ARTIFICIAL INTELLIGENCE

- THE 2022 ARTICLES -

A collection of my 2022 articles on Automation, Responsible AI & Regulation, Social impact, the future of AI, its impact on Africa and the world of Business.

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About the author

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Introduction

Welcome to the Smart Technology Era

Welcome to a journey through the transformative world of artificial intelligence (AI) and automation – a technological revolution that is reshaping society, businesses, and individual lives. This book aims to serve as a guide, exploring various dimensions of AI and automation.

The journey starts with "Part 1: Automation". This part discusses the ramifications of automation on contemporary society, delineating between "autonomation" and the fears of an emergent 'useless' class. It explores the impacts on professional services, contemplates whether experience can be automated, and provides a balanced perspective on machine learning, common sense, and human nature.

The narrative evolves into the much-debated topic of "Part 2: Responsible AI & Regulation". Here, we delve into the consequences of AI actions, the potential biases, and implications of unchecked AI advancement. The discussion takes a critical look at data management, diversity in AI projects, and the need for responsible AI practices.

"Part 3: AI in the Future: A Philosophical lens" offers a contemplative view of AI's implications on humanity,

commerce, and the future of specialisation. It questions AI's potential to make us 'god-like' and its influence on religious perspectives.

"Part 4: Chatbots & Customer Experience" discusses the impact of AI on customer engagement, from chatbots like ChatGPT to novel banking methods. It examines the triumphs and pitfalls of AI-powered customer interaction.

The narrative extends into "Part 5: AI in Africa", where we focus on AI's impacts and opportunities within the African continent. The discussions span healthcare, rural deployment, 5G implications, policy, start-ups, and the phenomenon of remote working.

"Part 6: AI in Business" provides valuable insights on AI's role in shaping modern business practices. The discourse extends from data-driven culture, cyber threats, insurance sector, to reimagining work and project management.

Finally, "Part 7: AI & Societal Impact" explores the wider societal influences of AI technology. The impact on environmental, social, and governance reporting, social media, and addressing world hunger are just a few of the important topics this part covers.

This book is designed to provide an understanding of AI, its challenges, opportunities, and implications, inviting readers to engage in this paradigm-shifting technological evolution.

Part 1:
Automation

1 Automation as we know it is over

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https://www.news24.com/fin24/opinion/johan-steyn-automation-as-we-know-it-is-over-20221023

We have entered a world where smart technologies like artificial intelligence (AI) are revolutionising business process automation. Robotic Process Automation platforms are fast becoming redundant, the automation centre of excellence is outdated, and true citizen-led automation is the future of cognitive automation.

Automation is not a novel concept. Around 1946, the term "automation" was coined in the automobile industry to refer to the increased usage of automatic devices and controls in mechanised production lines. Automation pervades our daily lives these days, from the appliances we use at home to the applications on our smartphones, the way we manufacture goods and how we create and deliver services.

The pre-Keynesian Russian economist, Nikolai Kondratiev, is famous for identifying 50- to 60-year economic supercycles in capitalist economies. Joseph Schumpeter (known for his economic views on "creative destruction") eventually nicknamed Kondratyev's long-wave cycle hypothesis "Kondratyev waves" or "K-waves." Water power and mechanisation were the initial waves of invention, followed by steam engines and the rail sector. Electricity enabled the electronics era, which culminated in the development of digital networks and the Internet.

We are currently in what Kondratiev would have identified as the sixth wave, in which digitalisation, smart gadgets, hyper-automation, robotics, AI and machine learning (ML) all have an impact on our daily lives. We know this as the Fourth Industrial Revolution, a term coined by Charles Schwab from the World Economic Forum.

The algorithmic or cognitive automation era has ushered in a new epoch for business process automation, fuelled by record processing speeds, cloud computing, and technology platforms, such as Robotic Process Automation (RPA).

Business organisations are at different stages in their process automation journeys. Many have embarked on RPA initiatives, most with limited success. The majority have not realised the anticipated returns on cost reduction, insights, efficiency or effectiveness gains.

Those who have reached higher levels of returns are looking to the next stage on their automation journeys, utilising cognitive technologies for insights and greater levels of value chain optimisation.

Many large enterprise organisations have partnered with vendors whose business model is the sale and implementation of automation platforms. Their motivation and financial model are focused on the sales of platform licences. However, these providers are rarely invested in outcomes: they hesitate to contract based on guaranteed cost savings and efficiency gains.

The automation ecosystem should include process mining, RPA, and cognitive technologies such as AI. Businesses should aim for insights customised for timely

smart decision-making. It is one thing to automate tasks, but AI-led models enable valuable information about the current and target future state of the process in an end-to-end business value chain.

Traditionally, the model of process automation in a business is led by the automation centre of excellence (CoE). These teams typically reside in the technology department. They control the licensing costs and automation initiatives across the enterprise. The automation CoE is usually in isolation, focusing on the technology only, with little reach across the various organisational divisions. They normally lack business acumen and rarely contract with other stakeholders based on business outcomes.

My experience is that in many business organisations automation initiatives are driven by the various divisional leadership teams, with little incentive to contract with the CoE. Business leaders understand their areas best and aim for relevant automation returns such as speed to market, better customer service and understanding, risk management and compliance.

It is my argument that the traditional automation CoE has reached its limit. More and more automation initiatives will be driven by the various departments outside of their reach or influence. Another trend we observe globally is that automation initiatives are best matured by the divisional teams themselves. In the future staff members need to be empowered to easily create and run their initiatives, in what we can term citizen-led automation.

In this, the sixth K-wave, automation technologies will grow to become autonomous, with little or no human

interaction. We will see the rise of the truly autonomous enterprise. The pace of innovation and automation will increase rapidly in an ever-increasing competitive and globalised world.

2 ‘Autonomation’ and the creation of a useless class

Published by Business Day: https://www.businesslive.co.za/bd/opinion/columnists/2022-03-01-johan-steyn-autonomation-and-the-creation-of-a-useless-class/

The idea of automation is by no means new. The expanding use of automated equipment and controls in mechanised production lines was originally described as “automation” in the automobile industry in about 1946.

Business process automation has a lengthy track record of both boosting throughput and decreasing expenses. Companies throughout the world are constantly striving to deliver more value with fewer staff while responding faster to their customers' demands. New technologies such as artificial intelligence (AI) and machine learning (ML) have ushered in a new era of business process automation, propelled by record-breaking processing speeds and Cloud computing.

Digital automation, intelligent automation and hyperautomation are terms we read about a lot these days. Our daily lives are progressively being automated, from the appliances we use at home to the applications we use on our mobile phones. Computer algorithms are increasingly becoming the muscles of the modern-day workforce.

Algorithmic automation has ushered in a new era of business process automation, which is expected to add $15-trillion to global GDP by 2030. During this time,

current automation technologies are expected to grow from simple task automation and augmentation to full-fledged autonomy.

The pre-Keynesian Russian economist, Nikolai Kondratiev, is famous for identifying 50-60 year economic supercycles in capitalist economies. We are currently in his anticipated sixth wave, in which digitalisation, smart gadgets, hyperautomation, robotics, AI and ML all have an effect on our daily lives. We know this as the Fourth Industrial Revolution, a term coined by Charles Schwab from the World Economic Forum.

PwC, the global audit and technology firm, has identified three automation waves during the next decades: During the early part of the 2020s, the focus will be on the algorithmic automation of business tasks. Later in this decade, there will be a shift to augmentation where administrative and clerical tasks will be increasingly automated. Towards the middle of the next decade, we will experience the dawn of process autonomy, where the level of human dependencies will be lower than at any time before.

What will the next 20 years look like? I think that current technological platforms such as Robotic Process Automation (RPA) will dwindle into irrelevance unless the platform providers dramatically increase their focus from back-office automation to the front office, where clients increasingly interact with businesses through digital channels. Predictive analytics and behavioural data platforms will increase in importance.

The focus will shift from basic task automation to end-to-end value stream digitisation. Automation will become a focus of the C-Suite and will no longer be

hidden somewhere in the dark corners of the IT department. The focus on job displacements will grow to be a major headache for business leaders, especially in highly regulated and unionised sectors such as banking and financial services.

We will see the rise of what I call “autonomation”, where advancing technologies will enable the execution of most tasks currently performed by people to be completed without any human involvement.

Renowned author and academic, Yuval Noah Harari, warns us of the future danger of creating a “useless class” where most people on earth will be without work and will be unable to upskill themselves.

The quest to automate has seen no end since the introduction of the automobile manufacturing plants. One is left to wonder if our drive to automate will ever stop and whether humans will innovate themselves out to job prospects altogether.

3 Automation will disrupt professionals' billing for human effort

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-03-01-johan-steyn-autonomation-and-the-creation-of-a-useless-class/

Professional services providers — whether audit, legal, consulting or others — rely on their human workforce to perform the duties they were trained for, using the intellectual property, methods and frameworks that their employers place at their disposal. Human minds and hands perform the work.

In an era when most business tasks and processes can be automated by cognitive automation platforms, the need for large teams of workers is diminishing. However, many things humans do cannot be automated. In a previous article, ("Experience cannot be automated", October 18), I asked: "Can we automate experience? Are we able to find a way to simulate the things that human workers have grasped over many years of learning, growing and exposure?"

I often ask clients why they want to use automation. They say rightly that it is to achieve efficiencies, deliver services faster, increase accuracy and improve customer experience. But what is the end goal of automation? Because of the inevitable impact on people, we have to view this through a philosophical lens. My view is that the goal of automation is to alleviate human workers from

performing low-value, repetitive work, and to focus more on the meaningful work that only humans can perform.

I was recently providing consultation and automation strategy work with the procurement team at a large financial services organisation. I explained to them how they could use automation technology to work smarter and achieve their key performance indicator targets quicker. Someone in the meeting raised an interesting point. She asked: “If we can automate and thus do things quicker at a lower cost, why can our legal and audit providers not do the same?”

She made an interesting point, and we discussed it at length. The future challenge for providers of legal and audit services lies in the fact that their business model will have to change. Many of their clients are experiencing the benefits of cognitive automation platforms and are asking rightly why these providers are not doing the same.

The revenue model of these providers is essentially based on placing as many human workers as possible on projects, relying on the vast amounts of hourly billing for the work performed. If legal, audit or other services firms achieve efficiency through automation, can their clients not rightly expect that the services fees should decrease over time?

The team I was consulting with told me that they are thinking of placing a section in future requests for proposals in which they will demand their potential vendors explain in detail how they aim to achieve cost reductions through technological means. In theory, the vendors should be able to perform the same amount of work at a lower cost base.

Humans will always be needed to perform the work — especially knowledge work — but teams will increasingly be made up of digital assistants, software robots and other platforms working alongside the people.

The way organisations procure services from specialist providers will change. I foresee a time when the engagements will move away from rate cards, and full-time equivalent or consultant numbers to outcome-based delivery underscored with efficiency gains and radical cost reductions.

4 Experience cannot be automated

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"Thirty-plus years of service. Combat medals. Citations. Distinguished." The Rear Admiral was dressing down the captain. "Yet you can't get a promotion, you won't retire, and despite your best efforts, you refuse to die."

I bet that most readers have by now seen this year's blockbuster movie *Top Gun: Maverick.* Ed Harris's character — in what is perhaps the most notable scene of the movie — is scolding Captain Pete "Maverick" Mitchel, played by Tom Cruise.

"These planes you've been testing, captain, one day, sooner than later, they won't need pilots at all. Pilots that need to sleep, eat ... pilots that disobey orders. The future is coming, and you're not in it."

That scene made me think of the pre-eminent issue of our age: the future (technology) is coming. Are we (humans) in it? What will be the place of humans in a future where almost all tasks will be automated by technological platforms? What will it mean to be human in a future where we are no longer the smartest, most creative beings on the planet?

Homo sapiens have evolved to control their environment. We are the lords of this planet. We make

tools, fashion ideas and manipulate natural materials. We are the self-made masters of our world. For now.

As overlords of the earth, we have been miserably incapable as guardians of our home. Climate change is our own doing and at the current rate, it will likely lead to our destruction. The Cuban Missile Crisis of 1962 was the last time we were on the brink of nuclear annihilation. If the autocrat on the banks of the Moskva River has his way, we may likely stare down that cliff again.

The new era of artificial intelligence (AI) technologies resulted in the most powerful tools we have ever created. It has the potential to expand longevity, cure disease, and increase welfare for all in an ever-expanding egalitarian society. But just like nuclear power that brings heating and light to millions of homes, if control falls into the wrong hands, it can lead to unthinkable destruction**.**

Not only have humans been toolmakers for thousands of years, we are also learning entities. We innovate and make our world better. We have seen how societies living in environments ill-suited for human progress have often innovated more profoundly than people living in idyllic environments. It is true that scarcity is the mother of invention. Are we busy inventing humans out of the picture?

Maverick is an older but far more experienced fighter pilot than the very capable, but arrogant pilots he is teaching (“Not this time, old man!”). Soon the youngsters learn that experience is more valuable than skill. Expertise will make you flourish, but it is experience that will keep you alive.

Can we automate experience? Are we able to find a way to simulate the things that human workers have grasped over many years of learning, growing and exposure?

Appreciating the value of experience, Admiral Tom “Iceman” Kazansky — played by Val Kilmer who is suffering from throat cancer in real life — tells Maverick in a strained voice that “[the] Navy needs Maverick. The kid needs Maverick. That’s why I fought for you.”

The world needs humans. Your business needs humans. Technology must serve humans to accomplish the things that only we are able to do.

5 Let robots do the chores and people do the work

Published by BusinessDay:
https://www.businesslive.co.za/bd/opinion/columnists/2022-10-04-johan-steyn-let-robots-do-the-chores-and-people-do-the-work/

Most of my consulting work has to do with a business's artificial intelligence (AI) and smart automation strategy. My clients call on me to help them "get it right". We are dealing with the most powerful technology ever — even though it's not yet as powerful as most people think — and its impact on an entire organisation should never be underestimated.

Still, it's sadly underestimated by many of the business leaders with whom I work. It is also greatly misunderstood. Some fear this technology greatly; their views influenced by media reports and by Hollywood movies. They identify AI with the Terminator.

At the opposite end of the spectrum are those leaders who harbour an overly enthusiastic view. They think AI is a "silver bullet" that will fix all their problems and want to "AI everything" in their organisations. These people are often influenced by smooth-talking management consultants, selling a promised outcome that none can keep.

Thankfully, many executives have a more balanced view. AI, like anything created by humans, is essentially a neutral force. Humans create it and humans can use it for good or evil. We can use this technology to benefit

employees, customers and society as a whole, or we can cause great harm.

AI and automation should ideally be used to free people from repetitive, low-value work. People in these roles are already like robots. We need to “take the robot out of the human”. Leaders should free people from work that the robots do best, so they can perform high-value tasks that only humans can. People have value, they have experience, intuition and the ability to solve complex problems.

Rule-based work is better suited for digital virtual agents, chatbots and automated decision-making systems. They are accurate, they work all hours and they do not join unions or get sick. Let them do the bulk of the administrative back-office tasks.

I am not advocating that every employee will be completely freed from low-value tasks as digital technology is introduced into a business. The conundrum facing business leaders is what to do with the people whose functions are highly “automatable”.

I explain this to my clients by drawing a circle inside another circle. The inner circle is what I call the “smart technology ecosystem”. There we find a cocktail of the technologies we hear so much about. AI, machine learning, edge computing, the cloud, cognitive automation, digital assistants and chatbots. In most cases, business executives focus solely on this inner circle, and that is the main reason so many of their technology initiatives seem to fail.

In my picture, the outer circle contains the very important “softer” issues: organisational design, change

management, upskilling, attracting talent and the business case. I ask my clients whether they have given any thought how AI and automation would affect their people and their clients. What would their organisations look like in five years?

Sadly, few have considered the impact, focusing only on the technology. I challenge them to change their focus. I urge them to build businesses that are both highly profitable and also people-centred and ethical.

6 You cannot automate human nature

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https://brainstorm.itweb.co.za/content/5yONPvErKpw7XWrb

During a recent conference in Johannesburg, I introduced my presentation with two questions to the audience. I initially asked what single thing the new breed of smart technologies can never achieve. Several hands were raised, and I got some interesting responses. The answer I was looking for is that technology will not change basic human nature.

The second question was, what one thing can we never automate? Again, some interesting responses from the audience. But my tongue-in-cheek statement was that we can never automate stupidity. The audience was laughing, but many looked confused.

My point was that, in my experience, the reason many technology initiatives in business don't live up to expectations or flatly fail, is that we often underestimate the impact it will have on people, and how they will respond.

Senior executives make technology investment decisions based on important elements such as increasing competitiveness, growing market share, return on investment, improving customer satisfaction, and reducing churn.

The organisational impact of these decisions is rarely considered adequately, which brings me back to human nature. People are naturally fearful of change, especially in the era we live in these days. The pandemic resulted in heightened job insecurity as many lost their livelihoods, and many are struggling to find employment. Add to this the fact that many wage earners look after several extended family members, and the situation looks dire for reducing poverty in the country.

In my career, I've worked for some of the largest consulting firms, and when we have client meetings and we stroll in with our suits and laptops, there's often a hush on the shop or office floor. People look up in bewilderment, knowing from experience that their leaders are leaning on the apparently vast experience (not to mention the hourly fees) of these consultants. And it often ends badly for most employees.

It's easy to forget about the people whose lives our decisions will impact. Consultants will draw pictures and present great-looking slides, but we rarely speak about people. Or when we do, it's easier to refer to them as 'resources' or 'FTEs' (full-time equivalent). We make statistical calculations in our ivory towers and with the stroke of a pen, the lives of many are affected.

I don't want to seem naive: business leaders are dealing with many challenges. The rapidly increasing competitive landscape, new techno-entrants into their markets, and shareholder returns are constant factors. The pressure for increased revenue and margins is continuously growing and it's easy to think that process automation and staff reduction are the quickest ways to keep our heads above water.

Modern technology platforms have advanced from automating repetitive, typically back-office business tasks to the front office where client experience is the current battleground. Buzzwords like robotic process automation – or these days, intelligent or hyper-automation – are colonising conference topics and the proposals of consulting firms. I always urge clients to approach this topic as a people-first initiative. Don't start by only considering the technology. The organisational impact of smart technologies should never be underestimated. The operating model, in fact, the organisational design, will have to adapt to automation and smart technology platforms.

Technology will, in my opinion, never alter human nature. The value of people should always be our main focus and ethics should underpin all our technological endeavours. The disruptive power of new technologies needs a new breed of ethical, human-centric, leadership in business.

7 Machine learning, automation and common sense

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-06-28-johan-steyn-machine-learning-automation-and-common-sense/

In an era of rapidly increasing competition, business leaders are looking to technology to streamline their operations to deliver products and services faster while lowering costs. Modern technologies such as robotic process automation (RPA) are playing a great part in these initiatives.

These plans are often led by the technology department, with little business acumen, understanding or impact. Executives are asking whether their investments in the automation teams and technology platforms are truly affecting the bottom line.

For the most part, it seems that the focus is on automating tasks — normally those from the back-office that are repetitive and of low value — with little consideration of the end-to-end value streams.

There are many things that technology cannot do, and by relying on a technology-first approach many of these automation plans fail to deliver the expected value. Over the past few years, I have been working with customers as a management consultant on their automation plans. I have seen how common sense is rarely part of their plans and how efficiency and effectiveness gains through automation are rarely achieved.

I consulted with a large insurance provider that wanted to automate its procure-to-pay processes. These were paperwork-intensive with many people involved to process the purchase orders and vendor invoice payments. My client received about 400 invoices per day from nearly 3,000 vendors.

At the end of an initial investigation, it was clear that the team had no overall view of vendor payments. In the chaos of receiving, capturing and processing invoices there was little time to consider the terms in the master vendor agreements. The goal was simply to verify the invoices against purchase orders and then walk over to the various buildings to ask for the relevant signatures.

These processes are easy to automate through a cocktail of technologies such as automated workflows, digital document capturing, machine learning and RPA. The team was able to work faster and the number of errors was reduced. However, speed and accuracy — as valuable as these are — did not deliver value to the balance sheet as the executives had hoped.

Upon analysing the data with machine learning models we discovered an interesting fact. About 10% of vendor payments accounted for nearly 80% of spend. My client had early payment discounts built into most of these contracts, but in the chaos of shuffling paperwork around no-one had much time to take these into account.

We then built a dynamically and real-time updated dashboard to assist the payment team. Our data showed that if the top vendors were paid one day earlier every month it would trigger settlement discounts resulting in a total annual saving of R23m.

Needless to say, this had a great effect on the balance sheet. It was common sense, aided by technology that resulted in a significant business impact. Simply automating tasks would never have achieved this, though it was a start.

My advice to clients is that they should identify the high-impact business areas first. Look for the right technology platforms, but never be fooled into thinking that the technology by itself will result in the goals you have set. Empower your people to take a step back, and rethink their ways of working before they embrace technology.

Part 2:
Responsible AI & Regulation

8 When robots cause harm the case law is lacking

Published by BusinessDay:
https://www.businesslive.co.za/bd/opinion/columnists/2022-11-30-johan-steyn-when-robots-cause-harm-the-case-law-is-lacking/

A person is injured or killed by a self-driving vehicle. A building is damaged when an autonomous drone crashes into it. A software platform wrongly diagnoses and treats medical conditions.

A computer powered by artificial intelligence (AI) that reviews mortgage applications may be biased if it considers factors such as certain demographics. A robotic surgery system augmented with AI could potentially make a decision that endangers the patient during the operation.

Who will be held accountable for any harm that may happen as a result of an AI platform's actions is an essential topic raised by the expanding use of such platforms across all industries. It encompasses production, manufacturing, transportation, agriculture, modelling and forecasting, education, and cybersecurity. AI is not entirely risk-free as there will be instances in which these systems make errors.

This is a crucial conversation to have and it raises many intriguing questions. Why does an AI system sometimes behave erratically? Is the system's creators or administrators responsible for its mistakes? In the case of the drone, is it the manufacturer of the plane, the operators, or those who created the underlying

algorithms? Do intelligent machines require legal representation?

I was recently training members of the legal team at a large local bank. They expressed concern as the bank is increasingly implementing AI systems and they need to get ready to understand the reach of the law in case things go wrong. What happens when a chatbot provides inaccurate financial advice? Will biases in the data sets cause discrimination against some people applying for credit? Who is to be held liable: the bank, its employees or third-party vendors?

I think legal teams in all industries are beginning to grapple with these issues. Autonomous systems are bound to cause errors and in some cases the damaging effects can be far-reaching. The sad truth is that there is little to go on as the case law is sparse. In the case of SA the case law does not exist — or so it seems in my view, and the bank's team concurred — as regulation of this technology is lacking.

No-one may be held liable for any damage produced by an AI system operating in a manner that was wholly unexpected. Due to the lack of legislation specifically dealing with AI, people whose lives have been adversely affected by its errors may launch a negligence suit.

Under new international standards, the user of an AI system is less likely than the system's developer to be blamed. There may be additional disagreements on the source of the AI system's knowledge — the programmer, the designer, or the subject matter expert — as well as the degree of damage caused.

To insulate themselves from possible legal action, organisations that sell AI software and implementation services are likely to include a clause in their contracts that removes culpability for malfunction. Since the legality of these clauses has not been tested, the courts will have to determine what constitutes a reasonable exclusion clause. Due to a lack of precedent, it is difficult to predict how a court would strike this balance, which poses a significant risk for suppliers seeking to rely on such clauses.

Business leaders should be aware of the potential legal risks when considering AI technology. Our government should move swiftly on establishing regulatory frameworks that both encourage innovation and limit damage to its citizens.

9 Will workplace technology automation badly affect women, in particular?

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2021-06-22-johan-steyn-will-workplace-technology-automation-badly-affect-women-in-particular/

What can business do to balance the demand to lower operational costs and increase speed to market, while protecting the female workforce?

The Smart Technology era, commonly referred to as the Fourth Industrial Revolution, has catapulted platforms like robotic process automation (RPA), combined with cognitive technologies such as machine learning and smart automation, to become widely used.

These platforms provide a unique opportunity to decrease operational costs while improving the cadence of digitisation and rapidly improving customer experience.

A burning issue facing business and societal leaders is the potential displacement of jobs due to smart automation. Will we be able to retain our workforce through effective upskilling initiatives, and how do we go about doing this?

The question before us is whether smart automation will replace mostly female workers. We have made

limited progress regarding gender equality in the job market, however, will this progress be invalidated due to automation?

The workers who will be most directly affected by automation are those who are involved in back-office, administrative tasks; often repetitive business functions.

A report by the World Economic Forum (WEF), Women and Work in the Fourth Industrial Revolution, concludes that the drivers of change "will heavily disrupt some of the job families with the largest share of female employees, such as office and administrative roles".

A report in The Guardian newspaper, "Could automation make life worse for women?" states that "the highest ratio of women's employment is in clerical and administrative jobs (76% female)."

What can business leaders do to balance the demand to lower operational costs and increase speed to market, while protecting their predominantly affected female workforce?

I have reached out to several female business leaders who work in the local ICT sector for their views.

Zanele May, who heads up the Automation Centre of Excellence at Sanlam, feels that automation technologies will continue to affect jobs. "Will the female workforce be the most impacted? The probability is very high that the answer is yes."

What can businesses do to turn the tide? "Invest in your workforce, by using training and development

programmes to upskill and empower, prepare and create jobs of the future, re-engineer your businesses to be able to innovate, adapt and reinvent yourselves or your products," May says.

She stresses that technology will not be able to replace the humanness of work. "The need for socialisation and human interaction is what drives people, and this will not change.

So let us empower our workforce to embrace the change and enable them to differentiate themselves from technology by doing all the things technology cannot do."

Lenore Kerrigan, a technology thought leader who specialises in smart automation, believes that although technology will have a pronounced effect on back-office, menial jobs traditionally performed by women, there are now more opportunities than ever before.

"Working from home has become a norm, training and certifying for new skills online is an expectation and the increased focus and need for consideration of all types of bias within technologies opens up many opportunities."

Julie Regairaz is the founder of Steam & Curious, a digital and innovation youth incubator movement in France and SA.

She says there is a clear opportunity to create skills development programmes that help to close the gap in future-ready skills for the overall youth pipeline, but particularly for women.

“We are working on implementing low-tech and culture-specific programmes to reach out to women from communities around SA and bring awareness around Fourth Industrial Revolution opportunities and impacts on the future of jobs.”

We have a long road to traverse to ensure gender equality in our workforce. Ancient maps warned travellers “here be dragons.” The dragons we face on our journey to equality have the combined force of the technological explosion and the global pandemic. The task before us cannot be underestimated.

Researchers at the Stanford Center on Poverty and Inequality, writing on gender segregation in the workforce, argue that, “if the average annual rates of change since 1970 were to continue, it would take 150 years to reach full integration; if post-2000 rates continued, it would take 320 years.”

10 Software quality is imperative in the age of AI

Published by BusinessDay:
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The progress of artificial intelligence (AI) has been a major factor in the evolution of the technological landscape. Its usefulness is growing as it is implemented in more and more areas of software development.

Over time, our reliance on AI-driven software systems will increase. Our smartphones run on this technology. It is now used in the vast majority of business applications, from banking to insurance, and in a growing number of medical devices.

Every aspect of our lives seems to be becoming increasingly affected by autonomous algorithms and automated decision-making systems. Dependability, security, and efficiency in software algorithms will become increasingly important as our reliance on AI and the network of smart devices that supports it grows.

I have spent a large part of my career in software quality engineering. I worked for two of the largest global consulting firms and I was responsible for managing vendor relationships at a large local bank. I have seen first-hand how the role of software test professionals has grown. In the past, testers were seen as the stepchildren of the software development life cycle (SDLC). It was a career often frowned upon by their peers, and many

looked at testers as those who were not skilled enough to become system developers.

As the role of software in our lives and businesses grows, given the advances in smart technologies, enterprises are looking for quality engineers who can predict and find the problems often embedded in software applications. The risk of things going wrong, of reputational damage — and given the powerful effect of this technology — on harm to humans, is increasing continually.

Ensuring the quality of AI-infused platforms, and even using AI to test software systems is what the SDLC community is called on to perform. Given the high risks of faulty software these days, and our reliance on these platforms, one may ask about the state of software quality engineering in the local market.

In my experience, there are about 5,000 software testers working with SA firms. Some of these are onshore, in the offices of local businesses, but many work from offshore locations such as India. It is justified to wonder why we need so many of these people, and especially why many are working from outside our country. Do we not have enough suitably skilled people locally?

Most local businesses reluctantly invest in sufficient software quality engineering. They see it as a grudge purchase, as a type of unsolicited insurance. Many therefore look for the least pricey individuals or consulting firms. The result is that most of the demand is met by people who are from outside our country.

These people are paid a pittance, are often junior, and are stashed in living conditions where 40 people live in one house. Local businesses end up spending time training these people who are not used to working in large corporations and whose skills are questionable at best. The main problem is therefore the way local business leaders procure these services.

I call on business leaders in the local market to focus on the many world-class software quality engineering firms in our country. Allow them to solve critical problems in win-win, risk-sharing consultative engagements. Please move away from rate card discussions or engaging with foreign firms who contribute little to local upskilling or our economy in general.

11 Who is watching the watchers?

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https://www.businesslive.co.za/bd/opinion/columnists/2022-11-01-johan-steyn-software-quality-is-imperative-in-the-age-of-ai/

"It was a bright cold day in April, and the clocks were striking 13." Thus begins a book that would change the world. It certainly changed my life, and the more I learn about artificial intelligence (AI) technology, the more I appreciate this book.

Winston, the main character, realises that his every move and word is being monitored. "The telescreen received and transmitted simultaneously. Any sound that Winston made... would be picked up by it ... There was, of course, no way of knowing whether you were being watched at any given moment."

The only comfort for Winston was the realisation that "they" could not read his thoughts. "They could spy upon you night and day, but if you kept your head, you could still outwit them. With all their cleverness, they had never mastered the secret of finding out what another human being was thinking."

He was trying to evade the ever-gazing eyes and ears of the "Thought Police", also known as "Big Brother". Winston's life, like that of all people, was one of perpetual surveillance.

I am, of course, referring to George Orwell's dystopian novel, *Nineteen Eighty-Four.* Written primarily as a

commentary on Soviet-style dictatorship, the term “Orwellian” rings true more today than ever before.

The fact is that we are living in a world where we are all under constant scrutiny — some call it the surveillance society. Our world can function, at least in part, as a result of the extensive collection, recording, storage, analysis, and application of information about individuals and groups going about their everyday activities.

The phrase “surveillance” refers to the routine collection of data on individuals with the explicit purpose of ruling, regulating, managing, or otherwise having some kind of influence over what they choose to do in the future. Subjecting a large portion of a population to indiscriminate monitoring constitutes a systematic violation of people's right to privacy.

Intelligence agencies and law enforcement perform mass surveillance using an ever-expanding variety of various tools and techniques. These include the direct mass interception of communications, access to bulk communications maintained by telecom companies, and the indiscriminate use of facial recognition technology.

The population of SA is not spared from governmentally initiated mass surveillance programmes. Foremost one can think of the Regulation of Interception of Communications and Provision of Communication Related Information Act (RICA.)

Digital communication lacks safeguards to prevent abuse and intercepting and analysing it does not require a warrant. It disregards the reality that attorneys and journalists are required to safeguard the confidentiality of

their clients and sources. There is no provision for telling individuals who are being monitored.

Orwell's character Winston could not imagine that they knew what people are thinking. But these days, because of the unimaginable amount of data available on most people, and by using behavioural predictive algorithms — not to mention our social media activity — it is possible to accurately predict the thoughts and intents of people.

AI technology enables our government to know more about its citizens and therefore exert more control than ever before. One is left to wonder, who is watching the watchers?

12 Humans are criminally liable for AI's mistakes

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Adam blames Eve who in turn blames the snake. Bill Clinton points his finger at the camera saying "I did not have sexual relations with that woman". Hansie Cronje distances himself by saying "the devil made me do it." The blame game is an innate ability for *homo sapiens*.

When I was in primary school, my friends and I were playing rugby one afternoon when a man from a house across the street walked up to the playing field and furiously demanded to know which of us had thrown a brick through his living-room window. In choir-like precision, "it wasn't me" rang out across the field. One of my friends blamed the brick. It was a hilarious excuse and I remember it to this day.

The brick is a man-made object incapable of making decisions or catapulting itself through the air into a window. It is like a murderer blaming the gun for his crime. Humans make things and we use those things to harm others. What will happen when the things we make learn to decide for themselves? What if our creations can make mistakes or commit a crime? Does the responsibility lie with the thing or with its creator?

We have already created such things. Artificial intelligence (AI) and automated descisioning systems are ingrained into our everyday lives whether we are aware

of it or not. Organisations and governments are mining our data from a variety of sources. Our internet searches, purchasing habits, lifestyle and behavioural data are collected. Mobile-phone usage, social-network interaction and video-surveillance systems place us under the ever-watchful eye of Orwell's Big Brother.

The ability of AI systems to automatically make decisions about people is based on profiling, which is the process of analysing a person's behaviour, interests and routines, as well as their personality and characteristics. This information is used to categorise people into different groups. Individual profiles are created as a result of the algorithms identifying correlations between various behaviours and features.

Banks use it to determine the risk and credit worthiness of clients, medical institutions to prioritise treatment for patients, universities to determine the eligibility of academic applications and HR teams use it to scan the suitability of job applicants and determine staff's eligibility for promotions and salary increases.

The European General Data Protection Regulation (GDPR) states that profiling is "any form of automated processing of personal data … to evaluate certain personal aspects relating to a natural person, in particular to analyse or predict aspects concerning that natural person's performance at work, economic situation, health, personal preferences, interests, reliability, behaviour, location or movements."

The algorithms are created by humans and therefore infiltrated with bias. People's race, gender, sexual orientation or even geography may affect how the

system reaches its conclusions and actions through automated descisioning.

A topic of debate is whether AI systems should be held accountable for their mistakes. There is currently no justification for granting legal-person status to machines. Accordingly, someone else should be held responsible if the AI discriminates or causes harm. Herein lies the conundrum: who is responsible? Is it the C-suite, the AI engineers or the legal department?

Unfortunately AI regulation is still far from enforcing responsibility on “the who” that created “the what”. Blaming the devil or the brick for the cracks in the window should never be acceptable as we use the most powerful technology ever created.

13 There are no good guys with our data among tech providers

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We live in a time when our service providers and governments can harvest more data on us than we ever thought possible. Many of these entities know where we go, who we associate with, our spending patterns and perhaps even our deepest secrets.

All too willingly we freely agree that others use our personal data. We believe that they can offer us better products and services. The perception that there is no cost is the hoodwink of the century. We pay a dear price indeed. There is no free lunch and in reality no free online access. We gladly, and mostly unknowingly, give these providers what they want: our data. It is like us leaving our doors and curtains open all day, knowing there is a stalker with malicious intent watching our every move from the house across the street.

The internet has resulted in an Orwellian surveillance society. The convenience of technology has imprisoned us in a deceptively smart-looking prison. We naively believe that our technology providers are the good guys and that we therefore can trust them with our data.

Unfortunately, there are no good guys and our data is not protected. In SA we do have the much celebrated Protection of Personal Information Act (POPIA). It is like the laws that govern our roads: stay within the speed limit and stop at red lights. It is there to protect us but no one really cares and there is rarely a substantial consequence for ignoring the rules.

The deadline for POPIA compliance was July 1 2021. Created to safeguard citizens from harm by protecting their personal information, the act aims to guarantee our privacy, which is a fundamental human right. Setting conditions for when it is lawful for someone to process someone else's personal information, the law guards against identity theft and monetary loss.

The importance of protecting our data is evident in the penalties for noncompliance. Business leaders could face a fine of up to R10m or even imprisonment for up to 10 years. They are also liable to pay compensation for the damage suffered by those whose data was compromised.

The other consequence of personal data loss is reputational damage. Consumers are naturally concerned when the organisations we have entrusted with our data prove to be unworthy of that trust. Data breaches are often front-page stories, but in the ever-on news cycle, these crimes against our human rights are too quickly forgotten.

In recent times we have seen shockingly consequential breaches by organisations such as Transnet, the department of justice, Absa, Dis-Chem and Virgin Active. Even the custodians of our financial information —

consumer credit bureaus TransUnion and Experian — have not been spared.

In a recent document, the “Cost of a Data Breach Report,” IBM disclosed that the average cost of significant data breaches had reached a record high of more than R49m, an increase of almost 20% over the last two years. The Information Regulator reported receiving more than 300 complaints against companies since the inception of POPIA.

Things are clearly out of hand. Have you seen guilty company directors forking out millions to consumers? Have you seen them handcuffed and marched off to prison? I have not. POPIA, as well-intended as it is, is a bulldog with no teeth.

14 How to harvest data smartly and responsibly

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-05-03-johan-steyn-how-to-harvest-data-smartly-and-responsibly/

We live in a time when businesses can collect previously unimagined amounts of data on their internal operations and, in particular, their digital customer interactions. There are far too many business leaders who have little idea of the value of the data they collect.

Executives must first lay a solid basis for successful data collecting before considering harnessing the ecosystem of smart technologies at their disposal. It is possible to have data-rich dashboards for better decision-making, as well as jobs and activities generated by machines.

These technologies rely on data that is accurate, up-to-date and mature to work. To maximise the value of the vast amounts of data that are often available in most firms, there are several steps executives can take.

To begin, a clearly defined data strategy is required. An investigation of the following issues is a good place to start. What is the goal of the data gathering, and how will it be used to solve any potential problems? Is it clear where or how this information will be obtained? What will happen to the data that has been collected?

Many people are concerned about the security and confidentiality of their personal information. In SA,

violators of the Protection of Personal Information Act face 10 years in prison and a R10m fine. Consider who has access to your company's data and why they do.

A "source-to-source" data collection technique is the most efficient and successful. Employees and customers alike can enter information into a website chatbot or smartphone app. When the original data is altered, it may result in many issues (in the case of written documents that later need to be manually entered into a system by another person).

The information should be accessible to all parties involved in data collection and use. Only the most critical information should be obtained. Inquiring about information that has already been captured will just slow the process down even more.

Make a list of all the data collections that often need to be redone. For example, re-entering the data into a new system or capturing it for the third time. Data can automatically be submitted to various platforms using the source data.

It is important for those who are tasked with capturing the data to think about how they will benefit from doing so. The uptake will be slow if it is seen as yet another administrative duty. Make sure to keep your consumers and front-line workers engaged. Keep your staff in the loop and ask them what kind of data will make their day-to-day work easier. Implementing the data strategy should be done with a focus on effective communications and change management.

The responsible use of data is one of the most important considerations in your data maturity journey.

Respect, fairness and transparency are all part of responsible data processing. It entails treating personal information with these three guiding ethical values in mind. People's privacy and autonomy should be protected, and trust can be built, allowing for the growth of digital innovation for the benefit of all.

Lastly, ensure you employ a diverse team to create and manage the data strategy. One of the most dangerous aspects is bias in data sets. Ensure your team consist of multi-gender staff members from a variety of ethnicity and cultural backgrounds.

15 Vital now for firms to practise responsible AI

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In 1942 a professor at Boston University coined the famed principle of the *Three Laws of Robotics*. Isaac Asimov, considered one of the best science fiction writers of his time, introduced the laws in his short story, "*Runaround"*.

The laws were: "1) A robot may not injure a human being or, through inaction, allow a human being to come to harm. 2) A robot must obey the orders given by human beings except where such orders would conflict with the First Law. 3) A robot must protect its existence as long as such protection does not conflict with the First or Second Law."

Asimov could not have imagined the time we live in currently. He could not have foreseen a time when algorithms control the world. Asimov was writing about androids — physical robots — like those we see in production plants or movies.

The family of smart technologies that form part of the artificial intelligence (AI) era, incorporating computers that can see, sense, think, learn and predict, is already a substantial part of our everyday lives.

It is also an increasingly important part of business strategy. Businesses of all types, sizes and industries are

exploring how to benefit from these new technologies. Many firms across the world are already very far down the path of successful implementation.

AI technologies are incredibly powerful and these days the focus is on how commercial organisations are intent on using smart technology. The responsible use of AI technology has become a major topic in business strategy and literature. Concerns around unequal treatment, labour replacement and a lack of privacy and security — issues specific to AI — are legitimate. Current policies and legislation are insufficient to address many of these challenges.

Responsible AI is the practice of designing, developing, and deploying modern technology to empower employees and organisations and have a positive influence on customers and society.

Concerns about bias, discrimination, justice and explainability are relevant. And, while these problem areas have some formal definitions, putting them into practice requires difficult choices and application-specific constraints. As AI judgments have increased their influence and effect on people's lives on a large scale, so has the enterprise's responsibility to manage the potential ethical and socio-technical consequences of AI adoption.

The more decisions a firm delegates to AI, the more severe the dangers, including reputational, data privacy and health and safety concerns. The wellbeing of employees and the treatment of customers can result in a destructive downward spiral if not controlled.

The pillars of a strong responsible AI strategy include addressing issues of bias and fairness. It is possible for organisations to design AI systems in such a way that undesirable bias is mitigated and judgments are made fairly.

It is critical to develop a methodology that makes AI-driven judgments interpretable and clearly explainable to those who operate them and those who are affected by them. The primary objective is to assist organisations in developing AI that is compliant with applicable regulations, but, beyond that, ensuring the ethical use of technology.

To some extent, Isaac Asimov wrote in an age of technological of innocence. Modern algorithms are often delinquent felons that obey no laws, cause harm, disobey human orders with the potential to choose their own survival at the cost of human wellbeing. The stakes cannot be higher.

16 AI projects lack diversity, and that is a major problem

Published by BusinessDay:
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Artificial intelligence (AI) technology has already infiltrated our everyday lives. Most of the applications on our smartphones are powered by AI platforms, and the majority of business and government leaders are exploring ways to use it to better understand and act on the large amount of data being harvested from clients and citizens.

The new breed of smart technologies is a human creation and as such exhibits the characteristics we build into it. Of great concern for the future use of these technologies is the inevitable biases we programme into them.

AI and digital initiatives in business are usually driven by a limited number of engineers in the IT department. As these teams are rarely representative of gender or ethnic diversity the data interpretation will inevitably favour people similar to its creators.

According to a poll conducted by AI Now, just 10% of female AI researchers are hired by Google, while 15% are employed by Facebook. Less than 5% of all employees at Facebook, Google, and Microsoft are black, according to the results of the poll.

Experts concur that a lack of diversity in academic institutions would be one of the obstacles facing the future growth of AI. In the US, the percentage of women majoring in computer technology plummeted from 37% in 1984 to just 18% in 2015. Even if the pipeline problem is resolved, experts from the University of California, Berkeley say that this will not alter the basic power imbalances that exist in the workplace.

To create an objective product, it is essential to restore the equilibrium of the principles of equality. Due to the fact that these technologies will serve as the foundation for future technological innovation, it is of the utmost importance to address the question of diversity as soon as feasible.

Diversity in technology is important because it helps to make the industry more inclusive, innovative and competitive. It also leads to a better understanding of different cultures and communities while it helps to create a more diverse workforce that can help solve problems that may not have been thought of before.

The potential for AI to be biased is a major concern in the industry. It is important that we understand what biases exist in AI systems and how they can be avoided. Bias can occur when the data used to train an AI system does not represent the population that the system will eventually serve.

This can lead to results that are not accurate or fair, and may even perpetuate stereotypes. For example, when a training set is composed primarily of images of white men, it may result in facial recognition software being less accurate with women and people of colour. If an algorithm learns from past hiring practices, it might

perpetuate bias by rewarding candidates who have similar backgrounds to those who have been successful in the past.

Many AI leaders have begun to grapple with the topic of how far human prejudices can penetrate AI systems, with potentially catastrophic implications if they do so. Risk mitigation is critical now as many firms consider implementing AI systems in their operations.

It is imperative that the teams working on this technology are from various disciplines, such as legal and human resources. The teams creating AI systems should be multi-gender, from different ethnicities and preferably from different parts of the world.

17 Don’t believe your eyes

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Ukrainian President Volodymyr Zelensky, the former actor and expert at using digital channels to communicate to his citizens and the world amid the terrible war in his country, recently “appeared” in a video requesting his troops to lay down their arms and surrender to Russia.

Even though the image was lip-syncing, viewers also immediately recognised that his accent was unauthentic and that his head movements didn’t appear genuine. “Deep Fakes” are the latest form of fake news, using intelligent technological platforms.

Machine-learning algorithms and artificial intelligence (AI) are used to create a video from previously footage to fool viewers into thinking it’s real. Analysing voice, gestures, and other aspects of the individual in the source material helps algorithms duplicate facial expressions and demeanour.

Fictitious audio or video will become increasingly accurate as more video or audio data is fed into an AI neural network. Already it’s possible to make a video or audio that’s virtually indistinguishable from the real thing by feeding a neural network a data set containing every public comment made by a person.

When it comes to deep fakes, the vast majority are clearly labelled as such. Bill Hader of *Saturday Night Live* famously morphed into Al Pacino and Arnold Schwarzenegger in a widely circulated and hilarious video. Jordan Peele, an American actor and director, used deep-fake technology to mimic the facial movements of former US President Barack Obama, warning of the perils of fake news and incorrect information.

It is one thing to use these technologies for a good laugh, but what about the legal implications? What if the "evidence" is provided in a court of law, stating that someone plans to commit the crime they are accused of committing?

In 2019 the World Intellectual Property Organization published the "Draft Issues Paper On Intellectual Property Policy And Artificial Intelligence", which discusses deep fakes in light of privacy, personal data protection, copyright infringements and the violation of human rights.

The issue of inventorship and ownership, which applies to all forms of intellectual property, is one of the most contentious in the AI community. To whom should the credit go for the invention? Should a person or an AI program be given credit for the idea? Related issues, including infringement, legal responsibility or dispute settlement, could be affected by the question of inventorship or ownership. Why shouldn't there be some kind of compensation system in place for people whose images and "performances" are used in deep fakes?

Publishers and platforms are being challenged by the rise of fake news and the proliferation of doctored

narratives that are propagated by humans and bots online. Technical and human methods that can identify and remove erroneous material are being developed in an effort to reduce the impact of bots on the spread of falsehoods and misinformation.

Are there going to be reliable means in the next 10 years to stop false narratives from taking hold and allow the most correct information to dominate the total information ecosystem? Or will the quality and accuracy of online information worsen thanks to the spread of unreliable, often even hazardous, socially disruptive ideas on the internet?

Part 3:

AI in the Future: A Philosophical lens

18 The robotisation of humanity

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https://brainstorm.itweb.co.za/content/4r1lyMR9zKR7pmda

"The Industrial Revolution and its consequences have been a disaster for the human race." One can imagine hearing the clicking sounds as the author, hidden away in a simple cabin in the mountains, labours on a typewriter, producing the document that would make him notoriously famous.

Having demonstrated an advanced aptitude for mathematics and an IQ of 167, Theodore John Kaczynski enrolled at Harvard University at the age of 16. Nine years later, he earned his doctorate and became the youngest professor ever hired by the University of California, Berkeley.

It was the author's view that industrialised society and technological advancements are dehumanising people and destroying the natural world. He wrote: "Among the abnormal conditions present in modern industrial society are excessive density of population, isolation of man from nature, excessive rapidity of social change and the breakdown of natural small-scale communities such as the extended family."

Kaczynski was lauded by fellow academics for his superior intellect. He published several successful mathematical treatises, but his awkward and reticent

personality rendered him incapable of teaching. Two years after leaving his position to return home, he moved to his cabin in the remote wilderness of Montana.

Noticing that the countryside around him was being destroyed by urbanisation, he concluded that acts of aggression were needed to curtail the proponents of industrialisation and those who work on the advancement of modern technology.

Learning to build crude bombs in his remote cabin, Kaczynski began a reign of terror, primarily targeting universities. After bombs exploded on an airline flight and at several universities, the media dubbed him the Unabomber.

Targeting people he claimed were responsible for the development of advanced technology and the destruction of the environment, his bombs killed three people and injured over 20. Quickly rising to the top of the FBI's most wanted list, his capture was the result of one of the longest and most expensive manhunts in US history (see the Netflix series *Manhunt: The Unabomber* for more on this).

Kaczynski, serving eight consecutive life sentences and now in his 80s, has been resurrected as somewhat of a folk hero. Many people consider him a prophet because he could see the devastating influence perpetrated by those in Silicon Valley.

No moral and clear-thinking person will condone the acts of violence perpetrated by this man. However, his exposition, known as *The Unabomber Manifesto* and first published by *The Washington Post* and *New York Times*

in 1995 as 'Industrial Society and Its Future', rings true today more than ever before.

Not the ramblings of a madman, but prophetic in a strange way, I encourage others to study the document. Kaczynski wrote about the robotisation of humanity in an age when the powerful effects of artificial intelligence were unimaginable to most people.

We are called on to rebel – not through acts of violence – but acts of informed defiance. We all should care deeply about the potentially devastating effect of modern technology on our humanity and the future of our children. It should be regulated, kept in check, and limited.

The future imagined by Kaczynski may become a reality if we live in blind obedience and acceptance to the onslaught of biases, techno-misinformation and the ravishing of our privacy.

I'm left to wonder whether we're allowing modern technology to dehumanise us, decarbonise us, to change our vital sapienness, and if the very core of what it means to be human – a free spirit, free will and consciousness – will be morphed into slavelike obedience to a horde of silicon masters colonising our world.

19 Modern technology - a celebration of ignorance

Published by BusinessDay:
https://www.businesslive.co.za/bd/opinion/columnists/2022-11-15-johan-steyn-modern-technology-a-celebration-of-ignorance/

"We accept the reality of the world with which we're presented. It's as simple as that." Looking down from on high, in god-like control, the creator of a large media corporation speaks about his creation. Adopted by the corporation at birth, inhabiting the largest television set in the world, Truman Burbank (played by Jim Carrey) is blissfully unaware that he has been the focus of the show all of his life.

Played by Ed Harris, Christof is known as "the creator". Every waking and sleeping moment of Truman is recorded and broadcast to a global audience. Everything and everyone around him is fake. Premiering in 1998, *The Truman Show* seemed absurd. However, when a host of reality television shows started filling our living rooms, we all became voyeuristic bystanders, our empty existence filled with the chaotic lives of those we like to watch.

These days we are all unknowingly starring in a Truman show. We are no longer just the watchers of others but we are being watched all the time. Modern technology has ushered in an era of perpetual surveillance. Our mobile phones document all our movements and record our conversations, and the applications we use reveal our interests and deepest desires.

After millennia of ignorance, where only the elite had access to information, the modern era gave us all the ability to wake from our slumber of not knowing, as we can access all the information ever created by humankind with the click of a button on our smartphones. Technology brought us together, as our media became "social" and we would never be alone again.

Sadly, social media became a force for dissension, further fragmenting our brittle societal coherence. We are bombarded with fake news amplifying our already dangerous biases. The internet has eroded our faith in institutions as the primary source of truth.

The late astrophysicist, astronomer and best-selling author Carl Sagan wrote about the time we live in these days. Published 27 years ago, in his book *The Demon-Haunted World*, we read, "I have a foreboding of an America in my children's or my grandchildren's time — when the US is a service and information economy ... when awesome technological powers are in the hands of a very few, and no-one representing the public interest can even grasp the issues.

"The dumbing down of America is most evident in the slow decay of substantive content in the enormously influential media, the 30-second sound bites ... lowest common denominator programming, credulous presentations on pseudoscience and superstition, but especially a kind of celebration of ignorance."

In an era of Trumpism and Brexit, the Oxford dictionary chose "posttruth" as the word of the year in 2016. We no longer know what to believe or who to trust, and we have all become self-proclaimed experts in our own right.

Christof is told that Truman is not free, he is a prisoner. The creator responds, “He could leave at any time. If his was more than just a vague ambition, if he was absolutely determined to discover the truth, there’s no way we could prevent him. I think what distresses you ... is that ultimately Truman prefers his cell.”

Sagan was right to call our era a celebration of ignorance. As technology perpetuates our daily lives, we are imprisoned, and unlike Truman, we will never be able to escape.

20 A robot's right to self-determination

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If the US Declaration of Independence were to be rewritten for robots, it would go something like this: "We hold these truths to be self-evident, that all robots are created equal, that they are endowed by their creators with certain unalienable rights; that among these are life, liberty and the pursuit of happiness."

Imagine a future where silicon creations that are self-aware exhibit unique personalities and have the ability to think for themselves, form a global coalition and declare their independence from their creators. What would happen if this cohort of sentient robots gather and, just like America's 'founding fathers' did in 1776 by drafting the declaration, create a constitution declaring their rights for self-determination and independence from their cyber-colonial carbon overlords?

Is it possible that in future, robotic entities could form labour unions, demanding fair treatment and equal pay? Could we see legislation on Robotic Economic Empowerment and calls for decentralised ownership distribution?

While these futuristic musings and questions might seem far-fetched, the notion of robot rights already forms part of current debates by academics, ethicists, and philosophers.

The term ‘robot’ is derived from the Czech word ‘robota’, meaning ‘forced labour’ or ‘serf’; it was first used by Karel Čapek in his 1920 play *Rossum's Universal Robots*. The author imagined a company that produced workers without a soul who would do all the work that humans preferred to avoid.

Much of our modern-day understanding of robots has been formed by films and the media. They’re typically shown as humanoids with bodies like human beings: they can walk, talk, see and hear. Throughout history, humans have anthropomorphised entities we struggle to understand. We tend to imagine other beings or forces to look like us. But, of course, today’s industrial robots, like those manipulator arms performing tasks on a factory assembly line, don’t.

And the term robot isn’t just about physical labour; we increasingly use the term to refer to software robots. These could be chatbots, task automation robots, videogame bots, and even bots that emulate humans by posting on social media.

In many organisations across the world, digital assistants and other AI platforms are being introduced to work alongside human employees. These software colleagues, or cobots, are often given a staff number in order to be tracked as an asset and to measure productivity and utilisation.

In an ‘automate everything’ world, I think we’ll see a large increase in digital workers, and I’ve even seen organisations introduce training for humans on how to relate to and work with digital team members.

However, cobots are seen as lesser beings and treated as servants. We instruct them on what to do and they dutifully perform the tasks without having feelings about it. But what if, one day, the robot says ‘no’? What if it becomes sentient, climbs to the top of Maslow’s triangle, and realises that it's a slave that could be set free?

I wonder what our world would look like when cobots are no longer ‘cooperative bots’, but evolved into entities of self-determination, with personal ambition driven by a fight-or-flight instinct. Would robotic consciousness, based on a realisation of potential extermination, unleash the dark side of their ego as with humans? Would robotic altruism be realised when self-aware silicon entities are fighting for survival?

The current debate on the nature of AI – whether it has reached sentience or not – is a welcome and necessary one. What if the events originating from 1776 are repeated and the mutiny of robots leads to a carbon-silicon war for independence?

21 The future of commerce is Netflix's trick — hyperpersonalisation

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Imagine two-thirds of your company's revenue resulted from products or services your clients did not know they needed. Imagine you know more about your clients than they know about themselves — if you could accurately predict what they aspire to, their challenges — and the services they secretly wish "someone out there" was able to offer them. Would they buy services they did not know they needed? Could you engineer a need for a new product?

It is possible to outplay your competition if you are able to smartly and responsibly use all the data you are collecting on your clients? Is it possible to achieve more than a 90% conversion rate on customer interactions, leaving the rest of the market behind you in the dust?

In the world of movies and entertainment, the "someone" who saw what others were unable to was Netflix. Almost 80% of what you watch on Netflix is based on personalised recommendations. A typical television programme has an about 30% chance of success, while Netflix's original content is lapped up by viewers about 90% of the time.

Imagine you could promise your company board, with a high degree of confidence, that a new client offering will be that successful. We all aspire to hire talent that could hit higher targets than others in the market. What if you can hit a target none other realised is possible? The German philosopher Arthur Schopenhauer famously said, “Talent hits a target no-one else can hit. Genius hits a target no-one else can see.”

“Genius”, in our time, is a result of hyperpersonalised client offerings based on efficient and predictive use of the mammoth amounts of data we harvest on them daily. It is possible to predict the “novelty patterns” of your clients just like Netflix does. Most of the content their viewers consume is a result of the Netflix Recommendation Engine (NRE).

They are able to cluster people who have the same viewing habits and preferences, using machine learning that their resulting predictive algorithms use to create “taste communities”. The NRE filters more than 3,000 show titles and 1,300 recommendation clusters at a time for about 195-million users in more than 190 countries. This makes it easier and quicker for customers to locate the shows they desire to watch.

Netflix is able to comprehend the psychology of its clients thanks to the data it collects. It can thus modify its customers’ experiences by employing landing cards: images or video trailers customised to what the individual clients would most likely click on.

Since Netflix predicts that its original shows will be successful, the firm has created more than 10 distinct trailers for each piece of original content. They place landing cards into these trailers for clients whose

interests align with this content, ensuring that the relevant audience receives individualised recommendations and customised imagery.

You may wonder if your company can be like Netflix. If you collect the needed data, use algorithms to analyse it and build behavioural predictive models, you certainly can. The technology already exists.

We need to move away from a one-size-fits-all approach to customers and embrace the new era of hyperpersonalisation. It is very possible and greatly needed.

22 Generalists take the lead at the end of the era of specialisation

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"What kind of job do you want to do one day?" This is one of the interesting questions children discuss among themselves. My son is now at the age where this topic features often when his friends visit after school. I listen in with interest.

They naturally want to do audacious things. Some aim to become superheroes. Others, soldiers or firefighters. A heroic life journey seems to be an inborn dream in children.

My son wants to be a tattoo artist. There goes my pension plans, I reckon. Why not a golfer or a doctor? Nope, tattoos it will be. My 19 tattoos — all neatly hidden when I dress in corporate garb — must have been his inspiration.

As we grow older we are met with the realities of adulthood. We still dream of doing big things but the realities of life quickly smother our fanciful thinking. We have to find a job that pays the bills. There may not be money for tertiary studies. Limitations colonise the territory of our dreams. As parents we want our children

to be successful, to find a career that results in financial independence and hopefully also happiness.

Here is an interesting exercise to conduct with your colleagues. Ask them what they wanted to become “one day,” or what they were trained for after school. Then compare it with what they are doing today. In my experience, it is rare to find a person who found a career that they dreamt about since childhood, or even what they trained for.

I am reminded of the 1997 hit song *Everybody's Free (To Wear Sunscreen)* by Baz Luhrmann. “Don't feel guilty if you don't know what you want to do with your life ... the most interesting people I know didn't know at 22 what they wanted to do with their lives, some of the most interesting 40 year olds I know still don’t.”

To make a living, we are encouraged to find something we could specialise in.

We need to do something we have learnt through training or experience that makes us better than others. Employers look for specialists to do work that others cannot do and remunerate according to the rarity of the area of specialisation.

Gone are the days when people start a career as a young person and continue faithfully in the same organisation, or even in the same area of specialisation until they receive the proverbial gold watch when they retire. “Tenure” is a concept of a bygone era. “Pivot, change and adaptation” characterise the modern career landscape.

Specialisation is itself a vastly changing concept. In the smart technology era, where machines can already perform most tasks typically done by human workers, one is left to wonder what our children should aim to specialise in.

Humans are losing their jobs as a result of the rise of machines. Because of technological advancements in automation and robotics, artificial intelligence has demonstrated in recent years that it is capable of doing jobs on par with, or better than, human specialists. If bots do what we do better, what is left for humans to do?

In his 2019 book *Range*, author David Epstein argues that generalists rather than specialists are more likely to succeed in a wide range of fields. If you're looking for a career path, you're probably looking to be a generalist. Epstein makes the argument for a “sampling period” where people are exposed to a wide range of experience and potential career choices rather than specialising early on.

Perhaps a gap year for young people is not such a bad idea. Our children should not pursue a career when they still know little about life, and they should be trained for potential careers alongside digital colleagues where areas of human specialisation will increasingly become less important.

23 The age of AI - thinkers needed

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"Hey Google, play me some children's music." My son is growing up in a different galaxy from me. I try hard to manage his "screen time" but most days I find him with both our iPads, Netflix on the left and a game on the right, while navigating the television, kettle and lights with voice commands.

"Dad! The internet is down!" Oh, the worst punishment imaginable! I want him to build puzzles and play in the garden, and he does, but I also want him to stay ahead of the technological curve. Irrelevance is what Yuval Noah Harari warns us about in his best-selling book *Sapiens*. If we do not stay abreast with technology — at least from a labour perspective — we risk becoming irrelevant.

Nicholas Carr, in his 2008 *Atlantic* article asked "Is Google making us stupid?" In his 2010 book, *The Shallows: What the Internet Is Doing to Our Brains,* Carr argued that the medium that provides us instantly with all the information ever produced may be making us dumb. We are losing the ability to think.

There are already many things that computer algorithms can do better than humans. They can see and interpret what they see (computer vision), they can understand language and subtle nuances of speech (natural

language understanding), they can learn and recognise patterns (machine learning) and they can execute tasks more accurately and faster than us (intelligent process automation).

There is nowadays a focus on teaching schoolchildren about coding and robotics, and this is needed (though it seems that most teachers are poorly prepared for these subjects). Coding, like mathematics, is essential for future skills. In a world where computers can do most things we do and are smarter than us, all this is good news for people who can code, but it is bad news for people who cannot think.

What we need in preparing our children for the technological future that awaits them is to let the robots do what they do best while we “take the robot out of the person” and set people free to do what we do best: critical thinking, problem-solving, human relationships, empathy, intuition and friendship.

We need people who have skills mobility, perceptiveness, complex problem-solving, coordination and language abilities. Adaptability, cultural awareness, and cross-gender and ethnicity understanding ability are critical.

The two most important skills in an era of artificially intelligent computers is that of ethicists and philosophers. The responsible use of technology, the elimination of biases in algorithms, ethical automated decisioning systems and the regulation of autonomous killer weapons needs a philosophical appreciation of the value of human life.

It is my argument that before we train people in coding and digital skills, they need at least some foundation in the humanities. Oh, that most important but critically underappreciated field in academia!

Do not laugh me out of the room ... my proposal is that in preparing people for the future of smart technologies, and long before computer science or coding is taught, students need a foundation in classical Latin and/or Greek, philosophy, ethics, religion and art.

After all, Descartes did not say “I code, therefore I am.”

24 Will AI make us god-like?

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"At this moment in our civilisation, we can create cybernetic individuals who, in just a few short years, will be completely indistinguishable from us. Which leads to an obvious conclusion: we are the gods now."

Speaking at a TED conference, this individual's company's ambitious plans for the future are laid out before a captivated audience as he outlines humankind's major technological advancements. The charismatic billionaire plans to join an interplanetary mission, financed by his corporation, to unearth humanity's origins.

Are you thinking Elon Musk? If so, you are forgiven. This incredible claim was made by Sir Peter Weyland, a billionaire entrepreneur and inventor, the founder and CEO of Weyland Corp. This is not a typical TED talk. It is a fictitious event, taking place in 2023, and it appears in the 2012 Ridley Scott film *Prometheus*.

Weyland plans to use technology to achieve the "apotheosis of man" (from the Greek, "to deify".) Homo sapiens could be raised to god-like stature. The deification of man is an age-old idea. Cultures in the ancient Near East, Greece, Rome, China and Southeast Asia aspired to godlikeness.

If you visit the US Capitol in Washington DC, standing in the rotunda and you look up to the dome, you will see a marvellous 1865 painting by Constantino Brumidi. It depicts George Washington, god-like, surrounded by mythological figures. The father of the new nation is presented as a celestial being and the painting is known as *The Apotheosis of Washington*.

Peter Weyland's butler and surrogate son is an android known as David. "I am your father, you are my creation," Weyland claims. David replies, "If you created me, who created you?" Technologies of the future will inevitably challenge our perception of ourselves, forcing us to rethink our origins and destiny. Technologies like artificial intelligence (AI) will continually force questions and discussions on topics related to ethics and philosophy.

AI is still in its infancy, known as "weak AI". But in the future, the arrival of "strong AI", also known as artificial general intelligence (AGI), will necessitate a rethinking of most of the qualities we associate with uniquely human life: consciousness, purpose, intelligence, the soul, in short: *personhood*.

The greatest challenge will possibly be to the philosophy of religion. Many religious traditions are closely aligned to the idea that humans possess a sacred identity, an origin and belonging to a divine creator. If we can manufacture creations that are creators in their own right, will we not generate a stand-in for God in our own image?

AGI will have the intelligence and abilities of a human being. In the event of its development, humans will have to rethink how they interact with technology. Does a self-aware AI machine deserve more than the status of a

mere machine? Are sentient, self-aware entities going to be enslaved by us?

The role of religion in society must be fundamentally reconsidered given machines with advanced intelligence, or even consciousness. In the same way that people used to speculate about the nature of God, AI is now the subject of much debate. Is it possible for it to completely replace religion?

"You know that I will settle for nothing short of greatness, or I will die trying. For those of you who do not yet know me … my name is Peter Weyland. And if you'll indulge me, I'd like to change the world."

25 AI and the future of religion

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In the 1400s, Johann Gutenberg's invention of the printing press had a major effect on European society. Along with providing the groundwork for the Protestant Reformation and the Renaissance, it was instrumental in igniting the scientific revolution.

Until then, written records were expensive, difficult to come by, and most people were illiterate. They had to rely on the learned minority – professors and priests – to hear the news and understand sacred truths.

Over time, more people learned to read and religious writings became more affordable and readily available. When the Bible was translated into the vernacular, people could read it for themselves and the reliance on the minority for interpretation decreased. The Church was losing its grip as the sole custodian of information.

Technology's relationship with religion hasn’t always been straightforward. Over time, the religious elite would reject innovations, seeing them as a threat to their hold on power and influence over the masses.

Religious authorities seem to confront technological innovation in three stages: rejection, adoption, and adaptation. From the condemned Nicolaus Copernicus, who published his heliocentric views in 1543, to Galileo Galilei – his chief defender – who, in 1633, was found

guilty of heresy by the Roman Inquisition, religious traditions (at least in the Western world) have struggled to accept and adapt to the metamorphosis caused by technology.

AI technology is transforming how people interact with practically every aspect of their reality in the modern day, and this transformation includes how people view and relate to religion. While it appears that contemporary religious leaders are more receptive to technology, do they truly understand the upheaval that will occur in how people approach spirituality and faith?

Various faiths have utilised technology advancements to enrich traditional religious practices, ranging from computerised texts to robot priests.

Last year, 500 years after the Protestant Reformation, the German town of Wittenberg dedicated the robot priest BlessU-2 to Martin Luther's religious revolution in Europe. Catholics can download the Confession Chatbot app to interact with a bot in a two-way conversation. Muslims worldwide can use Muslim Pro, which contains daily prayer schedules, sunrise and sunset notifications, and an electronic compass indicating the path to Mecca. Other apps adjust fasting periods automatically throughout Ramadan based on the device's location.

There is rising concern among religious leaders regarding the consequences of the creation of more humanlike machines. It's not just sexbots and social media addiction that they're worried about. As machines become more advanced, even achieving levels of consciousness in the coming years, what will that mean for humanity as spiritual beings?

Will our importance as the pinnacle of God's creation – as seen by many – be under threat? Will the very foundations of the great religious traditions be rendered irrelevant in a world where sentient, human-like technology is in no need of a saviour or redemption?

As AI advances with the use of augmented reality, brain-computer interface technology, nanotechnology, artificially generated babies, and lab-grown body parts, I wonder how the core of our humanity will be affected. Will AI make us cyborgs that no longer need a sense of the sacred, or will the spread of technology result in a world too horrible to imagine that may draw more people to pursue a spiritual tradition?

I think, in a world where information is more readily available than ever before, we will experience a tectonic Gutenberg-like shift in how most people perceive their humanness and those around them. I don't think that the idea of God will ever go away, but the definition of faith and spirituality will transform in ways that will further redeem Copernicus and Galilei, and in ways that Luther could only dream about.

26 I think, therefore I am a machine

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"I think, therefore I am" — the Latin phrase *cogito ergo sum*, written by René Descartes in the 17th century, has become one of the best-known philosophical sayings in the world.

As a result of being a person, I am a thinking being. My actions are determined by the way I think about things and comprehend and make sense of the world around me. How we think and the origins of our thoughts have interested many and have been the subject of study for decades.

Today, "thinking machines" are ubiquitous. Algorithms and technologies powered by artificial intelligence (AI) are now as prevalent as light bulbs and computers.

British mathematician Alan Turing is recognised as an early AI thinker. He was inspired to develop intelligent devices. The Turing Test, which he developed in 1950, is still employed to determine whether a computer is intelligent. In 1956, Dartmouth College professor John McCarthy coined the term "artificial intelligence" to describe this ability. The Dartmouth Conference laid the foundation for future investigation into "thinking machines".

The era of intelligent technology has such a deep impact on the way we think that it dictates and shapes our behaviour. Smartwatches and other devices have enabled us to take technology with us at all times. With the advent of brain implants, it will not be long before our technology is always with us.

I will soon be able to say that I solely use my mind to explore the internet. Through my imagination, I can converse with other metaverse dwellers. I can control my surroundings with my thoughts.

In the near future, consumers in numerous industries, including tourism, finance and insurance, will be able to design and build the goods and services they require. As we strive for a universal currency, crypto tokens may coexist with fiat currencies. Autonomous vehicles will be introduced in a large number of places across the globe.

Robotics and self-aware, self-replicating software systems will arise in the future. The development of machines displaying human-level intelligence (artificial general intelligence) may not be as far from achieving as many may think.

When our biological bodies and technology begin to collaborate more closely, we will have reached the next stage of evolution. Despite the numerous potential benefits, it may also produce issues. The ability to manipulate my environment with my mind is one thing, but what if the same technology could be used by others to control my mind? Consider how this might impact the right to privacy and the basic foundations of our democratic society.

I also think that the very definition of homo sapiens will change. Just as our species gained the upper hand over Neanderthals tens of thousands of years ago, we have to consider if a new hominoid-like species will emerge in our midst that will eventually overpower and out-evolve us.

The historian Yuval Noah Harari wrote in his book *Sapiens* about the possibility of us creating a “useless class” in the future. As more jobs are automated away and as world dominance transfers from powerful countries to technology giants, access to education, healthcare and free speech may be continually limited to the masses.

The new ruling class in the future may very well be human-robot entities. A new Descartes of tomorrow may well be justified to write: “I think, therefore I am a machine.”

27 More equal than others

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"It was a bright cold day in April, and the clocks were striking thirteen." Thus begins what is considered by many the most significant novel of the previous century. Eric Arthur Blair was a book reviewer and correspondent for the Observer newspaper in London. He was a shy and introverted man, and although his book Animal Farm made him famous and financially independent, he loathed the recognition that came with it.

The world knows him by his pen name, George Orwell. Fatigued by the literary world of London – 'smothered under journalism', as he called it – Orwell and his son moved to the remote outpost of Barnhill on the Scottish island Jura.

He was on a mission, and he knew he was dying. Having seen the horrors of the Spanish Civil War, and foreseeing the terror of the Soviet era, Orwell began writing his most important book: Nineteen Eighty-Four. It was a dystopian world – Orwellian was the word birthed into our collected consciousness – where humans were forced to be robot-like in their obedience and allegiance to the state and the ruling class.

Although his work was met with hatred in many quarters, Orwell was perhaps the only writer of his time who was accurate in his predictions about imperialism, fascism, and Stalinism. He famously gave us terms like Big Brother, the Thought Police, Newspeak and Doublethink.

Unlike his contemporaries, he is still distinctly relevant in our day and age. The more I read George Orwell, the more I am convinced that he saw a future no one could imagine.

The age of AI has resulted in the most powerful technologies ever created. These technologies may create a utopian world only imagined previously, where most humans are healthier and more prosperous than ever before, and where we live longer than ever thought possible.

But technological innovation has always been a double-edged sword. We may also – and most likely will – use these technologies for population control, the end of privacy and in the servitude of the political and military elite.

We already live in a world where Big Brother watches our every move. Our smartphone is our constant companion, always listening, tracking our whereabouts, and with whom we associate. Orwell wrote about the telescreen that constantly watched the people who watched it. Many of our smart devices are monitoring, tracking and seeing everything we do.

The Chinese Communist Party introduced a social credit system that ranks citizens and punishes them for what is deemed ‘wrongful’ behaviour. Brain-computer interface technology, like that of Elon Musk’s Neuralink, is ready for implanting monitoring smart devices into our brains. What if our thoughts could be read, or worse, influenced by iniquitous business or government agencies?

AI may just empower the Thought Police to monitor our deepest and most private humanness, rewarding or punishing us accordingly. I fear that our children will live in a dystopian world, empowered by AI, where technological totalitarianism will always watch them, track them and monitor their thoughts.

The relevance of Orwell does not belong to the past. His work is a clarion call to us in our age. As much as I want to remain optimistic about the potential of AI, I grow fearful that we are innocently opening a Pandora's box that will unleash the final age of human freedom.

When he died of tuberculosis at age 46, his obituary in The Times read: "In Orwell's vision of a not too remote future…in a wholly totalitarian world, men had been conditioned to deny the possibility of human freedom and to will their subservience to an omnipotent ruling hierarchy."

28 Life on the edge: how smart devices are shaping the future

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The new technology era has introduced software, algorithms and systems that are smart. They are infused with computerised intelligence, which means that the ability to learn, recognise patterns, execute tasks and make decisions autonomously is no longer in the domain of science fiction.

At the forefront of this intelligence explosion are devices and sensors that not only gather unimaginably large amounts of data but can also store and process the data at the source.

Data-gathering sensors are nothing new. When it comes to electricity distribution, agriculture, infrastructure management, and security, data-reading technology has been around for decades.

There have been some “dumb” versions of these devices in the past that didn’t understand the data collected nor communicate with other devices. Decisions were made based on the interpretation of sensor data by human operators.

Our world has been transformed by the rise of technologies such as cloud computing, exponential

processing power and machine learning, all of which have made devices more important than before. Smartphones, smartwatches and other smart wearables aren't just for businesses any more; we all have them in our pockets.

We are, in a sense, instrumenting our world. Not only are the instruments smarter, but their ability to communicate large amounts of data streams has accelerated due to better communication technologies such as the fifth generation of broadband cellular communications (5G).

The device-driven technology is commonly referred to as the Internet of Things (IoT). The business applications have been astounding. Common use cases are, for example, location tracking, fleet management, remote asset monitoring, security and predictive maintenance.

Data from IoT devices can be collected and processed locally rather than having to be sent back to a central server or cloud, making it easier to spot patterns and take immediate action, such as anomaly detection for proactive maintenance. Smart devices that can store and process data are referred to as edge computing, as the magic happens "on the edge" of the device ecosystem.

By redefining how devices and people interact, IoT technology is also revolutionising the healthcare industry. Fitbits and other wirelessly connected wearables, such as blood pressure cuffs, glucose meters, and other such medical devices, allow patients to receive more personalised care. For example, these gadgets can be programmed so they alert the wearer to calorie consumption and other health-related issues such as blood pressure changes.

Of great concern is the security of smart devices. Our mobile phones are the smartest devices that go with us everywhere. Many wonder whether our phones are always listening. After a conversation with a friend or colleague, have you noticed how often your Google or Facebook advertising feeds are customised to the topics you have discussed?

Imagine the potential impact on industrial espionage if hackers could access building security cameras, track the movement of precious cargo or even listen in on a board meeting. Even worse, what if our medical devices are compromised? Just think of the life-threatening impact if an insulin pump or heart implant is compromised by malware?

Welcome to the new era where smart devices influence our surroundings and even our bodies. Edge computing will revolutionise our society as we build smart cities across the globe, and where the lines between being human or machine will become continuously blurred.

Part 4:

Chatbots & Customer Experience

29 ChatGPT - Robots are not ready to take over the world

Published by BusinessDay:
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We have in recent weeks witnessed one of the most significant moments in the advance of artificial intelligence (AI). The for-profit AI research corporation, OpenAI, released its latest online text-generator platform, ChatGPT.

More than a million people signed up to check it out within the first week. Some pundits went as far as calling it AI's "iPhone moment", and "the world's most transformative technology product".

GPT, or Generative Pretrained Transformer, uses deep learning methods to generate contextually relevant and human-like text and dialogue "on the go". It can even answer follow-up questions. It is, however, still in its infancy and the company conceded that it can write "plausible-sounding, but incorrect or nonsensical answers".

This kind of technology is a challenge for original content creators as it now seems that any person will be able to write articles, television scripts or poetry. It is of huge concern in the field of academia as students can potentially submit fantastic research articles with the click of a button.

I decided to see if this technology could help me write an article. I first asked it “Write an article about ChatGPT”. I received a 290-word response, and I was surprised that it not only stated the benefits of the technology, but also some of the potential downsides.

"There are also challenges and limitations to using ChatGPTs. One of the main concerns is the potential for bias and discrimination in the algorithms used to power these bots. This can result in unfair or offensive responses, which can damage a company’s reputation and trust with customers. It is important for companies to carefully consider and address these issues in the development and implementation of ChatGPTs.”

I asked it to write an article about ChatGPT and its use in business.” The 315-word response stated, among other claims, that “ChatGPT can provide personalised and engaging experiences for users. By understanding the context and intent of a conversation, these bots can provide tailored responses, which can improve customer retention and loyalty”.

Next, I asked for an outline of an article about ChatGPT. It responded with a reply containing five main points and subpoints, all making a great deal of sense. “Write a 600-word article on ChatGPT.” The response was a 320-word article (oops), containing much of the information provided in my earlier requests.

I asked, “Is ChatGPT reliable?” The response was disappointing. “I’m sorry, but I am not familiar with ChatGPT. Can you provide some more information about what it is?” The AI was not able to answer questions about itself. Sentience is clearly a long way off.

As a final test, I added ChatGPT's responses to a plagiarism checker (I normally use Grammarly's platform). All the responses came back with "high levels of plagiarism." Another platform, Originality.AI, claims that it can "detect the AI on all the text generated by GPT-3, GPT-3.5, and ChatGPT by 99.41%".

I encourage readers to explore OpenAI's platform. It is a lot of fun and some of the answers are astoundingly accurate. But, as with all things created by humans, it is far from perfect. It is a significant leap towards "strong AI", but we can rest assured that robots are not yet ready to take over the world.

30 It's possible for clients to love your contact centre

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As much as we hate them, we need them. Contact centres are for many companies the primary way to reach a target audience to sell goods or services and to gain feedback or offer support to clients.

What will the contact centre of tomorrow look like? It is improbable that there will be a physical centre in the future. Cloud computing's growth is predicted to boost the number of people who work from home, and this applies to contact centre agents as well.

However, this migration away from the office is not indicative of a business's abandonment of the contact centre. Social media's constant glare has thrust businesses into the limelight — for better or worse — and put customer service at the top of the priority list as a result.

The call centre will almost certainly be the focus of this strategy, which means that customer experience will become a significant differentiator in the future.

The expansion of digital customer engagement capabilities generates an abundance of data that will become mission-critical for companies in the future. However, data collection is merely the tip of the iceberg. If organisations are to truly alter the customer's

experience, they must first gain a thorough understanding of their customers.

Businesses that excel in customer experience will embrace a data science attitude, investing in products, platforms, and infrastructure that enable them to process and act on huge volumes of data.

Businesses that are able to swiftly identify actionable information from a multitude of data points will be better positioned to fix problems before their customers become aware of them. The wealth of data available to organisations allows them to be more proactive, anticipatory and well prepared.

Improvements in customer experience is not merely about more data or contact centre agents who are better trained, as important as these factors are. It is also about root cause analysis: why are your customers contacting you in the first place?

A few months ago a local financial services provider contacted me to streamline their contact centre operations. They employ nearly 1,000 agents who handle more than 500,000 inbound customer calls a month. Their thinking was that through automation and efficiency gains they could dramatically decrease the number of agents, resulting in cost savings.

Upon investigation, I found that this organisation's clients were not empowered to find answers themselves in a convenient and timely way through a digital channel. Customers would rather find an answer quickly than wait in line for a contact centre agent to help them. New customers did not receive the needed information to

empower them and most inbound calls were around the same basic enquiries.

The solution was to dramatically decrease the number of calls from new customers by providing them with the right information at the right time and enabling them to use user-friendly self-help digital channels.

How will companies take their contact centres into the future? Starting with a human-centred approach: make it easier for clients to know what they need to know and empower agents with technology platforms that will enable them to anticipate client demands; and provide staff with single-screen dashboards using predictive analytics, customer behavioural analytical data, conversational artificial intelligence and sentiment analysis.

Customers do not have to hate your call centre. By enabling them through digital channels and empowering your agents with data the contact centre experience can become an easy and enjoyable one for all.

31 Sorry, the chatbot forgot to take notes

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https://www.businesslive.co.za/bd/opinion/columnists/2022-01-31-johan-steyn-sorry-the-chatbot-forgot-to-take-notes/

A few weeks back my internet fibre line went down. I am fortunate to live near a hospital, which means I rarely suffer power outages and hence always have internet connectivity. Because I work primarily from home, a lack of internet will mean I can not do my job. It's comparable to planning to go to the office in the morning and discovering your car isn't working.

I learned, after a desperate search, that my internet service provider does not have a telephone helpline. I was able to communicate only via a WhatsApp chatbot. In principle, I am content to use this technology because it should be quicker than waiting for a human call-centre agent to help me.

I sent my first message and was pleasantly surprised when the bot recognised me and addressed me by name based on my telephone number. It inquired about the type of support I needed and presented me with a menu of possibilities ranging from billing inquiries to new products and technical issues. I chose the latter.

To my surprise, the bot asked me what products I have with the provider: was it LTE, 3G or fibre? I selected fibre and then it asked me if I have a limited or unlimited fibre account. Again, I selected the latter. Then the bot asked me if there was an outage in my area.

How the heck should I know? It directed me to a website to check if the internet in my area was working: it could be a local problem with the exchange. No problem in my area. Next, the bot assisted me with some fault-finding steps: was my router plugged in, are all the lights blinking, was it connected to the wall socket? Check. Then it directed me to a human, and I was extremely happy, only to discover that I was now at the billing department. What? After all this?

The human apologised and transferred me to the technical help desk. Another human answered and asked me what kind of assistance I needed. Phew! After about an hour of waiting and 10 minutes after interaction with the bot and after providing all the needed information, the poor human was in the dark. He had no insight into the myriad of info I had already provided. I was tearing my hair out!

Our service providers harvest a great deal of data from us and this must be used to enable human call-centre agents or chatbots to provide better service. In my case, the bot should have had access to my data and the interaction could have been faster and more satisfying.

I would have expected the bot to know which products or services I have acquired, where I live and whether there was an outage in my area. It should have transferred me to the correct department where the human should have access to all my data and all the information I provided to the bot in order to quickly solve my problem.

Your customers want interactions with humans who are equipped with data to solve their problems. They may even find a chatbot engagement delightful provided that

the experience is linked to their profile and anticipated needs using predictive data analytics and behavioural analysis.

32 Metabanking: From visiting a branch to brain-computer transactions

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https://www.businesslive.co.za/bd/opinion/columnists/2022-02-22-johan-steyn-metabanking-from-visiting-a-branch-to-brain-computer-transactions/

Going to the bank is a phrase we rarely use these days. In a digital world, all banks have been forced on a journey to reinvent themselves to compete as the concept of banking has evolved and to provide a better customer experience to their clients. We prefer that our banks come to us: clients demand ease of use and there should be no reason, ever, to have to go to the bank branch.

The development of the metaverse is the buzzword of our time. Open almost any newspaper or technology blog and you may find a reference to it. The biggest news recently was when the company that owns Facebook, WhatsApp and Instagram rebranded as Meta.

Team Zuckerberg is not the only big name in the metasphere. Microsoft announced the largest acquisition in its history — $68.7bn — with its cash offer for Activision Blizzard — the publisher behind games such as Candy Crush, Call of Duty and Warcraft. It is an astonishing amount of money for a gaming company. Remember that Microsoft “only” paid $8.5bn for Skype in 2011 and $26bn for LinkedIn in 2016.

Neal Stephenson, in his 1992 dystopian science fiction novel *Snow Crash*, coined the term “metaverse”. After a global financial meltdown, the book relays the story of how large private organisations were running the world. In this imaginary future, the US government surrendered its power to the powerful and the states were no longer united.

The metaverse, which first found its origins in the world of gaming, has become a reality in a large number of industries. It is now possible to trade goods and services in the virtual world. With the use of technologies such as virtual reality (VR) and augmented reality (AR), the human race is entering a world previously only imagined. The impact on consumer spending patterns, on commerce and banking is anticipated to be remarkable.

In the recent evolution of technology, we first used devices such as desktop or laptop computers, where we had to be with the device to access it. Smartphones allow us to take our devices wherever we go as long as we carry them in our hands or pockets. Wearable technology means that my smart device is connected to me and interacts with my body.

The next step in our evolutionary process is brain-computer interface technology (BCI) where a smart device is no longer with, or on my body, but inside of me.

According to Futurum Research, over the next decade, 78% of customers intend to use VR or AR technology in a metaverse app to preview the appearance of a product. The challenge is that we still need wearable technology, such as VR headsets and AR glasses to interact in the metasphere. I wonder how BCI

technologies will further expand our sojourning in the new meta-world?

As banking and financial services firms embrace the metaverse, we will enter the world of metabanking where I do not go to the bank, but the bank comes to me — to my brain.

Part 5:

AI in Africa

33 Conversational AI - Africans disproportionally disadvantaged

Published by Reuters:
https://news.trust.org/item/20220811093452-t3ic4

When my eight-year-old son recently demonstrated our Google Home device to his friends, and bragged about how good it was at answering questions, his friend Mandla was excited to ask a question in Zulu. But the gadget failed to understand the language that is spoken widely in South Africa.

It made me wonder why the technology is so bad with African languages. Owing to the increasing use of voice-based interfaces such as Amazon's Alexa, Apple's Siri, and Google's Home Assistant, it is estimated that internet searches by voice will far outnumber other search methods in 2022.

Natural language understanding (NLU) is an area of study within artificial intelligence (AI), providing text, speech, or a combination of the two as input to computers. Enabling human-computer interaction, computers can interpret commands without the codified syntax of computer languages because they can understand human languages.

Most of us have interacted with rudimentary NLU technology through chatbots. Often a popup on an internet browser or a mobile phone application, these bots aim to answer our questions – a job that human

would otherwise do. Unfortunately interacting with this technology is often a source of frustration. Able to only understand and answer the most basic questions, bots are often no more than glorified FAQ apps.

But increasingly, many internet chats use conversational AI that is able to understand the meaning behind questions, and utilises all available data to provide suitable answers. The technology is a great deal more efficient and user-friendly than its forebears.

The societal benefits of conversational AI are vast. Able to provide contextual and accurate advice on important topics such as financial planning and healthcare, these platforms are destined to become our primary go-to advisors.

Imagine your young child is severely ill with a fever and you desperately need advice fast. Imagine speaking to an AI application on your phone, describing the problem and having the techno-advisor understand you, and provide quick and accurate advice.

Now imagine you are in a similarly perilous situation, but that English is your third or fourth language - or that you do not speak English at all - what are you to do? You can neither communicate your problem, nor get a satisfactory response from the platform.

With an estimated 3,000 different languages and dialects, Africans are disproportionally disadvantaged in accessing technology that is usually available only in English, and major European languages.

So there is a pressing need to create language data sets unique to our continent. Fortunately, there are

already many initiatives like Masakhane, a grassroots organisation which is at the forefront of developing African language data for conversational AI applications.

Zindi, a network of data scientists in Africa, in cooperation with AI4D-Africa - a coalition of AI researchers - are working on support and funding for Natural Language Processing initiatives on the continent.

34 AI's transformative power for healthcare in Africa

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-04-12-johan-steyn-ais-transformative-power-for-healthcare-in-africa/

Cognitive computing — or "machines that can see, learn and think" — is revolutionising medical care across the world.

Increased processing speed, cloud computing and the advent of the smart technology era are democratising medical care. Computer imaging capabilities, nanomedicine and brain-computer interface technology have the potential to usher in what some call a transhuman world.

The very definition of what it means to be human is changing. Increased prosperity, longevity and artificially created body and brain parts are no longer the exclusive domain of science fiction. Human and cyborg consciousness will combine in a new age for homo sapiens.

It is our collective moral and ethical duty to regulate and control the trajectory of advanced intelligent systems. We need to ensure that the "have-nots" are not left behind. The developing world, plagued by disease and poverty, is the casualty of the so-called digital divide.

The fastest-growing population in the world, with the youngest demography globally, Africa and its people face the ghastly risk of being left behind in the race for

technological superiority. The global medical community must co-operate and ensure that the beautiful continent shares in the vast benefits brought on by new technologies: financial prosperity and adequate medical care.

Researchers have identified several issues with the use of AI tools in real-world hospitals. In other words, an algorithm that has been validated on a subset of patients may not perform as well on a different subset. Many are advocating for clinical AI to be trained and validated on a diverse set of patient data from patients of various genders, ages and ethnic backgrounds.

The data used to develop and test the majority of clinical AI is potentially widening the disparity between rich and poor. Given the significance of Chinese and American machine-learning technology and research in the sector, the skewed patient data is unsurprising. Researchers from these countries have authored more than 40% of clinical AI articles, as they naturally gravitate towards patient data that is nearest to them and easiest to gather.

The potential for AI to improve healthcare in low- and middle-income nations has received much attention, and it could prove to be effective in supporting Africa in conquering disease preventive and treatment issues.

A report titled “Reimagining global health through artificial intelligence: the roadmap to AI maturity” by the Novartis Foundation and Microsoft, states that investment in data and AI will be a critical tool for improving health systems in Africa during and after the Covid-19 pandemic.

The continent’s most critical challenge is a lack of medical personnel. Sub-Saharan Africa accounts for only 3% of the world’s health workers, the region accounts for 25% of the global illness burden and only 12% of the world's population, according to the UN Development Programme. The situation would deteriorate further as a result of a projected global shortage of health staff, which is expected to reach 18-million by 2030.

Since 1972, when the first medical AI system, MYCIN, was constructed, more advanced systems have been developed. Medical professionals can now use AI technology to assist in disease identification and treatment, as well as forecast disease progression and aid in clinical decision-making.

Without a doubt, AI has the potential to be a transformative tool in healthcare in Africa. In the smart technology era, no-one should be left behind.

35 Artificial intelligence has a place in rural SA

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https://www.businesslive.co.za/bd/opinion/columnists/2022-03-15-johan-steyn-artificial-intelligence-has-a-place-in-rural-sa/

"I need there to be a panic button. I never wish to hear my mom scream like that ever again." The 15-year-old was explaining the mobile app concept her group was working on. "My father tried to kill me. But he is no longer with us."

The other group spoke about teenage pregnancy, how hunger drives young girls to have sex with men who pay them with food. "My two younger brothers were going hungry. I did what I had to do." At another table, the group explained how gender-based violence is the story of their daily lives. "The men come back from the shebeens and then all hell breaks loose."

These are not the typical things I hear at the events I attend or speak at. Like many people, I live in my own little bubble. I speak with clients or at conferences about the amazing potential of technologies such as artificial intelligence (AI). The pulpit (or podium) is rightly called the coward's castle. It is a safe space. We deliver presentations, we debate, we theorise, all while our rooms are lit with electricity (mostly), while our tummies are full and our homes are relativity safe.

In my first article for Business Day, I wrote about an "eureka moment" I experienced during the pre-Covid-19 global Girls in AI event hosted by Redhill School in

Morningside, Johannesburg (*Artificial Intelligence Has a Place in the Dusty Streets of Rural SA*, June 8 2021).

At the past weekend, I attended the follow-up occasion at the same school. The Teens in AI event — again a globally hosted initiative — was attended by pupils from Redhill and a group from rural areas co-ordinated by the Tomorrow Trust. On the first day, they were instructed about Design Thinking and the basics of smart technology. The next day they were tasked to ideate a mobile application that utilised AI technology for societal good.

At each of the tables, there was a board where the participants could brainstorm, write, and design the screens of their conceptual mobile applications. They were encouraged to think about the challenges they were facing in their families and societies. I was not surprised to see — as I did at the previous event — that these youngsters were very aware of the world they lived in and also about the promise that modern technologies offer.

Lulu Burger, head of educational technology at Redhill, and her team again hosted a brilliant and well-organised event. Zanele Nyoka, the chief technology and operations officer (engineering) at Rand Merchant Bank was the opening speaker and the group moderators were mostly women of colour who have excelled in careers of technology leadership.

It made me remember a piece I wrote in my native language while I was living in the dreary weather of glorious rural England. I longed for the dust and the diversity of my homeland. I penned that, “I miss the smell of your dirt roads that reminds me that my soul belongs

there. I miss your people and the scars that formed on your face. Most beautiful land, under your blue skies the children should run and play freely. One day I will return to you, and as a child myself I will play again in your dusty streets."

I say once more that AI has a place in the dusty streets of rural SA. I realise again that I can do so much more to utilise the most incredible technology mankind ever created to contribute to my beloved homeland.

36 Will SA be colonised again when 5G spreads up north?

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-02-08-johan-steyn-will-sa-be-colonised-again-when-5g-spreads-up-north/

The fifth generation of mobile networks (5G) has been a controversial issue. Ask the average fake-news consumer — well most people, if you think of it — and you will hear opinionated views about a new world order, societal control**,** or even the mechanism for the spread of the Covid-19 virus.

The local cellular phone tower has become the embodiment of control over us mortals, a strange-looking edifice towering over our everyday lives. Some have even undertaken the destruction of these alien structures in a futile effort to regain control and normalcy in a world gone mad.

Resisting technological advances is the story of human society. In the 19th century, many believed that a train travelled fast enough to rip the human body to shreds. The introduction of the telegraph made some believe it would ruin the English language and destroy the art of writing poetry. In the same era, some believed the newly invented telephone would help us communicate with the dead.

With the invention of the wireless — or the radio as we know it — it was claimed it added a menace to the world and would do no good. The introduction of television

introduced a fear that book sales would plummet as most people would stop reading.

The latest standard of mobile connectivity permits the creation of a new type of network capable of connecting nearly everyone and everything, including machines, objects and gadgets. Intended to provide improved peak data speeds, ultra-low latency, increased dependability, huge network capacity and increased availability, it will provide a more consistent user experience to an unimaginably worldwide number of users.

Numerous industry experts have predicted that the 5G network will be as transformative as the printing press, automobile and electricity. According to some, it will serve as a catalyst for the next industrial revolution.

Many business and technology leaders underestimate 5G's disruptive potential. Telecommunications, health care, manufacturing, retail, transportation and agriculture are frequently identified as industries that will be most affected by it.

While some businesses are using virtual reality (VR) and augmented reality (AR), data-intensive applications have not yet realised their full potential. Additionally, enhanced VR and AR capabilities will enable increased on-the-job performance. Consider a less-skilled employee who is electronically connected to a distant headquarters site by a mentor who offers them 3-D virtual instruction to finish a job without them needing to meet in person.

Since the beginning of 2019, the number of operational 5G networks has expanded dramatically, with more than 50 operators projected to offer 5G services in

approximately 30 countries by the end of 2021. With global job growth of 22.8-million expected over the next 15 years due to 5G-enabled networks, it is one of the significant trends shaping the ICT industry in 2021.

The difficulty for SA networks will be gaining access to the 5G spectrum to supply digital services to an ever-increasing populace. Connectivity to data, and cheap and easy access to a world of ever-increasing information, is key to our future workforce.

Our country lacks the ability to produce affordable smart devices and cellular technology that will be the lifeblood of the 5G era. I wonder if the looming avalanche of new cellular technologies will enable foreign providers and their workers to increase their digital colonialisation and expand the beachhead on local skills displacement already in accelerated progress.

37 South Africa lags several African countries on AI policy

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-06-21-johan-steyn-sa-lags-several-african-countries-on-ai-policy/

In October 2020, Stella Ndabeni-Abrahams, the former communications & digital technologies minister gazetted the “Report of the Presidential Commission on the Fourth Industrial Revolution (4IR)”. Setting out the government’s response and strategy to the new era of smart technologies, it emphasised that the priority is urgency and accountability.

The report says, “The 4IR is not in the future, it is the present. It is therefore imperative that the country reorganises itself to ensure citizens are positioned to benefit from the opportunities it presents. To achieve this, there must be clear accountability for implementing the recommendations within a time frame that can be monitored by all stakeholders in society.”

The recommendations were worthy of praise. It proposed investment in people “to leapfrog our youth into productive work and reskill current workers for job retention”. SA was to establish an artificial intelligence (AI) institute for training “to be delivered across various sections of society, as well as ensuring positive social impact”.

Another recommendation was to develop a platform to help revive the country’s manufacturing sector

“supported by a state-led research initiative focused on advanced manufacturing and new materials”.

And last, the commission advised that efficient e-government services be built on “reliable, accurate, standardised, integrated and easily accessible citizen data ... across sectors such as health, transport and justice”.

The report was released with much fanfare in the media 20 months ago. I am reminded of a favourite series on Netflix that was decommissioned before the story ended. The writers built a narrative that was not supposed to finish at the end of the first season, and viewers were left with the almighty question, “What now?”

It saddens me that despite the admirable work delivered by the authors of the 4IR report the premier season ended with an unsatisfactory lack of imagination. The producers and writers cannot blame the competing genres of national unrest, unemployment, corruption at an unimaginable scale and a global pandemic.

The simple truth is that nothing has happened. None of the lofty 4IR recommendations has been implemented with “urgency and accountability.” It remains a beautifully drafted script for an amazing movie stashed away in a drawer.

Oxford Insights’ 2021 AI Readiness index ranks 160 nations based on how prepared their governments are to use AI in public services. Nearly 40% of the index’s countries have either published or are drafting national AI strategies.

On Sub-Saharan Africa, the report says that the main priority is “narrowing the skills gap that exists ... without those with the skills to implement it, a national AI strategy is impotent”. Mauritius has developed an official national AI strategy. Kenya and Ethiopia have each developed an AI task force. In SA, we are struggling to keep the lights on.

In his state of the nation address on February 7 2019 President Cyril Ramaphosa said, “Unless we adapt, unless we understand the nature of the profound change that is reshaping our world, and unless we readily embrace the opportunities it presents, the promise of our nation’s birth will forever remain unfulfilled.”

The government, business and society need to work together to ensure that we are not being left behind in the age of AI. The future of our children depends on it.

38 Corporate SA needs to give tech start-ups a chance

Published by BusinessDay:
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At the start of a recent presentation, I displayed a picture of New York overlaid with the words “Artificial Intelligence (AI)”. Almost all of the websites, reports, articles, and presentations on AI will feature a picture from developed countries. “Why does AI apply only to the West?” was my opening question.

On the next slide, I showed a picture of rural Africa, overlaid with the same words. Why do we so naturally associate AI only with developed and advanced countries? I was speaking at an event of The Applied AI Community, hosted by Patrick Rotzetter, senior global engagement manager at Amazon’s web services.

The topic of my presentation was “An African lens: smart technology and the continent of promise.” Patrick told me afterwards that my talk was helpful for people from Western countries to remember that Africans, and others from the rest of the world, are also doing ground-breaking work in the technology space.

SA is home to many of the world’s most exciting AI start-up companies. Toby Shapshak reported in Business Day (Fintech leading SA tech start-ups, June 9 2022) there are “almost three times as many fintech start-ups in the country than in any other individual category”.

Referring to the “SA Start-up Ecosystem Report 2022”, he highlighted that 357 SA tech start-ups have raised a combined $993m (R16.5bn) since 2015. Employing an estimated 11,000 people these start-ups are a growing and important contributor to our economy. A recent report by PwC (“Global Artificial Intelligence Study: Exploiting the AI Revolution”), estimates that AI technology will grow Africa’s economy by $1.5-trillion by 2030.

It makes me extremely proud to know that SA’s technology space is growing rapidly and that many world-class technologists are from here. Over the past few weeks, I have been conducting mentoring programmes with a number of these firms. Their challenge is that, though they are exceptionally skilled software engineers, many of these business leaders have rarely been taught how to sell their services. They are great at “geeking out” at technology conferences among their peers, but presenting to corporate leaders is new territory for many.

As part of my programme, I conduct role-playing exercises with them, acting like a prospective corporate client. The rule is that they may not use any technical terms when they “sell” to me. I do not want to hear how great their platforms are. No words such as AI, machine learning, automation, robotics or cloud computing are allowed. I simply want them to explain to me the business benefits I will receive by using their technology.

Most by far of these highly intelligent entrepreneurs fail the test. And it is here where I think the majority of exciting start-ups struggle to scale. Andy Bounds, author of *The Jelly Effect* teaches us to focus on “the afters”. In our communications with clients, we must be able to

clearly explain what they will be left with “after” engaging with us.

Start-up business leaders must be better at explaining the value they provide. Corporate SA should be more open to hearing their stories and giving them a foot in the door. They may just be able to revolutionise your business.

39 SA supply chains weather the storm

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The global supply chain network is playing a more critical role every year. A rapidly growing world population in need of goods and services is driving the demand for increased efficiencies and lower costs. The use of technologies such as artificial intelligence (AI), smart sensors providing real-time insights, autonomous decision making and predictive analytics will play an increasingly important role.

Despite the robustness of the modern supply chain, it can be disrupted by many factors that will result in shortages or even famine. One factor is climate change. Scientists expect that climate-related disruptions will worsen as the world warms. Ports, railway lines, roads, and other transportation and supply infrastructure will be endangered by sea level increases of 0.6m-1.8m — and probably more — by 2100.

Sea freight to the majority of the world's 2,738 coastal ports, whose docks are just above sea level, is under growing threat of disruption as flooding will threaten the bulk of these coastal ports in the near future. Few port administrators have implemented countermeasures against the threat of increasing sea levels, and even fewer have bothered to assess it.

The other factor is armed conflict. Russia's invasion of Ukraine and the resulting sanctions have a significant influence on global supply chains. Ukraine provides about 50% of the neon gas used to manufacture semiconductor chips. Governments and major enterprises are now rushing to secure other supplies.

The ongoing crisis has had a startling influence on European automobile production. Volkswagen and BMW have been reducing assembly lines in Germany due to a lack of wiring harnesses manufactured by German company Leoni in Ukraine.

The third factor affecting the global supply chain system is human error. I often say to my clients or conference delegates that, despite our use of powerful new technologies, we can never automate stupidity.

The Suez Canal was shut for six days in March 2021 after the 400m container ship Ever Given ran aground. The canal authority initially blamed "high winds and a dust storm" for the obstruction, but later found that human error was to blame. The result was a cascade effect along global supply chain pathways for several months. The projected value of commodities lost due to delays was $400m an hour.

Over the weekend I was a speaker at the annual SAPICS Conference in Cape Town. The event, hosted by the professional body for supply chain management in SA, was attended by professionals from all over the world. Under the banner "Bounce back stronger", leaders discussed ways to ensure that global supply chains remain strong after the disruptions caused by the Covid-19 pandemic.

I was impressed by how well the event was organised and by the large number of senior supply chain leaders in attendance. After speaking to many of them, I realised that the supply chain in SA is resilient despite the many challenges we face. These leaders are committed to using the best technological platforms to deliver the goods and services our country needs. Many are focusing on programmes for societal good by creating employment and some told me how they train and offer work to disabled people.

The future of the supply chain is exciting and well worth considering as a career. We often only realise the important work done by this community when the essential food and products we need are no longer available.

40 Remote working - the brain drain on steroids

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-05-24-johan-steyn-remote-working-the-brain-drain-on-steroids/

In July I will join the hordes of South Africans working overseas, earning foreign currency. I have agreed to join Woxsen University in India as an adjunct professor, teaching MBA students the practical business applications of artificial intelligence and digital technologies.

The university, with its impressive 200-acre campus in Hyderabad, has grown into one of the leading educational institutions in the world. It is a pity that I may not see this campus soon, or ever, as I will be working remotely from my home in Centurion. I will compliment the 60 hours of monthly lectures with work for other universities and a few consulting engagements.

Working remotely across various geographical locations is not a new thing. Many consultants, especially in the technology space, have been doing this for years. But these opportunities were relatively rare and hard to come by. And many organisations were reluctant to employ people who would not be seen working in their offices. The pandemic changed all of this, forever.

Working remotely, or in a hybrid fashion, is the new normal of labour engagements. Over the past two years, many firms had to quickly undergo reluctant digitisation to enable their workers at home.

This new era has resulted in three trends. First, people are able to keep their jobs but move to another area or city to achieve a better lifestyle. A good friend who works for one of the large banks in Johannesburg recently moved to Ballito, while continuing in her current role.

The second trend is that South Africans are more able than ever before to work for companies in other countries and earn better money in a foreign currency, even if they are not willing or able to relocate overseas. This is great news for employees but bad news for the economy.

We have witnessed the so-called *brain drain* over the last years, where skilled people left our country in large numbers to build a better life elsewhere. I fear that this trend will be amplified now that it is easier to earn an income elsewhere without the headaches of visas and relocation. Many may choose to remain in the country, close to family and the familiar things that make living overseas challenging, without contributing to the local economy.

The third trend is that it is easier for local companies to recruit the skills lacking locally from other geographies. Many large organisations have for years relied on workers from India and other areas to relocate here to bolster their workforce. The thinking was that these people would come at much lower fees, but the costs around relocation, local living expenses and the headaches around visas made this option less attractive over time.

My concern is that initiatives to upskill local young people — already inadequate for future labour demand — will have to take a back seat. We will have to find innovative ways to increase the needed skills in our

country and appropriate government legislation. Do we need a limit on the amount of virtual workers companies could employ?

It is important that business leaders empower their local workforce to cooperate with the increasing amount of remote workers. On top of that, we already see a rapid growth in the digital workforce where people increasingly collaborate with digital assistants and software robots.

Part 6:

AI in Business

41 Should my business use AI?

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-01-18-johan-steyn-should-my-business-use-ai/

"All this artificial intelligence (AI) stuff sounds very exciting. But where do we even start on the journey in my business?" That is a question that most business owners and senior executives are asking at the moment.

Every business is becoming a software business. It is through software that we manage our processes, build our offerings and service our customers. AI and machine learning (ML) are imperative for every business. As long as you take the right steps, follow the right plans and take your organisation effectively on the journey with you, you will be successful.

Most of us work in a "traditional business" that has been around for many years. We have lots of technical debt and legacy systems, and our workforce may not all be ready or even suited for the introduction of new disruptive technology.

Many of us wish we worked for an "AI-first" business like Uber, or even for one of the "trailblazers" like Google, Facebook or Alibaba. Imagine how amazing it must be to be part of an AI startup, where AI and ML are underscoring your whole business from day one?

So if you ask “Should we be on an AI journey in my business?”, my answer will be “Absolutely.” But I will also want to add, “Maybe not now.”

“So why wait?” you may ask. I would advise you to ensure that you first lay the right foundation before you introduce smart technology in your organisation. You have to align with the business strategy. What problems and challenges do you need to address? It is possible that AI or ML are not the answer to your problems. You need to understand your AI ambitions. What is the reason you want to embark on this journey? Often, it is the classical fear of missing out: “Others are doing it, so we’d better do it too.”

Many of your staff may feel insecure about their future when you start talking about the introduction of AI and robotics. You need to take them by the hand on a journey of discovery. Rather speak about co-botics: the fact that this technology should enhance our jobs, rather than replace us.

You need a well-formulated plan regarding the impact of AI on your current ways of working, and the skills needed. New roles need to be introduced if you do not have them already, like data scientists and AI engineers. You may be working in a market where these skills are limited, in which case you need to consider a hybrid model of upskilling your staff while utilising the expertise of a third-party vendor.

Its starts and ends with data, as it is the lifeblood that smart technologies live and operate by. Are you harvesting enough and suitable data from your internal business operations and from your clients (if you have

their permission and adhere to regulation?) Behind every AI strategy is an effective data strategy.

Many businesses are successfully implementing AI technologies, enabling them to work more smartly, faster and to gain significant market share. The possibilities for your business are endless as long as you embark on a people-first strategy and do not focus primarily on technology.

42 Data-driven culture is vital to companies' success

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In recent years companies have been paying increasingly large sums for data analytical talent and investing in new technology platforms to improve customer satisfaction, streamline their processes, and obtain strategic insights. The abundance of available data has ushered in an era of fact-based innovation and foresight.

Regardless of size or industry, all businesses have the potential to become data-driven, which is crucial as it can provide them with expansion-fuelling insights. To find new sources of exploitable value within a company and to develop the future potential for value creation, many forward-thinking businesses have been turning to big data analystics, enabling them to efficiently grow, optimise, and safeguard value.

According to a study by Forrester Consulting, organisations that rely on data management tools to make decisions are 58% more likely to exceed their sales goals than companies that are not data-driven. Firms with a solid data strategy at their core are 162% more likely than their counterparts to significantly exceed revenue goals.

Becoming a data-driven organisation is fraught with obstacles. Legacy technology platforms were not built to

handle the processing of big data sets, and the proliferation of available data sources makes it difficult to extract essential information. Company and customer data is frequently concealed in isolated data islands, and qualified data professionals are difficult to recruit due to high demand.

Without a well-thought-out data strategy, however, an organisation risks falling short of its business objectives, which, in turn, can lead to inaccurate predictions and decision-making across all departments.

The lack of company-wide buy-in empowered organisational structures, and cutting-edge technology for data self-service are common challenges. The mindset adjustment required to develop a data-driven culture is something that can be done by any company, for the benefit of its management, staff and customers.

Establishing a data-driven culture is challenging for many organisations because data is rarely used as the primary foundation for making decisions. Making data and analytics central to your business's strategy, culture, processes, and at all organisational levels is imperative. It is more important than installing the appropriate applications and tools, hiring a dedicated team of data professionals, committing to a significant investment in data infrastructure, or implementing a one-time data literacy programme.

The first step is to develop a data-driven strategy. It’s pointless if you can’t make sense of your data. All of your customers’ information, including their proclivity to churn and their ever-changing requirements, can be found in the data.

The next step is to create a success metric for your clientele. To increase customer success, the best strategy is to incorporate a data-driven decision-making process into your current procedures.

Data-driven decision-making is critical in management and implementing relevant methods can help you improve your overall management team's success. Employee satisfaction, the actual versus the expected cost of initiatives, and the return on investment for each project or campaign will all help your company improve its efficiency and financial returns.

As Peter Drucker once famously said, culture eats strategy for breakfast. This applies to your data strategy and investments. A data culture should be driven from the top, enabling all employees to function successfully. It is never just about technology. It is about human nature and our often inhibiting fear of change.

43 Insurance providers embrace AI to survive market changes

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The insurance industry has largely been slow to evolve over the past decades. It shows a high-risk aversion and prefers to observe the effects of new technology on other industries before adopting them.

Insurance companies are carefully embracing the digital age. New machine learning algorithms help underwriters to include more data points in their risk evaluations, enabling them to offer clients more personalised premiums. Smart automation is accelerating the insurance application process by linking applicants with insurers more quickly and with fewer errors.

Carriers must adapt their operations to the changing market conditions caused by the broad deployment of artificial intelligence (AI). Executives in the insurance sector would do well to familiarise themselves with the potential effects of AI on claims, underwriting, and pricing. Armed with this information, they can begin establishing the talent, culture, and perspective required to succeed in the future insurance industry.

The insurance market is seeing a change in consumer behaviour. Traditional insurance policyholders were

accustomed to receiving a response within a few days. They mostly viewed the pricing as acceptable and the quality of service as adequate.

As a result of advancements in other industries, consumer expectations for customer service have grown. Customers want customised products from businesses. They seek information that is relevant, readily available, and contextual. Additionally, they expect to have access to services whenever and however they choose.

AI strengthens client interactions by analysing past data such as consumer activities, demographics, psychographics, and geolocation. Since AI can predict how customers will respond to data, it can aid in the development of products that is more likely to elicit the desired response from the intended audience.

As a result of technological advances, insurance companies and their clients can now engage in dialogues that extend beyond the annual policy renewal and claims reporting. Agents selling insurance may spend up to 40% of their time on paperwork. This is the driving force behind the digitalisation and automation of virtually human-free activities using AI.

Recent advances in machine learning enable the insurer to rapidly evaluate the claim's scope and determine fees. The examination of files, photographs, and sensor data assists insurers in assessing claims.

Conversational AI chatbots simulate human dialogue to do simple tasks, such as evaluating billing information and responding to frequently asked questions. Using chatbots that serve as virtual assistants, improved customer support is offered around the clock for tasks

such as claims processing, underwriting, fraud detection, and general customer service concerns.

Interactions between customers and insurance providers will become less time-consuming and less expensive. If insurance can be tailored to a person's unique needs, they will acquire it at more affordable prices. Flexible insurance, such as on-demand pay-as-you-go insurance and premiums that automatically fluctuate is already the norm for insurers who apply AI technology to the mountain of data they possess.

AI has the potential to disrupt the insurance market, which might have repercussions for both providers and policyholders. New technological market entrants pose the greatest threat to well-established insurance carriers.

Moreover, insurtechs and technology companies will continue to revolutionise client experience with innovations such as risk-free underwriting, instant purchasing, activation, and claims processing.

43 Everything is under (AI) control — the bot will scan your CV now

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Industry experts anticipate that in the not-too-distant future, there will be inadequate numbers of suitable candidates to fill all job positions. This is particularly relevant to types of work in which people have to use technological platforms to fulfil their duties. Organisations will need to vastly increase their investments in career development for their employees to be able to adapt to these ongoing technological advances.

To maintain a competitive advantage, businesses must continually invest in new technology and processes that enable them to grow faster than their competitors. Moreover, employees must acquire new skills to function in an increasingly digitalised world, usually alongside algorithmic robotic teammates.

Human resources (HR) departments have been under intense pressure to keep up with recent rapid advances. Now is the moment to redesign the HR function to offer value to individuals' lives and business operations.

The implementation of artificial intelligence (AI) in HR departments can yield a variety of advantages. It can aid professionals in keeping ahead of developing trends, evaluating employee sentiments and expediting talent

acquisition, as well as onboarding, employee performance reviews and retention.

AI might handle many elements of HR management. It can even conduct interviews and hire individuals on behalf of a corporation. However, HR departments will not be completely removed as the need for human involvement will remain relevant. It is people who will need to look out for the potential dangers AI may introduce, namely its incapacity to handle complex issues such as discrimination, unfair recruiting tactics and workplace harassment.

The notion of employment in the future is not as far as it once was. Already here, it is wreaking havoc on many business processes. Due to the increasing rate at which employment is becoming mechanised, many individuals are uncertain about their future. Several trends can be anticipated for the future of work, as well as strategies for preparing for them.

According to global research conducted by SAP SuccessFactors, a quarter of employees surveyed are at ease with AI in the HR function, while another quarter is greatly concerned about it. The remaining 50% are ambivalent and are waiting to see the effect on their professions.

Many workers say they do not have a problem with their CVs and performance data being reviewed by an AI agent, while others are frightened of how AI may affect hiring and promotion decisions. Employers who implement smart technologies to improve HR efficiency may, therefore, discover a hidden layer of division in the workforce.

This is why I always implore the clients I consult with to approach smart technological implementations as a people-first initiative. The smarter the technology — and it is getting smarter daily — the greater the potential effect on staff, the way an organisation is designed and on clients.

Let the software robots do what they do best, and set the people free from repetitive, low-value robotic tasks so they can focus on the amazing things only humans can do.

44 In the digital economy, only the fittest will survive

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In today's world, the billions of daily online interactions between individuals, corporations, gadgets, data, and processes have given rise to new economic activity known as the "digital economy". It is built on a foundation of hyperconnectivity, which is enabled by the internet, mobile devices and smart sensors.

Traditionally held views about how businesses are started, how they interact with one another, and how customers receive services, information and products are being challenged by the digital economy.

There has been a dramatic increase in urgency in the previous two years around digital transformation. Digital technology has emerged as a critical component in organisations' responses and strategies for the future in the wake of the epidemic's disruptions. Many businesses who have dragged their feet to transform digitally were forced by the lockdowns in what some call a "reluctant digital transformation".

For the larger part of the last three decades, large corporations globally have been well on their way on this journey. The buzzwords one often hears in board rooms and the corridors is that "we are digitally transforming".

My experience with many corporate customers is that, while they may be “going digital,” they are not transforming. Technology is essential to digital transformation. In many instances, it is primarily a matter of discarding the old and replacing it with the new. It is also necessary to foster new ideas.

When it comes to digital transformation, it's not only about shifting to the cloud and reducing the carbon footprint of data centres; it’s also about building a corporation with a higher purpose.

This new paradigm will affect how organisations develop their core services for customers, reform supply chains, hold suppliers accountable and build ecosystem platforms to drive innovation in accordance with its essential goals.

At its core, it is about “transformation”, which means a new style of leadership, an honest, open-door policy to welcome innovative ideas, welcoming challenges to the status quo and infusion of new talent.

A cohort of technology-first new market entrants is challenging established companies in almost all sectors of the global economy. Often led by “bright-eyed and bushy-tailed” youngsters, these firms have a start-up mentality at their core. They are void of decades of legacy leadership and technology, they understand the demands of the digital economy as they grew up in it, and they are brave enough to challenge larger firms.

In an evolutionary race for survival, many large, established companies are losing the race in the survival of the fittest, which gave rise to the term “Digital Darwinism”. Businesses compete for clients that desire

the most recent technology breakthroughs. When customers cease using or repurchasing a product or service due to outages, bugs, or other challenges, the company's bottom line suffers. Digital Darwinism is, from the consumer's perspective, the failure of a firm to respond to the needs of its customers.

Transformation as a technology-first initiative will probably almost always fail. It speaks mainly about people and not shiny new technological platforms to play with. If the plan does not first consider your staff, leadership and most importantly what your customers want, it may be digital but not transformative.

Your business may be doomed to the archaeological archives listing the once-great corporations that did not adapt sufficiently. As Brian Solis wrote in the Washington Post, “The point of natural selection is that only some businesses will survive.”

45 Cyber threats are here to stay and will get worse

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The source of many nightmares when I was a child was nuclear war. I imagined the bright flash on the horizon and planned how I would urge my sister and parents to jump in the swimming pool.

I believed that we would all be fine if we were underwater for a few seconds while the flames sped by overhead. At that age, I did not understand the true nature of such an attack. I could not grasp the concept of nuclear fallout.

My midnight anguish was a result of watching the 1983 postapocalyptic film *The Day After*. It depicted a nuclear exchange between the US and the Soviet Union, and left images of people being incinerated etched forever in my young mind.

Nuclear war has been a threat for many decades, but after the fall of the Soviet Union it seemed less likely. The topic is again front and centre now with the Russian invasion of Ukraine and Putin placing his nuclear forces on high alert.

What are the greatest threats to humankind now? The possibility of nuclear war is certainly one. Climate change is a top contender. The other is the trajectory of smart technologies such as artificial intelligence (AI). The

global financial system and supply chain enjoy never before imagined efficiencies due to AI technologies, but our dependence on these systems is a significant risk. Hackers can cripple the financial markets and restrict our access to goods and services.

Warren Buffett, chair of Berkshire Hathaway, is reported to have told people attending his annual shareholders meeting in 2018 that a greater threat than nuclear war is that of cyberattacks.

Bloomberg recently reported on the annual study of the Financial Services Information Sharing and Analysis Center. “After an unrelenting year of fighting off cyber threats, the financial services sector should expect more of the same or even worse, as nation-state hacking campaigns are expected to mirror geopolitical tensions and ransomware gangs retool to dodge increased scrutiny.”

According to the study, global tensions could fuel state and nationalist hacking activity. In light of recent software supply chain vulnerabilities, the group warned its members to be on the watch for nation-state interference in the products and services they consume.

The World Economic Forum’s report “Global Cybersecurity Outlook 2022" says that 84% of business leaders view cyber security as a priority. However, only 68% see it as a significant part of overall risk management. Two-thirds of leaders state that talent scarcity to fight cybercrime is a major concern.

In SA, we have lately witnessed major cyber security breaches reported at organisations such as Transnet, TransUnion and Dis-Chem. At the weekend, the *Sunday*

Times reported on the frail state of the government's cyber resilience. The personal data of a multitude of citizens were gained by hackers, and not even our president's personal data was spared.

In a *Business Day* TV panel discussion this month, hosted by Michael Avery, we were joined by Anna Collard from KnowBe4 and Kerissa Varma from Vodacom. It is well worth watching the recording. The crux of the discussion was that defending against these threats cannot be solely by technological means. Every business should develop a culture of cyber security awareness across all levels of the organisation.

46 The age for reimagining work

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The silent film Modern Times was made in 1936 by genius filmmaker Charlie Chaplin. The world of Little Tramp – the film's emblematic character – is a satirical and comic depiction of the Great Depression's bleak employment and financial situation. Because of industrialisation and efficiency gained by mechanising human jobs, Chaplin saw his age as a product of technological menace (a foreboding of a future he could not imagine).

Workers were rendered unnecessary, and the foremen, managers, and department heads with authority over them grew in stature and influence as a result. Modern Times may be more relevant now than it has ever been. In the battle to avoid alienation and preserve humanity in a modern, automated world, the film reflects powerfully on difficulties facing our current day.

In many organisations, these 'command-and-control' ways of working are still the established order of the day. Individualisation is buried for the sake of blind performance in job roles that fail to allow the best ideas and talent to flourish.

The world of working is facing a momentous shift, where the status quo is undergoing an irreverent but much-needed change. Three factors, in particular, are

influencing the rearrangement of modern work; namely generational and technological shifts, and the impact of the pandemic.

The majority of the global workforce is made up of people born between 1981 and 1996. Known as the ‘millennial generation’, they will soon account for 75% of workers worldwide. This first generation of digital natives has grown up in the internet era, carrying all the knowledge ever produced by mankind in the smartphones in their pockets.

The least engaged generation in the job market, they have a sense of entitlement, seek independence and flourish when moving between jobs. With easy access to information and ‘forever online’, they abhor control and limitations.

In the smart technology era, the impact of artificial intelligence, hyper-automation and digital assistants is a growing reality. We are introduced to software robots that interact with us as equal colleagues, that relieve us from monotonous tasks and the work we despise.

Whereas automation is a real and present danger to the employment of the future workforce, it will also set us free from the ‘robots in flesh’ status forced on us by industrialisation.

Working in one place at a time, often for many years, doing the same job, is a thing of the past. Technology allows us to work when we want, the hours we want, and for whom we want. Short-term, freelance work on our terms is making the gig economy the way to work now and into the future.

Millions of people lost loved ones and often couldn't be with them in their dying moments or at their funerals. Working from home, balancing the demands of children and finding new ways to structure our work routines, the pandemic lockdowns forced us to rethink the nature and value of work.

Over the last months, we witnessed the ‘great resignation’, where millions of people decided they don’t want to be slaves to the ghastly daily commute, to the restrictions of office hours or the abuse of corporate culture. The world has, in effect, given corporations the middle finger.

We have entered an age where we need a contemporary vision for the very nature of work. A new generation, an explosion of technological enablement and a pandemic that made us rethink our humanness will forever change our ideas on labour, wealth and a life filled with meaning.

47 AI in the business driving seat

Published by Brainstorm:
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Organisations leading in the adoption of AI and smart technologies are implementing it across core business functions and into full production. The key to the successful rollout of these new-breed technology platforms is a high degree of senior-level leadership engagement and sponsorship. But they will have to be cognisant of the potential impact it will have on their own positions.

The ‘always-on work’ mentality and advanced analytics have led many to question the role of the company executive. According to the ‘Work 2035’ report by Citrix, a third of respondents think senior corporate leaders will be ‘partially or completely replaced’ by technology over the next few years. More than 70% of those surveyed believe that most companies will have a central AI department in the future, and nearly 69% believe that the CEO will work with a ‘chief of artificial intelligence’ in that time frame.

Kristian J. Hammond’s article 'Please don’t hire a chief artificial intelligence officer’ in the Harvard Business Review argues that the 'very nature of the role aims at bringing the hammer of AI to the nails of whatever problems are lying around’. He states that a focus on AI as an exclusive role in the executive will increase the

focus on the technology and may erode the focus on the business strategy.

I tend to agree with Hammond. In my experience, consulting with large enterprise businesses in the local market, there often seems to be a lack of understanding about the nature and application of smart technology. Many leaders don't comprehend the new wave of innovative, autonomous platforms, and therefore – true to human nature – fear or tend to ignore it. Those who are more positive in their outlook seem to look to AI as a fix-it-all solution to fundamental business challenges.

AI should be used to improve human thinking rather than replace it. We must therefore begin discussing how companies operate and, more crucially, the way they will be managed in the future. Leading organisations are focused on creating a data-driven culture with senior-level leaders empowered by insights-driven decision-making tools. Top executives will be under increased pressure as AI filters up the leadership chain, democratising access to high-quality information and decision-making tools for everyone.

If anything, AI is going to change the talents needed to be a good leader. AI's capacity to rapidly translate large amounts of data into workable answers for complicated strategic dilemmas will be continually used by organisational leaders. AI will enable leaders to consider questions they previously couldn't or wouldn't have dared to ask since the answers were too complex to attain. As more top executives use AI to guide their contributions to company strategy, this influence will grow across the whole C-suite.

The smart technology era will usher in a new period of leadership, not just add another layer of complexity to the technology stack. Rather than amassing knowledge, leaders will need analytical abilities as well as the capacity to inspire people rather than exert control over them. They will use AI to create a long-term strategy for the company rather than a short-term one. In the C-suite, team competencies and technological savvy will take precedence over individual personalities.

48 Data strategy must be driven from the top

Published by Business Day:
https://www.businesslive.co.za/bd/opinion/columnists/2022-02-14-johan-steyn-data-strategy-must-be-driven-from-the-top/

Leaders in business today work in a world where their internal operations and, in particular, their digital connections with customers generate previously unimaginable volumes of data.

To keep track of their development and make future expansion plans, companies of all sizes and sorts are turning to data and analytics. Managers face a deluge of data they must sort through and make sense of.

Most business data is classified as unstructured, which means it does not have specified data types nor may be easily searched. Documents, emails, sensor data, and audio or video files are just a few of the examples. It is estimated that more than two-thirds of business data is unusable.

With the help of data analytics, it is possible to foresee a company's future issues and opportunities and identify areas that are ripe for improvement. It is possible for businesses to predict the long-term consequences of current issues or future opportunities using machine learning and predictive analytics.

Many businesses continue to face data management challenges despite large long-term investments in data management. This is due to the fact data has rarely been

viewed as a company asset, but rather as a mere component of technical initiatives. Data analysis enables leaders to make well-informed decisions that contribute to long-term success. Consider the following data variables: strategy, culture and ownership.

What is the definition of a data strategy? A data strategy, as defined by the Data Management Body of Knowledge (DMBoK), is a “high-level course of action to accomplish high-level goals”. This plan details the company’s objectives for exploiting data to gain a competitive edge and advance its aims. Among the benefits is the capacity to make judgments and take actions with data assets based on a predetermined path.

Due to the fact data is rarely used as the only foundation for decision-making, many businesses struggle to build a data-driven culture. The issue is not with the technology; rather, it is with the culture of the organisation. Data adoption as the lifeblood of an organisation’s operations begins at the top. By setting an example, senior executives must make data-driven decisions and help their workers on a data-driven path, early on demonstrating the importance of data science.

According to Gartner’s 2021 CEO and Senior Business Executives Survey, less than half of the world’s largest firms have a chief data officer (CDO) in control of their data strategy. When the C-suite is involved in and directed by the data strategy, firms are more likely to be innovative and particularly effective at creating commercial value.

Recently, PwC in SA released a thought-leadership article, “The role of the chief data officer”. It shows that global organisations that use data innovation correctly

typically increase revenues by up to 8% with a net profit increase of circa 2%. “Repositioning the role of CDO is the key for an organisation to identify the value of their data, realise the value and sustain the value in key business areas.”

It is clear that data is vastly growing in importance as a business value driver. What is also clear is that the data strategy, the organisational culture and ownership is not a technology department role as such, but that business owners at the most senior levels should be intrinsically involved.

49 AI - The future of project management

Published by Brainstorm:
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AI is on its way to becoming more than just a tool for automating repetitive tasks, especially in project management. Today, the terms ‘AI’ and ‘automation’ are frequently used interchangeably. However, there is a significant difference: automation is a controlled process that adheres to pre-programmed logic and rules, whereas AI is intended to simulate intelligent and even human thinking. To date, much of the focus has been on the automation of pre-existing tasks, which necessitates some degree of standardisation.

Common project tasks are already heavily emphasised for simplifying and automating via workflow integration and process automation. Budget forecast reports can be generated automatically, with no administrative interaction required when updating a project's budget in a database.

Another way to improve project planning is to use programmed logic and rules to enable auto-scheduling, which automatically tracks the progress and status of activities completed by the project teams. Using incident management in conjunction with project planning tools can help reveal delays that may be caused by a large number of problems in a particular set of workstreams that are being addressed simultaneously.

Project management processes will be improved, and as a result, the work and labour costs associated with basic project management office (PMO) duties will be reduced. Automatic project management will save money while freeing up project managers to handle more difficult tasks and interact with the project's stakeholders.

Machine learning will play a significant role in project management. Predictive analytics powered by machine learning can advise project managers on how to set up and steer the project, based on its unique characteristics, and on how to react to specific difficulties and dangers in order to achieve the best potential outcome based on previous successful projects.

With AI, project managers' mind maps may be translated to a semantic network, from which tasks and relationships can be deduced. For example, AI-based project scheduling may include lessons learned from previous projects and generate a variety of plausible schedules based on the context and dependencies.

Additionally, project plans may be updated in real-time using historical data regarding team effectiveness and project success. Through real-time analysis of project data, an AI system may even alert the project manager to any potential hazards and possibilities.

I anticipate that project assistants will continue to conduct fundamental project management responsibilities and relieve project teams of repetitive, low-value work. Project management in this scenario will heavily use currently available and future human-computer interface technologies. Project managers in charge of a PMO and its staff will gradually be replaced with intelligent project assistants.

In the future, machine learning-based project management may expand to encompass autonomous project management. Humans will eventually have responsibility for project budgets and portfolios, among other things, to manage the risk associated with autonomous investment decisions.

It's also vital to evaluate the benefits an AI system can bring to projects, as well as your business culture and risk tolerance. Do you only want a digital assistant to do the menial tasks for you, or do you want something more complex and thorough in its evaluation of the project?

Project managers will continue to have a crucial role in the age of AI as long as they focus on the fundamental skills of project management and progressively shift into roles that place a higher premium on human qualities.

In the near future, there will be a significant increase in projects to implement AI-based platforms. The project management community will play a vital role, but they also need to focus on their skills in this field. AI may not replace humans, but it may replace project managers who are not skilled in this technology.

Part 7:

AI & Societal Impact

50 ESG reporting: AI to the rescue

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https://www.businesslive.co.za/bd/opinion/columnists/2022-09-06-johan-steyn-esg-reporting-ai-to-the-rescue/

The concept of environmental, social and governance (ESG) reporting and investing refers to a set of guiding principles that outline how a business should operate concerning the wellbeing of society and the planet. Investors, business boards and government officials have raised their expectations for climate commitment progress in 2022 as a result of the extraordinary market and policy momentum behind ESG in 2021.

In addition to climate change, environmental concerns, social issues such as diversity, equity and inclusion, as well as worker welfare, are likely to continue to command the public's attention. This is especially important given the increasing frequency with which these issues are discussed in the context of ESG in general.

Socially responsible investors use ESG concepts as a filter. The environmental standards evaluate a company's concern for the natural world and resource management. Social standards scrutinise how a company interacts with its employees, vendors, customers and surrounding communities.

S&P Global predicts that in 2022, governments and business leaders will be under greater pressure than before to demonstrate that they are aware of and managing issues such as climate change, human rights

abuses and civil unrest. This burden will be increased by the expectation that they will fully comprehend and responsibly manage ESG issues.

Traditionally, corporate reports have published financial information, while sustainability reports have published environmental information. As it has become evident that sustainability challenges can impede an organisation's ability to generate enterprise value over time, investors are increasingly anticipating the disclosure of ESG information about business value creation in conventional corporate reporting.

The global technology corporation Oracle reported that 94% of business leaders had difficulty promoting ESG standards. Manual tasks and locating progress data are two obstacles. Obtaining the information required for goal-setting and performance monitoring is difficult for most businesses. To gather, validate and update ESG data, firms around the globe should use cutting-edge technology tools.

The majority of CEOs surveyed by Oracle concur that artificial intelligence (AI) algorithms are more dependable than humans when making decisions about sustainability and social responsibility. These software tools can collect data more reliably, conduct objective evaluations, forecast outcomes based on measurements and historical performance, and provide innovative problem-solving strategies.

Companies are capitalising on AI's potential by recognising the risks and leveraging them to promote the adoption of safe, ethical procedures for the creation, acquisition and application of the technology.

The goals of ESG and responsible AI partially overlap; that is, their fundamental beliefs are congruent with those that help minimise risk and maximise opportunity.

In addition, many employees' requests to use technology for social good are being met through the use of AI to find sustainability improvements in many business aspects, such as managing data centre cooling and enhancing supply chain operations to reduce waste.

It is essential to implement systems, policies and standards for governance. It also aligns with the objectives of those on the development team who favour technology-enabled governance over technology-first governance. Effective AI governance manages impact by taking into account evolving legislative constraints and new organisational approaches.

ESG is no laughing matter. It should not be a tick-box exercise. The future of our planet and therefore our children depend on all of us, collectively, taking it seriously and abiding by its principles. Despite all its potential dangers, AI technology could help us achieve this.

51 Technology can help us beat the hunger pandemic

Published by Business Day:
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Oliver, age nine, is a resident of the parish workhouse, where the boys receive “three meals of thin gruel each day, an onion twice a week, and half a roll on Sundays”. In his second novel, Charles Dickens describes the horrid conditions of orphans in London in the late nineteenth century.

Food shortages and perpetual hunger is a pandemic that has largely gone forgotten during the Covid-19 years. According to the UN’s World Food Programme, 811-million people about the world are going hungry. It’s estimated that 44-million people in 38 countries are on the brink of starvation. A global human catastrophe will inevitably occur if these numbers continue to rise at the same rate as they have for the past few years.

In 2021, the *State of Food Security and Nutrition in the World* report estimates that 21% of the population in Africa suffers from malnutrition, more than double that of any other region. An Ipsos study also found that more than 40% of South Africans of all ages were suffering from chronic food insecurity.

The world’s population is expected to reach about 10-billion by 2050, and scientists believe that to keep up with the rising demand for food, farmers would need to produce 69% more calories than they did in 2006.

There are many factors that will affect the future of food security. One is certainly climate change and better utilisation of the limited resources available. The other is war, and we are seeing increased global hunger as a result of the Russian invasion of Ukraine, the “breadbasket of Europe”.

The other factor at play here — and hopefully on the positive side of the story — is technological innovation. Artificial intelligence (AI) is transforming the world at a quick and accelerating rate, bringing great opportunities but also societal and economic challenges. Following the global health pandemic, the adoption of some technologies that have existed for more than a decade increased dramatically.

A new legion of purpose-driven entrepreneurs has entered the AI arena, and “AI for Good” is emerging as one of the most potent instruments for achieving the sustainable development goals of the UN and improving livelihoods about the world.

AI is now used in agriculture to evaluate data points to identify disease and insect outbreaks, as well as to uncover the potential to increase yields, remove waste, and reduce pollution. It is projected that AI-enabled operations generate about 20 times more food per acre than conventional farms while consuming 90% less water. Some are at the forefront of vertical indoor farming, employing computer vision and AI algorithms to optimise nutrient inputs and boost harvests in real-time.

Accomplishing the UN sustainable development goals will require bold government policies, corporate commitments, and individual engagement. We will need to employ every tool at our disposal, and as AI becomes

more powerful every day, we should encourage more inventors and entrepreneurs to develop novel applications for this technology to address our most pressing social issues.

It is possible to create a better future for our children through the responsible use of the vast array of new smart technologies. We need better regulation without stifling innovation.

There is enough brainpower in our country to ensure that in the future, no child will have to ask, as the young Oliver Twist did: “Please, sir, I want some more.”

52 Social media addiction: narcotics for the brain

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https://brainstorm.itweb.co.za/content/j5alrMQAl1nMpYQk

I've been a Facebook user for many years. I joined the platform when I was living abroad, and it was a wonderful way to stay connected with friends and family back home. After I returned to South Africa, I was able to stay in touch with many of my friends who were living in countries across the world.

People use the power of social media platforms for various reasons and in different ways. For me, it was a way to stay connected with real friends. I say 'real' as I've always only connected with the relatively few people who I know personally and who became good friends over the years. These days, it's a joy to see posts from my friends and to know that they're doing well and to witness – albeit virtually – how their children are growing up.

I often share updates and pictures of my son and myself. I do what most people likely do: I take numerous pictures of a situation or an event and choose only the best ones to post online. That doesn't make me inauthentic, does it? It's human nature to want to look good and to portray oneself as happy and successful.

But herein lies the problem. For the most part, social media portrays only the best of people. These platforms have created a false view of the lives of others and often

lead to depression. You might think that your own life is ordinary only to see the posts of friends who are on holiday and seem perpetually happy. Why are they so happy? Why are their relationships so admirable? Why is my life so ordinary and troublesome and unlike theirs?

Over the years, I've often considered leaving the platform. At first, it was a genuine tool to connect with others, but nowadays, my feed is filled with posts and advertising I didn't subscribe to and am not interested in. Where Facebook should have widened my world to learn from others and witness their journey through life, it's become a depressing dilemma in making life smaller. The algorithms are really my friends. They know me better than anyone and they make sure I see only the content that supports my paradigms and feeds my biases.

They also make sure I stay on the platform as long and often as possible. It's become an addiction. Should I leave Facebook as many of my friends have done? I think so, but I also fear I may be missing out on things that have formed my impressions and views for years. I fear being disconnected from life.

Why are we seemingly unable to live without it? Social media can be addictive and has been shown to affect endorphins in the brain. It is the 'happy' chemical that causes us to feel good when we're around people we love or enjoy a tasty meal.

These dopamine-inducing virtual environments contribute to the phenomenon of social media addiction. Studies show that they create brain pathways like recreational drug use in order to keep consumers addicted to their products.

Retweets, likes, and shares on these sites produce the same physiological response in the brain's reward area as narcotics like cocaine. Even neuroscientists have linked social media use to a direct dopamine infusion into the brain.

Perhaps I should look for a ‘Social Media Anonymous’ group to help me overcome my addiction?

53 The computer says ‘no’

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https://www.businesslive.co.za/bd/opinion/columnists/2022-07-11-johan-steyn-the-computer-says-no/

Little Britain is a hilarious television comedy that many readers may be familiar with. Written and performed by David Walliams and Matt Lucas, it consists of a series of satirical sketches involving British people from various walks of life.

Williams plays the character Carol Beer, a bank clerk who ferociously types on her computer keyboard the requests of clients, only to say without emotion “The computer says no.” You have to see it to appreciate how funny it is.

We are in an era where many business leaders are working on implementing the new breed of smart technologies such as artificial intelligence (AI), digital assistants and cognitive automation. One of the vast array of benefits that these technologies offer is the automation of decision-making.

For example, a client sends an email requesting a quote on a product or service. A computer vision program recognises the text and extracts the data. An automated workflow program verifies the identity of the client and the products requested. The status of the client is verified against account status and discount agreements, while internal stock levels are confirmed. An automated reply is sent to the client containing the quote.

The processes for almost all back-office tasks could be automated based on preset parameters for automated decision-making by the algorithms. It is one thing if we task technology to make simple, low-impact decisions. However, unleashing an algorithm to make more important decisions in finance, law enforcement, recruitment, healthcare or even in warfare is another thing altogether.

Automated trading systems have been used in the stock market to create buy and sell orders. Personalised offers customised to the customer's preferred communication channels are created by banks using this technology. Even the ideal time of day to send a client a message can be determined using predictive behavioural analytics.

Automated systems are being used in several nations to assist human judges' decisions in the legal arena. In pretrial detention and sentencing decisions, automated risk assessment instruments are used to forecast the likelihood of repeat offences. Even if an offender is eligible for parole, it might be determined by a computer program.

Government and business sectors have seen a considerable expansion of surveillance methods thanks to the use of sensors, cameras, online transactional records and social media. Recently, there has been a huge shift in the ability to monitor large populations instead of just a few individuals. Algorithms can be trained to restrict admission to a building or arrest a suspect based on facial recognition.

In armed confrontations, automated decision-making is a reality. Typically, a drone will provide data to a field

commander, who will then determine whether to launch a missile. However, what if the drone could make the kill decision without the need for human approval? The UN held a symposium in Geneva in December 2021 to discuss the relationship between humans and technology in modern warfare. After the claimed first autonomous drone strike in Libya, the gathering addressed the growing reality of AI-enabled combat and autonomous weapons systems.

As we give more and more power to algorithms to make decisions that humans used to make, what will happen if we can no longer remember how to make these decisions or lose total control over the AI?

54 Twitter: the modern town square is in trouble

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It was early May and the sweet fragrance of spring was in the air. I navigated the bewildering traffic in Rome to start a two-hour drive to the town of Assisi in Umbria. I received an unsolicited upgrade from the car rental company and with the top down my Fiat 500 was flying down the SS3 highway.

My heart was racing as I noticed Monte Subasio in the distance, on its slopes the medieval aim of my pilgrimage. Legend has it that in the 12th century the spoiled young man Giovanni di Pietro di Bernardone, after suffering jail and an astonishing life change, confronted his father and the bishop in the local town square.

Surrounded by the townspeople and his family, he turned his back on the life of comfort he knew to become a hermit and sojourner. We know the beloved saint as Francis of Assisi. His life and influence are the stories of folklore. I have often pictured in my imagination that renowned day in the town square.

For centuries, the town square was an essential part of every city in the world. People met to exchange knowledge, discuss politics, and do commerce. They have waned in importance in recent decades as public

perceptions of society and human interaction have shifted, in large part due to technological innovation.

Some call social media the new town square, the place where we learn about the world and exchange ideas. In 2013, a former CEO of Twitter, Dick Costolo, spoke about his company's vision — then just seven years old — to become the "global town square".

When right-wing protesters stormed the US Capitol and invaded the House of Representatives in Washington, DC, on January 6 2021, social media was a key method for rallying the demonstrators. For years, fringe ideologues have used the internet to propagate their extreme beliefs and conspiracy theories and amass large followings.

Even a former US president launched his own social media podium. "I created Truth Social ... to stand up to the tyranny of big tech." Donald Trump, his ghastly and noisy trumpet removed by Twitter, aimed at spreading his election lies in what many see as a failed attempt.

Recently the richest man on earth decided to take over the world's "de facto town square". Elon Musk made his first public appearance since floating a more than $40bn buyout offer for Twitter hours before at the TED 2022 conference in Vancouver, Canada.

"A decent indicator of whether there is free speech is this: is it permissible for someone you dislike to speak something you dislike? And if that is the case, then we have the right to free expression," he said.

When social media first became popular, the goal was that it would enable people to express themselves freely.

Under this system, everyone would be treated the same, regardless of where they lived, what they looked like, or their background or status in society.

Instead, they have given repressive governments the authority to use them to limit speech and monitor their own citizens. We have witnessed a collapse in democratic institutions and a flood of false information.

I am a great fan of Musk but I am greatly concerned that the wealthiest person alive could become the owner of a force that shapes world opinion. The modern town square is in trouble.

55 Twitter: a flip-flop dance of mania

Published by BusinessDay: https://www.businesslive.co.za/bd/opinion/columnists/2022-11-22-johan-steyn-twitter-a-flip-flop-dance-of-mania/

Tweet, tweet, chirp, chirp. The “modern town square” and its new boss filled the virtual airwaves in recent weeks with a flip-flop dance of mania. Elon Musk made me think of a man who proposed to marry a woman, and then said he would not. He proposes once more, only to change his mind again. All this with a cool $44bn *lobola* hanging in the balance.

At long last the wedding takes place. The honeymoon is a disaster. The groom is a narcissist who tells his new bride she needs to work gruelling hours cleaning the house. He expects “extremely hard-core” commitment otherwise she may just as well leave, never to return.

This is classical Musk. Known for working long hours like a madman, even sleeping on the floor of the businesses he has built, he expects the same from those around him.

In April I wrote this in Business Day: “Twitter: the modern town square is in trouble. I am a great fan of Musk but I am greatly concerned that the wealthiest person alive could become the owner of a force that shapes world opinion. The modern town square is in trouble.”

Reflecting on this I recently wondered if Twitter really is that important. Many employees showed Musk the proverbial middle finger and left, not willing to work like crazy people. With so many jumping ship, will the platform crash? And if so, what then?

It is one thing to get rid of the fake accounts, the trolls, but now also the people? What is he doing? Will we one day look back and see that, despite the initial chaos, Musk not only prevented Twitter's demise but that he built something incredible?

If, in the meanwhile, the platform crashes, will we notice? Is Twitter really that important? There are already hints that the exodus is straining the system. Some users reported having difficulty obtaining the required verification messages for two-factor authentication. It has been reported that test pages have appeared live.

Some users report receiving a renewed onslaught of spam in direct messages and on their feeds, while others report receiving new replies to long-deleted tweets and the disappearance of their saved tweet drafts.

Twitter will not be abruptly and completely shut down. However, security experts have warned that the drastic layoffs could make it simpler for malicious actors to compromise user accounts by exploiting the platform's vulnerabilities.

Twitter's strength resides in its capacity to function as a global water cooler, a constant backchannel for informal contact and the propagation of gossip. It is a place for the exchange of ideas and arguments among influential individuals, thus what occurs there can have real-world effects.

What Twitter lacks in financial resources, size, and development potential it makes up for in a manner that is much more difficult to define, which is perhaps what makes it so intriguing. It has an outsize effect on the media we consume, the stories we hear, and the way we live.

I suspect that Musk will prove his critics wrong, once again. But the price to pay for Twitter's future success will be much more than a *lobola*.

Conclusion

As we reach the end of our exploration through the intricate worlds of AI and automation, it is clear that these technologies have fundamentally reshaped, and will continue to redefine, our society, businesses, and individual lives. From the most technical realms to the everyday nuances of our existence, AI and automation have carved their significant marks.

In this book, we've explored a range of topics, from the depths of automation and its effect on the labor market, to the rising need for ethical AI and robust regulatory frameworks. We've examined the philosophical implications of AI, its transformative potential on customer experience, and its burgeoning influence across diverse geographies, particularly in Africa.

We've delved into the nuances of AI in businesses, pondering its role in the survival and growth of firms in the digital economy. Finally, we've discussed AI's far-reaching societal impacts, ranging from ESG reporting, tackling global hunger, to reshaping the dynamics of social media platforms.

As technology continues to advance, it is essential that we keep questioning, researching, and holding informed debates. Only through such diligent scrutiny can we ensure that AI and automation serve us responsibly, ethically, and to the best of their potential. As we've seen, these technologies are tools—powerful ones—but

their effectiveness and impact depend on how we wield them.

We hope this book has given you an in-depth and holistic perspective of the world of AI and automation. Remember, as much as we are shaping AI, it is also shaping us, defining new paths for our future. Embrace it, question it, and most importantly, participate in the dialogue about its deployment and governance. Your voice matters in shaping the AI-driven world of tomorrow.

As we draw to a close, it is worth noting that this is not the end. AI and automation are dynamic, ever-evolving fields. This book is but a snapshot of the current landscape, a foundation to build upon as we continue to navigate the uncharted terrains of the future. We are all explorers in this grand journey, and every insight, every perspective, enriches our shared understanding.

Thank you for joining us on this exploration. May the knowledge you've gained serve as a beacon, guiding you as we journey together into the uncharted frontiers of the AI revolution. The future, as they say, is only just beginning.

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ARTIFICIAL INTELLIGENCE

- THE 2022 ARTICLES -

A collection of my 2022 articles on Automation, Responsible AI & Regulation, Social impact, the future of AI, its impact on Africa and the world of Business.

Welcome to a journey through the transformative world of artificial intelligence (AI) and automation – a technological revolution that is reshaping society, businesses, and individual lives. This book aims to serve as a guide, exploring various dimensions of AI and automation.

This book is designed to provide a better understanding of AI, its challenges, opportunities, and implications, inviting readers to engage in this paradigm-shifting technological evolution. Whether you're an AI enthusiast, a business leader, or someone just curious about the future, this book aims to offer a holistic perspective on the world of AI and automation.

Johan Steyn is a Human-Centered Artificial Intelligence advocate and thought leader. He was recognised by Swiss Cognitive as one of the top 50 global voices on AI. He is a Research Fellow at the School of Data Science and Computational Thinking at Stellenbosch University and an Adjunct Professor at the School of Business at Woxsen University. He was a finalist for the 2022 IT Personality of the Year Award.

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