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STARTEGIC USE OF TECHNOLOGIES – AI and ML for Professionals

By CS Haresh Jani and CA Vikram Pandya

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ANALYSIS OF IMPACT OF TECHNOLOGY ON PROFESSIONALS

By CS Amita Desai

CS Haresh Jani initiated the session at IMC organized by Manoyog GRC Advisors Private Limited. He explained in brief the advantages and use of Technology. The session was later taken by CA Vikram Pandya. Both the speakers were very well versed with Technology and Professional service provided by professionals like CA / CS/ Cost Accountant and Lawyers.

The presentation covers how technology impacts the way professional need to work to sustain and provide value added services to their clients in the most efficient way.

One of the most important functions of the company secretary is to be a trusted advisor to the board. In some respects, this role is relatively immune to technological change. It requires attributes like judgement, cognitive thinking, empathy and a sense of propriety that cannot easily be delegated to an algorithm. In fact, technology potentially has a major impact here as well. It may not remove or replace this part of the company secretary's role, but it certainly affects the way it is carried out. The important issue is the availability and use of data. Technology enables organizations to generate and capture an enormous amount of information – about their performance, their operations, their employees and customers and much more. But once you have all that data, what do you do with it? The speaker said that the Data doesn't give you edge unless Data is analysis and put to use to derive results.

A common fear about the future for all sectors is whether Artificial Intelligence (AI) and human will continue to work happily alongside one another that is complement or AI will substitute Human!!!!

Professional Advisory is not just based on data. Trust and relationships are integral to an effective professional service and this will continue to be the case for sometime. AI will however allow professionals to gain deeper insights into vast amounts of data much more quickly and effectively, thus allowing them to enhance their performance and increase efficiency. However days are not far, when Internet of Things (IoT) will help AI with data being available, to have own judgment, analytics, emotion and derive to desired rational outcome.

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Recently Robot Teachers are teaching Physics lessons to students alongside teacher at Indus International School, Bengaluru in India. The AI-enabled robots teach lessons in Biology, Chemistry, Geography, History and Physics to Classes 7-9. As per the Collaborative Learning Model (CLM), the man-machine team, comprising a teacher, students and the robot, collaborate in the classroom to deliver a lesson. The teacher collaborates with the robot and brings out the key concepts, relevance and application of the lesson being taught.

A. Brief summary of Session

1. The presentation started with an interesting **video clip** showing how a customer experience Banking Transaction, which no one had ever dreamt of.
2. **History of AI** started from year 1956, during the Second World War, noted British computer scientist Alan Turing worked to crack the 'Enigma' code which was used by German forces to send messages securely. Alan Turing and his team created the Bombe machine that was used to decipher Enigma's messages. The Enigma and Bombe Machines laid the foundations for Machine Learning (ML).
3. CS Haresh Jani stated that how **regulators and authorities use the Technology** for ensuring compliances and no escape from law by keeping an eye on Social Media for Insider Trading Transactions. Social Media sites like Matrimonial sites, Facebook , LinkedIn and Instagram are becoming a hunting ground for SEBI as it seeks to trace connections in various insider trading cases, especially when it's unable to establish links through conventional ways such as know-your-customer (KYC) documents or bank account transactions. SEBI's emphasis to take assistance of advanced technology including Artificial Intelligence and Big data.
4. The **discussions and presentation** covered Artificial Intelligence (AI), Machine Learning (ML) and Automated Machine Learning (Auto ML), Block chain, Big Data, Robotic Process Automation, API (Application Programming Interface), IoT (Internet of Things) and many more as discussed below :

(a) **ML---Machine Learning** is a concept under AI where we let the machine learn things on its own if it is provided with sufficient data and computational power. The machines learn like humans by gaining experiences using thinking capabilities, where experiences are nothing but information or data and thinking capabilities are nothing but computational power.

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He explained how ML is designed to show Car from different angles and machine will learn what is CAR and any image of Bus or Auto , Machine reads that it is not the Car.

(b) AI--- Artificial Intelligence is a much broader concept where machines are capable of achieving things that we human beings consider as “smart”. There are multiple ways to achieve AI, but the best and the most groundbreaking discoveries are happening in the field of ML. In simple word, ML is Predication and AI is an Action.

(c) Automated Machine Learning -AutoML is the process of automating the process of applying ML to real-world problems. AutoML covers the complete pipeline from the raw dataset to the deployable machine learning model. AutoML was proposed as an AI-based solution to the ever-growing challenge of applying ML. The high degree of automation in AutoML allows non-experts to make use of ML models and techniques without requiring to become an expert in this field first.

(d)He further explained how AI is achieved with the same example of recognizing a CAR by machine.

- Step 1 is Business Intelligence (Decide what is expected from machine) then Step 2 have Big Data (huge number of images of car from different angle to be gathered and feed in machine)
- Step 3 Machine Learning (let the machine learn things on its own if it is provided with sufficient data and computational power)
- Step 4 Deep Learning (is part of MI where the number of images are increased to achieve better results so that it might outperform all models)&
- Thus AI is developed, which is the last Step where machines are smart enough like a human or it surpass human capabilities.

(e) He also presented what is the difference between AR , VR , MR & XR (Augmented Reality , Virtual reality, Mixed Reality and Extended Reality). AI, MI and DL--- Artificial Intelligence, Machine Learning and Deep Learning.

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(f) NLP — Natural Language “Processing”

NLU — Natural Language “Understanding”

NLG — Natural Language “Generation”

NLP = NLU + NLG

Natural Language Understanding (NLU) is the understanding the meaning of what the user or the input which is given means. That is nothing but the understanding of the text given and classifying it into proper intents. Most common example is Siri, Alexa and Google Assistant .

Natural Language Generation (NLG) is what happens when computers write language. NLG processes turn structured data into text.

Natural Language Processing (NLP) is what happens when computers read language. NLP processes turn text into structured data.

(g) Generation of NLG: There are three generation of NLG

(a) ARRIA—It instantly converts multiple data streams into fluid textual analysis that is indistinguishable from the work of trained analysts—except by the volume and speed with which it is produced.

(b) ARTICLE FORGE—It is one of the most recent online tools to write whole articles for you, even though given the exact same keyword to compose. It uses its intelligence and research abilities and provides you completely exclusive articles inside just 30 minutes!

(c) HEY LEIA—which creates website automatically in few seconds

(h) Cloud Computing Platform : Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. The term is generally used to describe data centers available to many users over the Internet. Large clouds, predominant today, often have functions distributed over multiple locations from central servers. If the connection to the user is relatively close, it may be designated an edge server.

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(i) Various Big Data Tools for Data Analysis : Few tools are open-source tools and few are paid commercial tools that have a free trial available.

(a) Hadoop is an open-source framework that is written in Java and it provides cross-platform support. Over half of the Fortune 50 companies use Hadoop like Amazon Web services, Hortonworks, IBM, Intel, Microsoft, Facebook, etc

(b) Cassandra

(c) Datawrapper

(d) Lumify

(e) Storm

(f) Rapidminer

(g) Pentaho

(h) BigML

(i) SQLite

(j) R Studio

(i) SaaS/ PaaS/ IaaS/ DaaS- kinds of new service models emerging in the recent years

(a) SaaS-- SaaS stands for "**Software as a Service**". The provided service is software that is most cases centrally hosted and accessible through the internet by a browser client. With that, the client can use the software without being concerned about computing resources or other money and time-consuming things. Examples are : Gmail, Google Drive, Google Calendar, Google Sheets , Hangouts etc.

(b) PaaS – PaaS stands for "**Platform as a Service**". The provided service is a platform that allows users to develop, manage and run applications through the internet. This can include middleware that connects applications with operating systems, programming languages, web servers and other parts that build an environment that enables fast development and easy management of applications. An example of PaaS is Google App Engine on Google Cloud Platform.

(c) IaaS- IaaS stands for "**Infrastructure as a Service**". The provided service is a complete infrastructure accessible through the internet containing networks, servers, operating systems and anything else that is required for building and running systems. An example of IaaS is the Google Compute Engine on Google Cloud Platform.

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(d) DaaS – DaaS stands for “**Desktop as a Service**”. The provided service is a desktop environment that is accessible through the internet and is also sometimes referred to as "cloud desktop" or "virtual desktop". The hoster provides all the required resources to run the desktop environment and any application within it as well as storing and saving data for each session.

(k) GAN- A Generative Adversarial Network (GAN) is a class of ML systems where two neural networks contest with each other in a game and given a training set, this technique learns to generate new data with the same statistics as the training set.

For example, a GAN trained on photographs can generate new photographs that look at least superficially authentic to human observers, having many realistic characteristics. GANs can be used to create photos of imaginary fashion models, with no need to hire a model, photographer, makeup artist, or pay for a studio and transportation. GANs can also be used to create portraits, landscapes, and album covers.

(l) Digital Twin - A digital twin is a digital replica of a living or non-living physical entity. It is a virtual model of a process, product or service. Digital twins are made possible thanks to Internet of Things (IoT) sensors that gather data from the physical world and send it to machines to reconstruct. NASA uses digital twins to develop new recommendations, roadmaps, and next-generation vehicles and aircraft. A digital twin of a patient or organs allows surgeons and health professionals to practice procedures in a simulated environment rather than on a real patient.

(m) Nexensus- Data monetization is the process of using data to increase revenue. The highest-performing and fastest-growing companies have adopted data monetization and made it an important part of their strategy, according to McKinsey & Co. Without right Data Monetization any organization runs risk of missing critical insights that could improve its business.

(n) Ui Path for invoice related all actions – you may log in to <https://www.uipath.com/>

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(o) Hyper Automation – HA is the advancement of traditional automation capabilities by using technologies like Artificial Intelligence (AI), Robotic Process Automation (RPA) and Machine Learning (ML) to automate processes. Basically, hyper automation is a combination of automation tools to increase AI decision making.

(p) Mindbridge to be used for audit -- <https://www.mindbridge.ai/products/ai-auditor>

(q) Incorporation.in—to find any kind of incorporation of entity across the globe run by AI

(r) Broadridge--- visit <https://www.broadridge.com>

(s) MaaS- Minutes as a Service—Automated Minutes writing with the use of AI

(t) Tofler- visit <https://www.tofler.in/> it gives deepest intelligence on Indian business

(u) Recommendation Engine -- Recommendation Engine (sometimes referred to as a recommender system) is a tool that lets algorithm developers predict what a user may or may not like among a list of given items

(v) Royalty Range- visit <https://www.royaltyrange.com>--- Organizations around the world use our databases for tax, transfer pricing, valuation, legal and benchmarking purposes.

(w) Nvidia- is a graphics processing chip manufacturer company that currently generates most of its revenue from the sales of graphics processing units (GPUs), which are used for competitive gaming, professional visualization, and cryptocurrency mining.

“Nvidia GeForce,” is usually integrated with laptops, PCs, and virtual reality processors. It has other product which is Quadro, Tesla, and GRID.

It has other product “Tegra”, which combines a GPU and a CPU into one chip. The product is designed to support online gaming, entertainment devices, drones, artificial intelligence, and—most importantly—self-driving cars.

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(x) Generative Design : It quickly generate high-performing design alternatives—many that you'd never think of on your own—from a single idea. It's a design exploration process. Designers or Engineers input design goals into the Generative Design software, along with parameters such as performance or spatial requirements, materials, manufacturing methods, and cost constraints. The software explores all the possible permutations of a solution, quickly generating design alternatives. With Generative Design, there is no single solution, instead, there are multiple great solutions. You choose the design that best fits your needs.

(y) Zegal : Zegal is a cloud-based legal software service on subscription based for businesses to create, manage, sign, and store legal and business documents, and for law firms to support their clients.

(z) Watson : Watson is an IBM supercomputer that combines Artificial Intelligence (AI) and sophisticated Analytical software for optimal performance as a "question answering" machine. The supercomputer is named for IBM's founder, Thomas J. Watson. The key analytical technology is an open source program called UIMA, for Unstructured Information Management Application

B. Impact of these Technologies on Professionals- By CS Amita Desai

In last 2 decades we have witnessed exponential growth in Technology and the way of living of Society. With the use of Technology human life became simpler. It is inevitable and certain that Technology will simplify many processes and those who are claiming expertise need to give the expertise in the public domain for the benefit and will of the Society at the cost of their profit or wealth. Action or Inaction is by choice and those who remain status quo will certainly suffer and those who will embrace such changes will have few initial challenges but equally huge opportunities.

We have seen that the amount of active web users globally is now near 3.2 billion people, which is almost half of the world's population. Every day, two million smartphones are sold around the world, and the amount of information we share on social media networks is phenomenal. Imagine how much Data would be available and handled, processed and analyses by Big Data and on an average Google Search Engine handles approx. 7 to 10 Billion search on a daily basis.

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In last two decade we have witnessed many changes due to new technology like Ola/ Uber, sharing car pools, PayTM, Robotic Cars, Nano Technology, Drones, 3D Printing, Smart Phone, Smart Watch, Email, Video chat, WhatsApp, FaceBook, LinkedIn, Instagram, streaming service like Netflix, Hotstar , Amazon Prime Video, Book my Show, Make My Trip, Easy Trip, GPS, e-reader device like a Kindle or Nook, Platforms like Spotify and Apple Music, Ganna, Sawaan , driverless cars, fitness trackers like Fitbit, thermostats, doorbells, shopping on Amazon, Flipkart , voice assistant Alexa, Uber Eats, Swiggy, Zomato, meal for senior citizens, IoT Safety device and Medical Alert are used by the Companies like MobileHelp and Medical Guardian for providing monitored medical alert systems, Robot Teachers, Robot waiters and this list is endless.

The revolutions that will surface in years to come will continue to make profound changes in our everyday lives. Future technology is sure to transform our lives in unbelievable ways.

The fallacy lies in belief that only the repetitive and mundane task will be done by machine and professional job contains task which are not susceptible can not be taken over by the computers. Increasingly capable machines gradually take over one or more tasks of professionals and hence belief that few task of human like to do cognitive and sentient thinking, which computers are not capable of, yet! will prove to be ill founded.

With AI, ML and other tools, if machines are given data of past 200 years of Supreme Court Judgements, with Big Data and certain attributes, the machine can predicts decision as accurately as any legal scholar. This may affect the requirements of judges, lawyers and dispute resolution professionals. E-Bay uses Machine and systems for Dispute Resolution Process. With Zegal many companies get commercial agreements in fractions of seconds. This may affect the need of a lawyer to draft lengthy legal contract. Similarly, for compliance professionals, if the Regulator or Government Authorities will use AI and generate auto filled Forms, the Machine will access your internal data and clear the form. There may be DIY (Do It Yourself) software available where client can fill in required data and Government AI can access your compliance software or accounting software to validate the information and data. Thus the need of specialized knowledge of professional will undergo great change in the society. The Machine can replace management consultant also by predicting accurate solution to each situation with its analytical ability.

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The Author, *Richards Susskind and Daniel Susskind in their book “The Future of the Profession”* took the position and advocate that with advancement of technology they prefer Society to be liberated from the Professionals by giving practical expertise to many then select few and made available at very little cost. However they have raise two moral question in the future world of technology :

- (1) Should we seek to **impose moral constraint** on the march of technology across the profession- like it would be inappropriate to turn off life support system to be handed over to machine, similarly Capital punishment decision to be given to machine ; and
- (2) Who should **own or control practical expertise in the tech based internet society.**? The same may be left for political philosophy however it brings debate for “Liberation of Expertise “ or “Enclosure of Expertise”, in later there may be emergence of new Gatekeepers replacing Professionals, like controlled intellectual property .

There may be further sub- question with Tech driven society with reference to how to motivate to work without reward, who will be custodian of expertise, feasibility of any institution for moral practices and issues of exclusivity.

The Author says that the Society must strive to have direct and free access to living , evolving and having medical help, guidance, advice , news , assistance, insights and know- how widely available at low or no cost that will empower human to live healthier and happier and that’s what the future generation need. However this shift will not come about spontaneously.

Currently, there is blend of automation and augmentation. The automation of processes replaces repetitive human decision and action by technology and augmentation proposes that technology be used to support and improve human behavior, both in making decisions and taking action.

However , for any professionals it is time to know that Machine offers Professional Services with Consistency, Quality, In Time and with great cost effective price. These are the challenges for experts in professional. Professionals need to be Data Scientist to survive. They may add value to their client with analytical use of data by machine. There are few skill sets require by professionals like Expert domain knowledge, Efficiency in service and Experience.

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The Professionals like Chartered Accountant, Company secretaries, Architect, Tax Consultant and lawyers need do adopt certain revolutionary steps like :

1. Automation- Accomplish more with less people
2. Innovation - Pro-Active approach
3. De-composition of actions - slice and dice and keep important work with expert rest with efficient staff
4. Conglomerate, have MDP (Multi-Dimensional Partnership), tie up with para legal and other efficient people with certification course, collaboration and communication with peer to peer and inter- dependence
5. Propose - Value addition by analysis of Big Data
6. Optimize the efficiency with automation and scaling up- Trained staff
7. Develop / Design/ give access to client for DIY option- plug and play
8. Separate community of seniors with experience to be leveraged in exceptional circumstance

- C. **Conclusion :** In conclusion I would like to share small fact about Sunflowers: Do you know Sunflowers turn according to the position of the Sun. In other words, they “chase the light.” This facing the sun phenomenon is called HELIOTROPISM Have you ever wondered what happens on cloudy and rainy days when the Sun is completely covered by clouds? Perhaps you think the sunflower withers or turns its head towards the ground. Is this what crossed your mind? Well, that’s incorrect! This is what happens.....

They turn towards each other to share their energy. Nature’s perfection is amazing.

Now let’s apply this reflection to our lives as professional. Each professional has efficiency, expertise or experience. How about following the example of the beautiful sunflowers i.e. "Supporting and empowering each other". Nature has so much to teach us. Wishing everyone a "Sun flower" trait of turning towards each other on their cloudy and gloomy days. Spread goodness...it will come back to you....!!

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