture Radio & TV Production and Broadcast | www.tagbc.fm

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TAG.Global Initiatives

6.3- In Community Service:

- Electronic Jerusalem Market, an electronic portal and a live commercial marketplace between Palestine and the world to support Arab Palestinians in Jerusalem.
- The Palestinian Exchange Market, an electronic portal for the facilitation of work of Palestinian businessmen with the world.
- Jordanian Association for Family-Owned Businesses to raise awareness on and develop standards of governance.
- TAG.Global's cooperation with Qatar Center for Supporting Civil Society and the Regional Network for Corporate Social Responsibility.
- Professional services to improve the roles and performance of Jordan News Agency (Petra).
- Talal Abu-Ghazaleh Knowledge Forum - "A space for dialogue and exchange of knowledge".
- Center of Governance for raising awareness and for the exercise of the social role in serving the society.
- Talal Abu-Ghazaleh Cambridge Center for IT Skills: contributing to the building of a knowledge society.
- Talal Abu-Ghazaleh Computer Refurbishment Center and its projects and initiatives widely distributed among charitable organizations and schools.
- E-training Center in Gaza Camp to provide the youth with electronic knowledge skills.
- TAG.Global is a partner to Prince Sultan bin Abd-Alaziz Award for Business Youth.

7. Music Patronages

- Patron, Bethlehem Orchestra, Palestine (2021).
- Patron, Palais Garnier, France (2016).
- Patron, Jordanian National Orchestra Association (JOrchestra) musical concerts, The Hashemite Kingdom of Jordan (2014-Present).
- Patron, the Second Modernity: The Artistic Collaboration of Fairuz and Ziad Rahbani Conference, Anis Makdisi Program in Literature, American University of Beirut (AUB), Lebanon (2006).
- Patron, Walid Gholmieh Symphonies (2006).
- Patron, Private Concert by Ramzy Yassa and Ghada Ghanem, UK (August 2004).
- Patron, L'Association pour le Rayonnement de l'Opéra national de Paris (AROP), France (2004-present).
- Board of Trustees and Chair, National Music Conservatory (NMC), The Hashemite Kingdom of Jordan (2003-2005).
- Patron, Lebanese National Symphony Orchestra (LNSO), Lebanon (2003-present).
- Patron, l'Opéra de Paris, France (2001-present).
- Patron, Private concert by the Mozarteum Orchestra of Salzburg, Austria (2000).
- Patron, 28th General Assembly for the International Music Council, The Hashemite Kingdom of Jordan (1999).
- Patron, TAGO Golden Jubilee Concert, UK (1997).
- Patron, Private concert by Ramzi Yassa, USA (1994).
- Patron, Freunde der Salzburger Festspiele, Austria (1976).

8. Publications (supervision and support)

8.1- Books by TAG:

- Inevitable Digital Future, (2020).
- The 2020 Global Crisis and the 3rd World War, (2019).
- Brave Knowledge World, (2018).
- Talal Abu-Ghazaleh – the Right to Return, (2017).
- Blankets Become Jackets, (2015).
- Short story: The Dreaded Echo, (1958).

8.2- Books about TAG:

- 'Candles That Lighted the Gulf Space', Dr. Ali Mohammed Al Naboodah & Nahed Altadfe, (2021).
- A Man from the Future, Jawad Al-Anani, (2019).
- A Reading of Talal Abu-Ghazaleh, Laila Alrefai, (2019).
- Did life passes you by?, Manaf Baaj, (2019).
- Talal-Abu-Ghazaleh… A Man of Knowledge, Karim Pakradouni, (2018).
- Talal, Son of Adibeh, Areej Younis, (2017).
- From Suffering to Universalism, Jaafar aloqaily, (2017).
- Talal-Abu-Ghazaleh… Rising to the top, Maher Maklad, (2016).
- Talal Abu-Ghazaleh… Secret of Glory-Man from My Country, Laila Alrefai, (2014).

8.3- Dictionaries:

- Talal Abu-Ghazaleh ICT Dictionary, 2nd edition (2013).
- Talal Abu-Ghazaleh IP Dictionary, 2nd edition (2013).
- Talal Abu-Ghazaleh Dictionary of Patents (2012).
- Talal Abu-Ghazaleh Legal Dictionary (2012).
- Talal Abu-Ghazaleh Collocations Dictionary (2012).
- Talal Abu-Ghazaleh ICT Dictionary, 1st edition (2008).
- Talal Abu-Ghazaleh Accountancy & Business Dictionary (2001).
- Talal Abu-Ghazaleh IP Dictionary, 1st edition (2000).
- Talal Abu-Ghazaleh English-Arabic Dictionary of Accounting, 1st edition (1978).

8.4- Professional Publications

- The Imperative of a WTO Reform Agenda, Switzerland (2013).
- WTO at the Crossroad, Switzerland (2012).
- Arab Certified Management Accountant (2012).
- Guide to Using ISAS in the Audits of Small- and Medium-sized Entities (2012).
- The Vest Pocket Guide to IFRS (2012).
- Guide to Quality Control for Small-and Medium-sized Practices (2012).
- Islamic Commercial Law (2010).
- Islamic Banking and Takaful (2010).
- Islamic Capital Markets and Instruments (2010).

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Publications (supervision and support)

- Accounting for International Fund (IF) Institutions (2010).
- Leaders Outlook, TAG Graduate School of Business Magazine (2010).
- International Financial Reporting Standard for Small and Medium-sized Entities (2009).
- The Licensing Executives Society International (LESI) Guide to Licensing Best Practices (2007).
- Anti-Money Laundering Guide (2006).
- Guide to Corporate Governance (2006).
- International Financial Reporting Standards (IFRS) Workbook and Guide (Wiley) (2006-2008-2011).
- Authorized Arabic World Intellectual Property Organization (WIPO) Intellectual Property Handbook: Policy, Law and Use (2005).
- Official Arabic Translation of the International Accounting Standards in the Public Sector (2005).
- Official Arabic Translation of International Standards on Auditing Practices and Business Ethics (2005).
- Authorized Arabic translation of the "Guide for Legal Retention Period for the Merchant Books and Auditor Work Papers (2004).
- Authorized Arabic "International Financial Reporting Standards" (2003-2013).
- Handbook of International Standards on Auditing, Assurance and Ethics Pronouncements (2001-2013).
- Authorized Arabic "International Accounting Standards in the Public Sector" (2001-2013).
- Authorized Arabic "International Standards on Auditing and Code of Professional Conduct" (2001).
- English Translation, "Intellectual Property Laws of the Arab Countries" (2000).
- Authorized Arabic "International Accounting Standards" (1st edition 1999, 2nd edition 2000, 3rd edition 2001).
- Authorized Arabic "Business Guide to the World Trading System" (1999).
- Authorized Arabic/English "Accounting and Financial Reporting for Environmental Costs and Liabilities" (1999).
- Trademark Laws in the Arab Countries: Country Guides (1998).
- Official Arabic version of the "International Standards on Auditing" (1st edition 1998, 2nd edition 2001, 3rd edition 2002).
- Official Arabic version of the "Business Guide to the World Trading System" (1st edition 1998, 2nd edition 2000).
- Accounting as a Tool for Decision Making in Tourism (1983).

9. Honorary Awards

- Talal Abu-Ghazaleh Annual Award for Innovation, EdTech Syndicate of Lebanon, in recognition of his support to innovation and creativity in all fields, Lebanon (2022)
- The Most Prominent Arab Scientific Personality Award of the Year 2020, the Human Development Training Center, UAE (2021)
- 'Jordan Business Honorary Award', Jordan Business Magazine, The Hashemite Kingdom of Jordan (2019).
- Honorary Shield, presented by the Gold Award for Sustainable Development, and the United Nations Commissioner for the Advancement of the United Nations' Goals for Sustainable Development 2030, Oman (2016).

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Honorary Awards

- The Worldwide Alumni Association of AUB (American University of Beirut) Distinguished Alumnus Award for 2016, Lebanon (2016).
- Honorary Award for recognition and acknowledgement of the strong partnership with the United Nations Development Program, The Hashemite Kingdom of Jordan (2016).
- UN21 Award for Remarkable Leadership, New York, USA (2015).
- Abu-Ghazaleh Social Responsibility Awards launched by CSR Regional Network for his efforts in social initiatives, Kingdom of Bahrain (2014).
- Honorary Shield, presented by President Abdul Rahman Sewar Al Zahab, Sudan (2014).
- Visionary Leader Award from the Asian Education Leadership Awards, UAE (2013).
- The Arab Award for Innovation Media from His Highness Sheikh Jaber Mubarak Al Hamad Al-Sabah, Kuwait (2012).
- Man of the Year Award from the Palestine International Institute, The Hashemite Kingdom of Jordan (2012).
- Distinction Award, presented by Canisius College, USA (2011).
- Award of "Arab ICT Personality" of the Year 2010 from the Union of Arab ICT Associations, Kingdom of Bahrain (2010).
- Honorary Award, presented by the Arab Federation for the Protection of Intellectual Property Rights (AFPIPR), The Hashemite Kingdom of Jordan (2009).
- The International Lifetime Achievement Award, UAE (2008).
- IP Hall of Fame Academy, USA (2007).
- Gold Mercury International Award from His Royal Highness Prince Khalifah bin Salman Al Khalifah, Kingdom of Bahrain (1978).

10. Certificates of Appreciation

- Certificate of Appreciation, presented by the Arab European Center for Human Rights and International Law in cooperation with the Arab Federation for Development and Economic Integration, United Arab Emirates (2022).
- Certificate of Appreciation, presented by the Research and Translation Center, Prince Sultan University, KSA (2017).
- Certificate of Appreciation, World's Most Prominent Chartered Accountants, Journal of International Accounting, UK (2014).
- Certificate of Appreciation, One of the World's 500 Most Influential Arabs, Arabian Business Magazine, UAE (2012).
- Certificate of Appreciation, Palestinian Business Forum, The Hashemite Kingdom of Jordan (2011).
- Certificate of Appreciation, Bahraini - American Cultural Exchange Society, Kingdom of Bahrain (2010).
- Certificate of Appreciation, General Directorate of Education, KSA (2010).
- Certificate of Appreciation, Youth Media Forum, The Hashemite Kingdom of Jordan (2010).
- Certificate of Appreciation, Islamic University, Palestine (2005).
- Certificate of Appreciation, Global Leadership Award, UK (1997).
- Certificate of Appreciation, International Accounting Standards Board, UK (1988-1990).

11. TAG.Global Members

1. **Talal Abu-Ghazaleh Global (TAG.Global)** — **tag.global**
   The Global Organization for professional services and education
2. **Talal Abu-Ghazaleh & Co. International (TAG-Audit)** — **tagi.com**
   Audit and Accounting Services
3. **Talal Abu-Ghazaleh & Co. Consulting (TAG-Consult)** — **tag-consultants.com**
   Management, Economic, and Financial Consulting Services
4. **Talal Abu-Ghazaleh Valuation (TAG-Value)** — **tagvaluation.com**
   Asset Valuation and Branding Services
5. **Talal Abu-Ghazaleh Domains (TAG-Domains)** — **tagidomains.com**
   ICANN Accredited Registrar
6. **Talal Abu-Ghazaleh Information Technology International (TAG-ITI)** — **tagiti.com**
   Consultation, Development and Implementation in the Field of Information and Communication Technologies (ICT)
7. **Talal Abu-Ghazaleh E-Solutions (TAG E-Solutions)** — **tagesolutions.com**
   Software Solutions
8. **Talal Abu-Ghazaleh Intellectual Property (AGIP)** — **agip.com**
   Registration and Protection of Intellectual Property Rights
9. **Talal Abu-Ghazaleh Legal (TAG-Legal)** — **tag-legal.com**
   Legal Services
10. **Talal Abu-Ghazaleh International Advertising (TAG-Media)** — **media.tag.global**
    Media Consultants
11. **Talal Abu-Ghazaleh International Press & Publishing (TAG-Publish)** — **tag-publication.com**
    Services and Consultations in the Field of Printing and Publishing
12. **Talal Abu-Ghazaleh Recruitment & Human Resources Development (TAG-Recruit)** — **tagirecruitment.com**
    Human Resources and Recruitment Services
13. **Talal Abu-Ghazaleh Tenders (TAG-Tenders)** — **tagtenders.com**
    Tenders and Bids
14. **Talal Abu-Ghazaleh Translation (TAG-Translate)** — **tagtranslate.com**
    Professional Interpretation and Translation Services
15. **Talal Abu-Ghazaleh Global University (TAG-GU)** — **tagiuni.global**
    Highly Accredited Online Academic, Professional Programs and Digital Educational Programs
16. **Talal Abu Ghazaleh University College for Innovation (TAGUCI)** — **taguci.com**
    College for Business and IT
17. **Talal Abu-Ghazaleh University College of Business-Bahrain (TAG-UCB)** — **tagucb.com**
    Bachelor Degrees in Business Administration
18. **Talal Abu-Ghazaleh Confucius Institute (TAG-Confucius)** — **tagconfucius.com**
    Teaching Chinese Language
19. **Talal Abu-Ghazaleh E-Training (TAG E-Training)** — **tagitc.com**
    Providers of Accredited IT Training and Certification Services
20. **Talal Abu-Ghazaleh Academy (TAGACADEMY.Global)** — **tagacademy.global**
    Organizing, Holding and Sponsoring Training Courses, Workshops and Seminars

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TAG.Global Members

21. **Talal Abu-Ghazaleh Knowledge Center (TAG-KS)** — **tagks.com**
    It is the CSR arm of TAG.Global which helps the youth enter labor market through offering them training courses and linking them with employers

22. **Talal Abu-Ghazaleh Knowledge Forum (TAGKF)** — **tag-forum.org**
    Event Organizing Services

23. **Electronic Arabic Encyclopedia Registration Website (TAGEPEDIA)** — **register.tagepedia.org**
    Enriching the online world with Arabic content

24. **International Arab Society of Certified Accountants (IASCA)** — **iascasociety.org**
    Professional Certificates (IACPA, IACMA and IFRS Expert), Membership, Training Courses, and Professional Publications

25. **Arab Society for Intellectual Property (ASIP)** — **aspip.org**
    Training and Raising Awareness in Legal and Intellectual Property Fields

26. **Licensing Executives Society - Arab Countries (LES-AC)** — **lesarab.org**
    Advancing the Business of Intellectual Property Globally

27. **The Arab International Society for Management Technology (AIMICT)** — **aimict.org**
    Capacity building and advanced IT training

28. **Arab Center for Mediation and Arbitration (AIPMAS)** — **aipmas.org**
    Conflict settlement related to Intellectual Property

29. **Arab Organization for Quality Assurance in Education (AROQA)** — **aroqa.org**
    Quality of Education

30. **Arab States Research and Education Networks (ASREN)** — **asrenorg.net**
    High Speed Research and Education Networks and e-Infrastructure Services

31. **Talal Abu-Ghazaleh for Cloud Computing Services (TAG-Cloud)** — **tagicloud.com**
    Cloud Computing Consulting Services (CCCS)

32. **Family Business Governance Center (FBGC)** — **fbgc.jo**
    Family business and governance

33. **Arab Omani Management Training Institute (AOTI-Oman)** — **tagi-aoti.com**
    Organize, hold and sponsor training courses, workshops and seminars

34. **Abu-Ghazaleh Intellectual Property News Agency (AG-IP News)** — **agip-news.com**
    Providing media services in the field of intellectual property

35. **All 4 Palestine Organization (All4Palestine)** — **all4palestine.com**
    Compilation of Prominent Palestinian Profiles

36. **Talal Abu-Ghazaleh Information Technology International News Agency (TAG-IT News)** — **tagitnews.com**
    Media Services in the Field of Information Technology

37. **TAG-Knowledge and Wealth Creation (TAG-Creation)** — **tagcreation.com**
    Business Advisory and Wealth Creation

38. **Talal Abu-Ghazaleh Training-Bahrain (TAGI-Training Bh.)** — **tagitraining.bh**
    Training Services

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TAG.Global Members

39. **Talal Abu-Ghazaleh Education News Agency (TAG-Educa News)** — **tageducanews.com**
    Media services in the field of education
40. **Arab Center For Dispute Resolution (ACDR)** — **acdr.aipmas.org**
    Domain Name Dispute Resolution
41. **Talal Abu-Ghazaleh Proctored Testing Centers (TAGI-Metric)** — **tagimetric.com**
    Third Party Proctored Examinations and Assessments.
42. **Talal Abu-Ghazaleh for Dispute Resolution Center (TAG-Resolution)** — **tagresolution.com**
    Arbitration to settle conflicts in the field of trademarks
43. **Talal Abu-Ghazaleh Computer Refurbishment Center (TAG-CRC)** — **tagcrc.com**
    Refurbishing and developing computers
44. **Talal Abu-Ghazaleh Design & Publishing (TAG-Design)** — **tagidesign.com**
    Design of printing consultations
45. **Talal Abu-Ghazaleh Academy for Languages (TAG-Lingual)** — **tag-languages.com**
    Languages Training and educational courses
46. **Talal Abu-Ghazaleh Internal Audit (TAG-Audit)** — **taginternalaudit.com**
    Internal Audit Services
47. **Talal Abu-Ghazaleh Foundation (TAG-Foundation)** — **tag-foundation.org**
    Initiatives in areas of social development, economy, training and job creation, and thought and research forums
48. **TAG-International Institute for Social Responsibility (TAG-IISR)** — **tag-foundation.org**
    Social development, economic, and training initiatives
49. **Talal Abu-Ghazaleh Partners in Development (TAG-PID)** — **tag-foundation.org**
    Initiatives and forums Development
50. **Talal Abu-Ghazaleh Patents (TAG-Patents)** — **patents.agip.com**
    Patents services
51. **Talal Abu-Ghazaleh International Diploma in IT Skills (TAGDIT.Global)** — **tagitc.com**
    Providers of Accredited IT Training and Certification Services
52. **Talal Abu Ghazaleh for Small and Medium Enterprises (TAG SME)** — **tag.global**
    Provide training to small and medium businesses and entrepreneurs to build sustainable practices and enable them to access finance
53. **Talal Abu-Ghazaleh Business and Culture Radio (TAGBC.FM)** — **tagbc.fm**
    Radio Channel for Disseminating Thought, Culture and Education
54. **Talal Abu-Ghazaleh International Records (TAGI-RECORDS)** — **tagirecords.com**
    Protection of copyrights and neighboring rights in the field of music industry, registration and legal services of companies and domain name registration
55. **Arabic Fluency Certificate (TAGTALAKA.GLOBAL)** — **tagarabic.global**
    Provider of Arabic fluency exam, teaching Arabic language and teaching methods
56. **Talal Abu-Ghazaleh for Technologies (TAGTech)** — **tagtech.global**
    High Tech Laptops, Tablets & Smart Phones

List of
Offices and Addresses

Talal Abu-Ghazaleh Global TAG.Global

The Global Organization for Professional Services and Education

tag.global

JORDAN (Regional Office):

- Amman - Head Office
- Amman Office
- Amman (University)
- Irbid
- Maan

ASIA

TAG.Global Offices:

AFGHANISTAN:
- Kabul

BAHRAIN:
- Manama

CHINA:
- Beijing
- Chengdu
- Guangzhou
- Shanghai

INDIA:
- Bangalore
- Mumbai
- New Delhi

INDONESIA:
- Jakarta

IRAN:
- Tehran

IRAQ:
- Baghdad
- Erbil

KAZAKHSTAN:
- Almaty

KUWAIT:
- Kuwait

LEBANON:
- Beirut (AGIP)
- Beirut(TAG-Audit)

MALAYSIA:
- Kuala Lumpur

OMAN:
- Muscat
- Salalah
- Duqm

PAKISTAN:
- Karachi
- Lahore

PALESTINE:
- Gaza
- Ramallah

QATAR:
- Doha

SAUDI ARABIA:
- Khobar
- Riyadh
- Jeddah

SOUTH KOREA:
- Seoul

SRI LANKA:
- Colombo

SYRIA:
- Damascus

UNITED ARAB EMIRATES:
- Abu-Dhabi
- Ajman
- Al-Ain
- Hamriya
- Sharjah
- Dubai
- Jebel Ali
- Ras Al-Khaimah
- Um Al-Quwain
- Fujairah

YEMEN:
- Sana'a

Liaison Offices:

BANGLADESH:
- Dhaka

CHINA:
- Hong Kong

JAPAN:
- Osaka

SINGAPORE:
- Singapore

UZBEKISTAN:
- Tashkent.

AFRICA

TAG.Global Offices:

ALGERIA:
- Algeria

CAMEROON (Covering 15 Countries):
- Douala

EGYPT:
- Cairo

ETHIOPIA:
- Addis Ababa

KENYA:
- Nairobi

LIBYA:
- Tripoli

MOROCCO:
- Casablanca

NIGERIA:
- Abuja

SOUTH AFRICA:
- Johannesburg

SUDAN:
- Khartoum

TANZANIA:
- Dar es Salaam

TUNISIA:
- Tunis

Liaison Offices:
DJIBOUTI:
- Djibouti

EUROPE

TAG.Global Offices:
MALTA:
- San Gwann

RUSSIA:
- Moscow

TURKEY:
- Ankara

Liaison Offices:
AUSTRALIA:
- Sydney

CYPRUS:
- Nicosia

GERMANY:
- Dusseldorf

FINLAND:
- Helsinki

HUNGARY:
- Budapest

ITALY:
- Rome

NEW ZEALAND:
- Wellington

SWITZERLAND:
- Geneva
- Zurich

TURKEY:
- Istanbul

POLAND
- Warsaw.

NORTH AMERICA

TAG.Global Offices:
CANADA:
- Montréal

MEXICO:
- Mexico City.

Liaison Offices: **CANADA:**
- Ottawa

PANAMA:
- Panama City

SOUTH AMERICA

TAG.Global Offices:
BRAZIL:
- Rio de Janeiro

CHILE:
- Santiago

VENEZUELA:
- Caracas

Liaison Offices:
COLOMBIA:
- Bogotá

OFFICES UNDER ESTABLISHMENT

ARGENTINA:
- Buenos Aires

BELGIUM:
- Brussels

BRUNEI:
- Bandar Seri Begawan

FRANCE:
- Paris

MACEDONIA:
- Skopje

NORWAY:
- Oslo

ROMANIA:
- Bucharest

SPAIN:
- Madrid

SWEDEN:
- Stockholm

THAILAND:
- Bangkok

UNITED KINGDOM:
- London

VIETNAM:
- Hanoi

Talal Abu-Ghazaleh Global Offices

More than 100 Offices and Liaison Officers Worldwide

JORDAN

Amman

General Administration
TAG.Global Building
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Fax: +962 6 5100 901
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Fax: +962 6 5100 901
jordan@agip.com

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Jordan
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Jordan
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Fax: +962 6 5100 901
info@tagtech.global

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46 Abdel Rahim Al-Waked Street,
Shmeisani, Amman, Jordan
P.O. Box: 921100 Amman 11192,
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info@tag-gu.global

AFGHANISTAN

Kabul
House No. 428, Street 15, District 10,
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