

**You Want A Smart Edge  
That's A Gatekeeper**

— V Padmanabhan,  
VP, Engineering &  
South Head,  
GlobalLogic



**Working In The Zero Trust Era**



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VOL. 33 | ISSUE 4 | APRIL 2020

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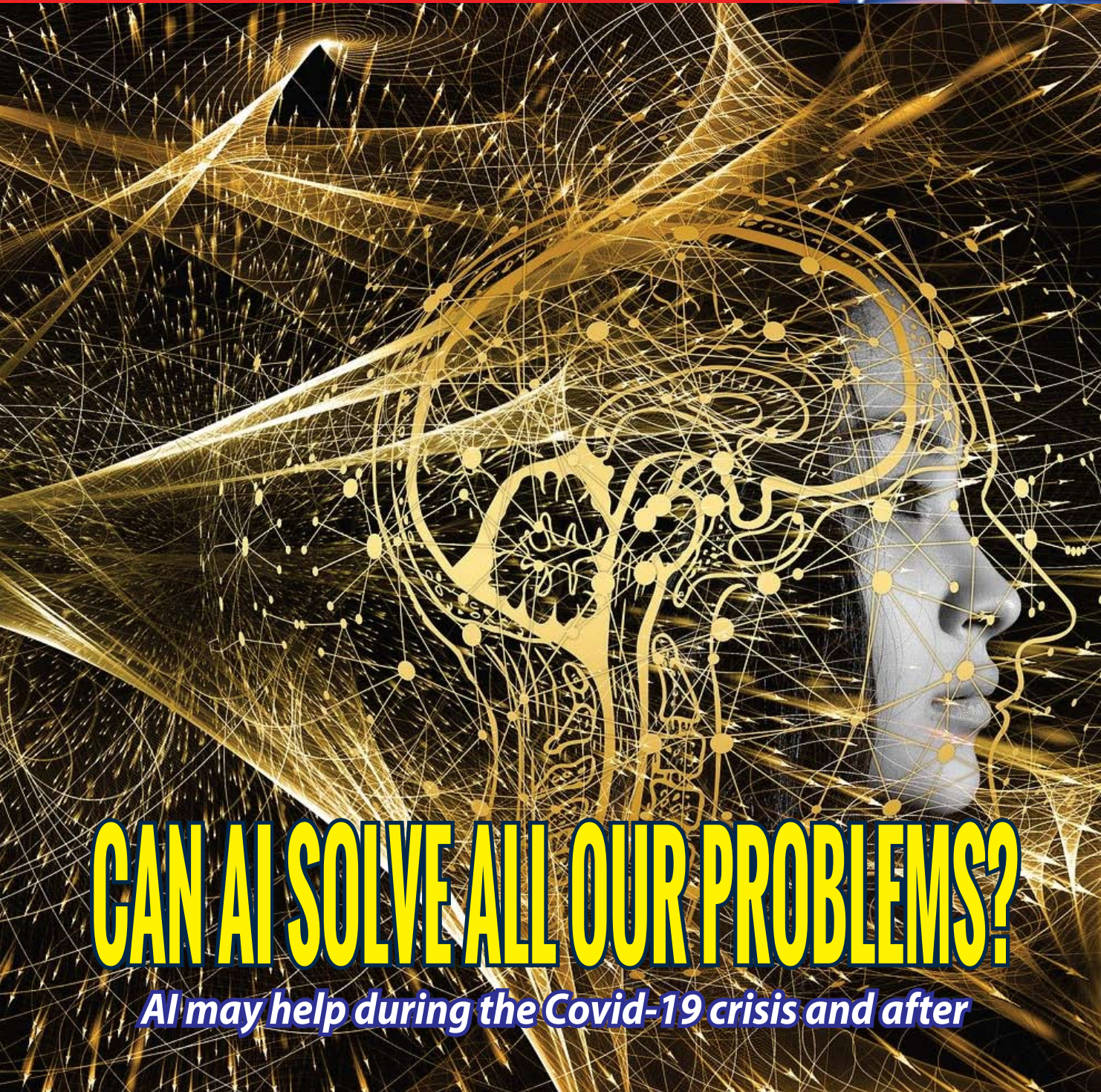
Will AR & VR Become The  
Breakout Stars Of the Post-  
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**Printed and published** by Pradeep Gupta on behalf of CyberMedia (India) Ltd, printed at printed at M/s Karan Printers, F 29/2, Phase II, Okhla Industrial Area, New Delhi, published from D-74, Panchsheel Enclave, New Delhi-110017. Editor: Sunil Rajguru. Distributed in India by IBH Books & Magazines Dist. Pvt. Ltd, Mumbai. All rights reserved. No part of this publication may be reproduced by any means without prior permission.



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## Opportunity in the time of Corona

Rocketry that led to satellites and NASA. Code Division Multiple Access (CDMA) as a way to beat Nazi snooping. Aeroplane jet engines that ushered in a new age. The nuclear bomb leading to N-power. Amazing and long-lasting computing breakthroughs as a result of cracking the Nazi Enigma machine... The list is endless. One of the least discussed effects of World War II is the acceleration of technology that happened thereafter. It's not that WWII led to it, but the fact that human beings thrive in a war or tragedy and their brains go into overdrive. It happens when there's a scarcity of anything. Necessity is the mother of invention.

The same will happen with the Covid-19 global crisis that has led to a shutdown. While we are heading for a recession, there are certain industries that will in fact get a boost like the broadband industry. It is experiencing an overload and will certainly get upgraded. It may even lead to many countries finally pushing for the much-needed 5G networks as that's one of the main things that can ease pressure permanently. When certain industries are down, others have to be promoted to maintain the balance.

Netflix, Hotstar, Amazon Prime & Co are in overdrive, but more importantly they will get a lot of new connections, most of whom will be hooked for life. Internet commerce continues to be indispensable as sites like BigBasket are unable to cope with the excess demand. The delivery boy network continues to expand unabated. As the work from home industry reaches record numbers in 2020, expect a further mushrooming of cloud and data centres.

The medical industry was caught woefully inadequate when the crisis first broke out. We may get a tech upgrade here too with things like more compact and effective testing kits along with mobile CAT scanners. We may see the growth of the medical startup industry and the debacle that was Theranos may finally be put to rest. The whole world had become dependent on China and it totally ruled certain supply chains. This has been disrupted and now we will become less dependent and promote smaller tech centres all over the world.

Finally, expect innovation to increase in ways we cannot even imagine. All the emerging technologies will get a fillip and be used in all sorts of different ways. All of us have to pull up our socks and make sure it's as business as usual, but also to have an eye for the future through innovation. It was Winston Churchill who is supposed to have said, "Never let a good crisis go to waste!"

*Sunil Rajguru*

# WE MAY BECOME SMARTER IN A POST-COVID-19 WORLD

Global pandemics will only push the world into creating systems where the human being can be replaced in emergencies and the number of tasks that can be done artificially will only increase exponentially. Humanity's march towards AI may only become faster

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**G**overnments and organizations all over the world are already collating a huge amount of data relate to the Covid-19 disease, it's spread and mapping of victims and using AI tools to see how best to mitigate the problems and use predictive analysis in a bid to halt its growth. Chatbots were trained with the details of the disease to answer the basic questions of the troubled populace. This is already being called a Black Swan event which may be crucial in understanding a global pandemic and its learnings may be applied to other areas. This is a dynamic model being dealt with in real-time. Facial recognition is already widespread and in future everyone may start using tools to screen

air passengers and citizens in public who show signs of fever and other characteristics that suggest that they are sick. Drones could also be used for video surveillance. The list is endless.

But if all goes well, then we will fully recover from the Coronavirus Covid-19 global epidemic, with minimum casualties. In the short run we will enter an economic recession. However in the long run, you can be sure that a lot of innovation will come out of the crisis and the world may totally change and take a tech trajectory for the better. Work From Home has been supersized in 2020. We will find that many jobs could have been WFHed in the first place and there will be a certain amount of optimization in the way



it's all done. Collaboration tools will proliferate and prosper. People are indeed using them to the max, with Zoom being one of them.

Contactless operations are the in thing now and hence governments may finally give the green signal for drone deliveries and driverless cars on a nationwide scale. Both robots and Robotic Process Automation will get a boost, as industries will want to replace many human tasks to cope with future pandemic scares. The medical industry will see a tech upgrade. 3D printing could play a big role in that. Tech valleys may mushroom all over the globe as countries will want to have a much less dependence on China. However if there's one ring to rule them all, one technology to power them all, then it has to be Artificial Intelligence.

**What is AI?** This is at the root of the debate and there is very little consensus as to what is AI in the first place. While the Turing Test talked of a computer's ability to fool a human into thinking it was another human, there have been modest gains with things like chatbots beating other men into proving that they would be better boyfriends, in short limited tests that women participated in.

To bypass this problem, sometimes AI faces further sub-divisions. There's weak AI or narrow AI which includes things like Siri. There's strong AI or full AI or Artificial General Intelligence (AGI) which we are trying to master and implement fully. Finally there's Superintelligence and maybe that's the only thing that Hollywood is fixated upon. Huge amounts of data (Big Data) and a huge computing power (with Hyperscale making huge strides) makes one think that the era of AI is finally upon us and the applications of AI will probably now increase exponentially.

The 2010s saw great progress. The computer won at popular American games like Jeopardy! and the ultra-complex Go. We also got Alexa and Siri and made strides in Natural Language Processing. Google Duplex plans to take that even further. Microsoft's Kinect was a breakthrough in tracking body movement. Actual robots can now self-learn, navigate hazardous tracks and play games just like humans. The Never Ending Image Learner (NEIL) made great strides in image recognition.

These are all individual components and the idea is to ultimately have a single AI system that may be able to run across the entire global network. In one of science fiction writer Arthur C Clarke's books, an AI system becomes a virtual President of the world and takes all the decisions. If you are a Marvel Cinematic Universe (MCU) fan, then you know Ultron is a ma-

## Some famous AIs



**Deep Blue:** Beat the legendary chess champion Garry Kasparov 3.5-2.5 in 1997. It is one of the first AIs to capture global public imagination.

**AlphaGo:** In 2016, it beat the reigning Go champion Lee Sedol 4-1 in Go, a game which is thousands of years old and board positions have been calculated to be more than the number of atoms in the universe.

**Google Brain:** Uses Deep Learning and combines open-ended ML research with systems engineering. Google Translate is one of the early successes from this.

**Siri:** The first famous virtual assistant from Apple and then we had Alexa from Amazon. Now we have a multitude of chatbots and assistants like Cortana from Microsoft.

**Watson:** From IBM, became famous for winning the popular US game show Jeopardy!.

**Melomics:** From "genomics of melodies", it uses algorithms to compose music without any human intervention.

**Holmes:** Heuristics and Ontology-based Learning Machines and Experiential Systems, developed by Wipro for "development of digital virtual agents, predictive systems, cognitive process automation, visual computing applications, knowledge virtualization, robotics and drones".

levolent form of that. Another idea that has caught on in Silicon Valley is the singularity, where we will all merge with the machine and there will be one combined organism that will encompass both humanity and a Superintelligent AI.

Of course we are a long way from that, or are we?

# WHEN TECH BECOMES THE MIGHTY WEAPON IN COMBATING CORONA

Coronavirus crisis opens up an opportunity for the tech companies and the healthcare providers to look at the immense possibilities offered by the technologies and embrace them for the greater good of humanity

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**T**he world is dealing with an unforeseen crisis at this moment with the Coronavirus spreading like wildfire across hundreds of countries infecting lakhs of people and taking away tens of thousands of lives.

Without any significant breakthrough so far in the quest for an antidote or cure, the magnitude of the affliction has thrown an unprecedented challenge to the medical and healthcare system everywhere, putting the hospitals, doctors, and even medical researchers under a lot of stress and strain. Technology companies, however, have pitched in quickly to help them fight this lopsided battle.

## Making researches and testing faster with AI

To understand the spread of the disease, researchers, now, are sequencing both the novel



coronavirus and the genomes of people afflicted. But analyzing genomic sequences takes time and computing muscle and any delay in the process will impact the development of vaccines.

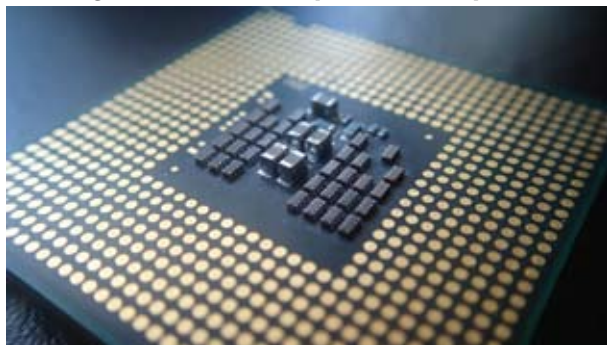
Just to give you an idea, 18 years back, when

SARS erupted, it took scientists more than a year to complete the virus genome sequencing. But in today's world of fast-paced innovation, it can be done within half a day, thanks to the increased computing power, as well as the possibilities unleashed by the power of Artificial Intelligence.

Alibaba's research wing, DAMO Academy has now developed a genome sequencing solution that is five times faster and efficient than other available sequencing solutions. The diagnosis of new Coronavirus takes 14 hours. The simultaneous screening capability for more than 20 people also brings down the averaged time for analyzing each sample from two hours to just half an hour.

Alibaba has also developed AI algorithms to analyze CT scan images which can significantly improve the testing and detection efficacy for Covid-19. The solution can differentiate the coronavirus-infected pneumonia case images from the non-coronavirus-infected pneumonia case images within 20 seconds-making it nearly 60x faster than human detection.

### Enabling researchers with powerful compute



Graphics processing unit(GPU) maker, NVIDIA has made its genome-sequencing software, Parabricks available to the researchers at no cost. Parabricks uses GPUs to accelerate by as much as 50x the analysis of sequence data and hence, can slash the time for variant calling on an entire human genome from two days to one hour.

Similarly, HPC and Quantum computing service providers have also come forward. After a request from the Canadian government for solutions to the pandemic across industries, DENSO and Leap2 quantum cloud service provider, D-Wave Systems have joined hands to give researchers across the world unfettered access to the hybrid quantum systems and quantum expertise for solving problems related to the Covid-19.

The open-source software company, SUSE claims

that its customers in the pharmaceutical and research space are already using supercomputers to find prevention, treatment and cures for Coronavirus. It is offering medical device manufacturers free services such as support and maintenance for its operating system and container technologies to be embedded in and run their medical devices.

### Evaluating virus dispersal risks using AI and simulation



On December 31, 2019, precisely nine days before the World Health Organization (WHO) alerted people about the emergence of a novel coronavirus, Canadian AI startup, BlueDot spotted and flagged the unusual pneumonia cases happening in Wuhan and sent out a warning to its customers. BlueDot analyzes a variety of information sources including news reports and flight records to identify, track and forecast disease outbreaks patterns and they use Natural Language Processing and Machine Learning to do so.

A good understanding of the virus characteristics and the dispersal factors help to control virus persistence. Simulation software can also be used to evaluate the risk of virus dispersal. Dassault Systèmes' simulation software, SIMULIA XFlow has been used to evaluate the virus dispersal at the Leishenshan Hospital in Wuhan, which was built in just 14 days to treat Covid-19 patients. The software helps to simulate virus contamination and diffusion within the hospital's ventilation system and to counteract the effects of unplanned ventilation risks.

### Telemedicine emerges as a viable alternative

Besides taking stringent measures like lockdowns and shutting all the non-essential services to contain the virus spread, the governments are also looking at alternatives like telemedicine and remote care options to reduce strains on hospitals. With a wide array of remote screening, and care options through video conferencing, chatbots, and secure messaging,



Telemedicine can be a powerful tool for preventing virus transmissions among medical and health practitioners, and patients.

Eighteen states in the US including Washington DC have enacted emergency regulations already to increase the use of telemedicine to tackle the Coronavirus epidemic. It can be a viable model of healthcare delivery in India too, where the challenge before the healthcare system is two-fold: First, the country's dense population, and second, an abysmal doctor-patient ratio. The healthcare system is already strained and we cannot afford any further exposures of the healthcare practitioners and patients alike.

### Increased research collaboration with video conferencing and AI

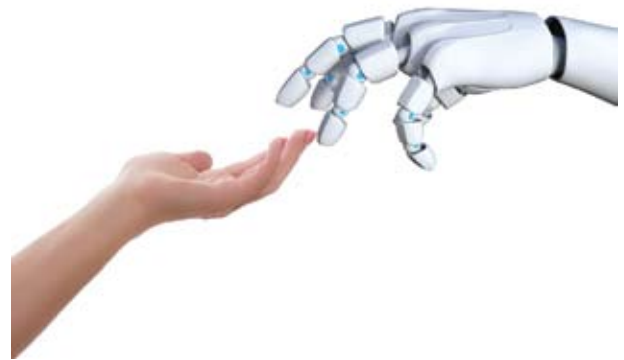
Alibaba is now providing a video conferencing platform with real-time multi-language translation to the medical experts all over the world for sharing their experience of fighting Covid-19.

Hospitals around the world can conduct video conferences to exchange experiences and seek remote consultations with Chinese hospitals. The exchange of information can help others in adopting timely prevention and control measures and even embrace the best approach for treating patients and thus minimizing the damages to a great extent.



Over 440 medical institutions from 104 countries have joined this International Medical Expert Communication Platform so far.

### Robots become the trusted aides to health workers



Earlier this month, China Mobile, cloud robotics systems maker, CloudMinds, and Wuchang Hospital came together for a trial run of a robot-staffed hospital in Wuhan, the epicentre of China's Coronavirus outbreak. The idea was to relieve the exhausted medical practitioners and healthcare workers.

Similarly, hospitals and airports are using robots and robotic automation to monitor patients and disinfect facilities. In one Chinese hospital, robots are being used to deliver medicine and collect bed sheets and rubbish. Xenex says its devices are currently being used to clean rooms at facilities with suspected cases. A robot called Little Peanut was reportedly transporting food to patients quarantined in a hotel. The maker of GermFalcon, a germ-killing robot developed to sanitize airplanes has also offered to help to provide its services to three airports in the US.

Back home, mask-clad humanoid robots were seen dispensing sanitizers, distributing masks and raising awareness in Kerala. The trial was done by a startup, Asimov Robotics. Similarly, a government hospital in Rajasthan has also been using humanoid robots on a trial basis for delivering food and medicine to the infected patients.

These are just a couple of examples to show the immense possibilities that can be unleashed by technology today for the greater good. The Coronavirus crisis has opened up a historic opportunity for the technology companies to rethink their innovation strategies and look at more flexible, nimble and frugal ways to develop solutions. Hopefully, they will take a cue from this crisis and act on it quickly.

# J.A.R.V.I.S. AT YOUR DISPOSAL? QUITE POSSIBLY!

The availability of cheaper and intelligent AI tools will extend the technology's scope and usage further in future for the greater good

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**R**emember J.A.R.V.I.S. (Just A Rather Very Intelligent System)—the intelligently programmed virtual assistant of Iron Man Tony Stark from the Marvel Cinematic Universe? Who would have thought that it would turn into reality someday? But here we are. Coming straight out from the pages of science fictions and sci-fi movies, we have J.A.R.V.I.S.—like Siri, Alexa, and Google Assistant at our fingertips today—the dream that we secretly held in our heart for so long!

From just an academic discipline, Artificial Intelligence (AI) has become the most talked-about technology buzzword in today's world and knowingly or unknowingly, all of us are using some forms of AI in our daily lives already.

But it's not been all hunky-dory as it seems. Embracing AI technologies have been extremely complex and cost-prohibitive proposition for many businesses and that has been affecting the democratization of the AI technologies as well. Availability of quality data and right skills also pose additional challenges in terms of adoption.

However, it's a good thing that every cloud has a silver lining. The rules of economics say that when something becomes cheaper people are most likely to use more of it. For example, personal computers were almost non-existent until the 1970s. But over the course of the last three decades, they have not only become better but also a lot cheaper. The same holds true for all the technologies including AI.

Thanks to a flurry of mind-blowing advancements in technological capabilities such as the availability of Big Data and advanced deep learning, algorithms have contributed heavily to make AI a lot faster and smarter, while the plummeting prices of Graphics Processing Units (GPU) have made it more cost-effective. Tech giants like Intel, NVIDIA, Facebook, Amazon, and Alibaba are working on to build new AI inference chips which promise to deliver high performance at low cost and hence could help businesses deploy AI in more cost-effective ways.

There are other ways to look at the cost problem also. Leveraging AI technology does not necessarily

cost a fortune and the pricing depends on the nature of outcomes one wants to achieve with AI and the complexity of it. Also unlike a few years ago, when only the likes of Google, IBM, Microsoft, Apple, and Facebook, were dominating the space with massive AI investments, there are a host of AI tools and technologies available now from an array of innovative AI startups that are challenging the status quo by all means.

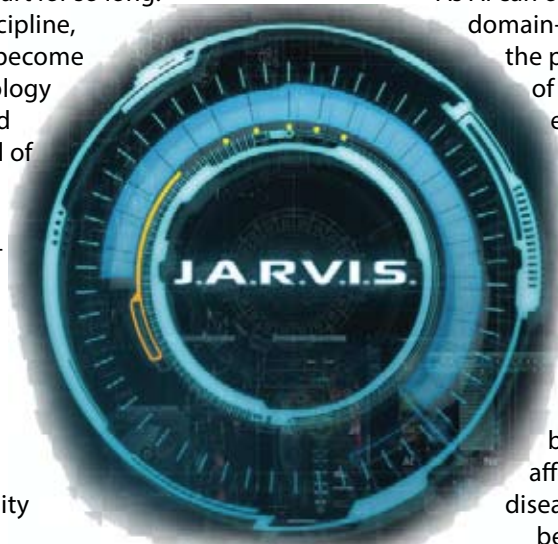
As AI can outperform humans in certain domain-specific tasks and also has the potential to tackle a plethora of issues that persist in the environmental and social domains, hence, some of the tech giants and researchers are also coming forward to contribute heavily towards the goal of democratizing AI for the greater good.

The soaring Coronavirus crisis has shown the world the ways AI technologies could be used to find speedy and affordable solutions to tackle the disease. AI technologies have also been used extensively to create a positive impact on people and the planet such as growing crops more efficiently, tackling climate change issues, improving disaster response with early warning systems, effectively diagnosing otherwise hard-to-detect

diseases, and even in hunting down child predators online or fighting human trafficking issues.

The availability of cheaper and intelligent AI tools will certainly take AI a notch above its current application areas and usage and help in building new use case scenarios.

We are rapidly moving towards an era, where machines will work alongside humans to push the boundaries and unleash new possibilities. Today a robot receptionist can greet in you at front office desk, check your emotions and quickly adapt itself to address your queries in the right manner possible. The day is not very far when machine intelligence will be a force multiplier for human brains, and make our lives easier in much the same way computers, smartphones, and intelligent assistants did in the last few years.



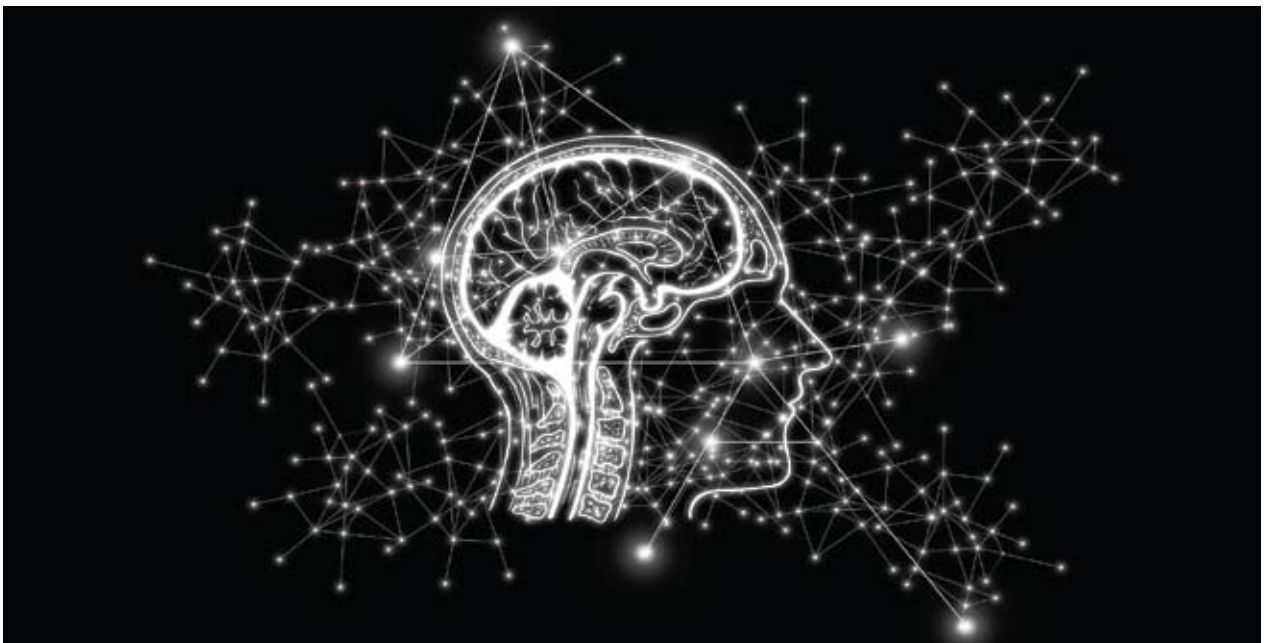
**“Started out, J.A.R.V.I.S. was just a natural language UI. Now he runs the Iron Legion. He runs more of the business than anyone besides Pepper.”**

**—Tony Stark in *Avengers: Age of Ultron*. (UI = User Interface. Iron Legion = Group of Iron Man armours. Pepper = Stark's assistant)**

# CHAPTER 2 OF AI – IT'S QUITE A PAGE-TURNER

Trust, bias and production-readiness – these are going to be protagonists as AI unfolds its story and potential ahead. Or would they be antagonists?

Pratima H



**W**e are still far from a world where babysitter robots would be as normal to see and count upon as (or who knows, even more than) an airpod-wearing teenager from the neighbourhood. After all, like any other technology, unless AI (Artificial Intelligence) passes the grandma-test or baby-test, it would still be a special appearance-character in the tale of everyday life. It will stay a slippery dream, unless it becomes easy, trust-worthy and consistent—and these three words are really heavy challenges for AI right now. It has to be simple and fast—at new levels—but be fair, right, understandable and reliable too. That too, in a language that is not the privilege of lab-coats and suits.

It has to. Because we are talking of billions riding on this next page here. As per some estimates (ResearchandMarkets report) the global AI market size can hit US\$390.9 billion by 2025. But are players

closer to making AI simple, ethical and worth handing over our babies to?

Another way to ask that—Why is HDFC using AI—and beyond chat-bots? Why is Watson being wielded for Oncology & Genomics? Why would driverless trucks happen sooner than driverless cars? And why is it about time we start thinking of numbers rising for Edge AI, Cloud AI, and transparent AI?

**Anil Bhasker, Business Unit Leader, Analytics Platform, IBM India/South Asia** helps us to see where and how IBM is moving the needle on the toughest plot-holes that held AI back so far.

**What business areas and applications would see the next big upswing in AI interest? Why?**

After having experimented with AI and moved simple workloads to the cloud and committing to 'random acts of digital', we believe that businesses are now ready to move to Chapter 2. Chapter 2 of

Digital and AI is about scaling and moving from experimentation to transformation. Last year, enterprise demands rose for real-time and near real-time analytics at scale. Going forward this year, businesses are more eager to have AI making positive impact on their bottom line, and that is where the trend will swing. So traditionally the business areas which provide most values will be the areas where executive will be willing to adopt AI.

### Like?

For example, sales and marketing in a retail organisation provide significant value, and AI can be used on customer data to roll out customised promotion in real time at scale. This could lead to one to two per cent increase in incremental revenue. However, the reason for lack of widespread adoption among enterprises so far, is not leveraging a powerful AI-enabled platform for data scientists to build robust air-tight models. So executives will be more interested in engaging such platforms which use AI to drive AI. Enterprises will continue to build on these trends in 2020, and that will drive analytics vendors to add new capabilities and expand their offerings.

### Any new frontiers that would shape the AI plot ahead?

Intelligent automation of speech and document centric workflows (like trade finance, invoice processing, etc.) forms the next big areas of interest and requirement from businesses. These areas are still currently very human centric—that aren't able to scale (up or down) as per requirements. With the advancements in speech (voice control will be the default mode for more simple functions) and NLP now, enterprises are able to overcome these challenges with ease. IBM Watson, with its advanced speech and NLP models, can help solve these problems without a lot of expensive data science skills required to build these models. Another one that will become more and more prominent is Edge AI.

### What have we learnt so far from AI's use in healthcare, transport, marketing and financial industry? How well the next set of solutions would be fixing bias, accuracy, data-angles etc?

Globally, we have seen AI being implemented in a number of industries including the ones you mentioned. The concern has been that these are not evolving beyond lab/research projects in most cases and even when they do, there are apprehensions



**ANIL BHASKER**, Business Unit Leader, Analytics Platform, IBM India/South Asia

about accuracy and bias. This affected the trust of the business towards these AI models. IBM's AI platform is focusing on solving these issues. IBM Watson OpenScale helps enterprises to manage production AI, with trust and confidence in outcomes. It is the DevOps for AI wherein it automates the management of the models to keep the accuracy at optimum and handle any data skew. Furthermore, its ease of use and affordability ensure the enterprise wide applicability to a much broader range of applications and use cases.

### Do customers ask for observability, monitoring, comprehensibility and explainability as factors that affect their decisions or are these areas still in the technical alley?

Enterprises see tremendous value in AI. However, for mission-critical business flows, customers want their business teams to understand the how and why of any suggestion, recommendation and/or prediction that an AI model makes. It could also have regulatory impact. Therefore, solutions with absolute transparency on what goes behind the decision-making thread will instill confidence. For that the AI platforms need to have those capabilities built-in to show customers the rationale behind each recommendation. Another key factor impacting decision-making for businesses was the inherent force to use AI from the cloud provider hosting their data.



## Can you elaborate?

Enterprises can no longer afford AI that locks them into a single vendor's cloud. So, last year, we put a stake in the ground and announced Watson Anywhere wherein we made the industry leading Watson AI technologies available to run on any cloud—IBM, Amazon, Google, Microsoft. This allows businesses to bring AI wherever their data and apps reside. Thus, improving efficiency, customer experience and creating revenue streams are predominantly the reasons that we have seen behind investments in AI & Analytics.

## Is the distance between academic/lab research and commercial adoption still a long one? Why and for how long?

AI is a 'continuous revolution' and is too vast for this comparison. As new ways are being invented, their adoption is coming along, but then more is coming out from the same research labs. Let me give an example to explain this better. IBM Research developed Project Debater—the first AI-powered, computational argumentation tool that absorbs massive and diverse sets of information and perspectives to help people build more persuasive arguments. From a business perspective, one of its several applications can be to crunch thousands of articles and come up with a summary that is useful for an executive to quickly get the context. However, for any AI initiatives to make it to the commercial foray, it has to have a roadmap for making a profound business impact with lesser regulatory complexities. This is the very reason why driverless trucks will see commercialisation quicker than driverless cars.

## What goes into productisation of AI? What factors emerge as challenges there?

In general, a good understanding of the problem from a business perspective, understanding the data points involved (including the bias, etc.), figuring out what models might work, understanding how to tune them to the requirement at hand (this is an iterative process), and being able to articulate the how and why of the workings of the model to the satisfaction of the business team—all go into making AI relevant for enterprises. However, cost of skills and time taken to take AI to production are some of the areas requiring advancement.

## What's the answer then?

The only thing that can address these challenges are AI driven AI modelling. It would not be wrong to

say that considering the enormity of data and time it might take to create a product out of AI, it could only be AI which can deliver it. IBM's AI platform helps reduce these challenges, making the process of AI model generation and deploy to production easier, faster and with trust.

## Can you share some examples of AI's progress in India—both in research areas and application ones?

India is uniquely positioned to succeed in the AI economy. There has been some significant usage of AI in the research areas of precision agriculture for better farm yield by combining the real-time satellite imagery feed and weather data. In healthcare industry, leading hospitals and healthcare institutions in India have implemented AI-enabled Watson for Oncology & Watson for Genomics to help physicians provide patients with personalized, evidence-based cancer care.

In industries like banking and insurance, the first wave of AI adoption focussed on implementing AI for improving customer experience through chat-bots. However, the next wave is focusing more on deeper impact on line of businesses by driving profits, and that requires a pivotally-robust Information Architecture. HDFC ERGO General Insurance Company is collaborating with IBM to co-create new AI based solutions on IBM Cloud that will redefine customer experience in India. Leveraging IBM Garage, teams from HDFC ERGO and IBM Services are working together to develop and test new solutions. This will help to better address customer queries, ensure faster turnaround time and draw deeper customer insights for a better omni-channel experience.

## What role do interventions like the Policy Lab and Project Debater play in accelerating the right AI perceptions?

When we talk about AI building AI and the strides we have made, it is all technical and difficult for the average users and consumers to gauge what has been achieved. But projects like Project Debater make it easy to quantify. The scenario of a computer program being able to understand & comprehend what is being said and counter with its own opposing views, all in real time, that too, not scripted replies, but those that requires a fabric of deep learning and augmented comprehension. This displays the advancements that have been achieved in the AI space.



# CAN AI HELP WHEN HAIL-STORMS TURN INTO HELL-STORMS?

Agri-tech is not just about agri-lending and agri-insurance but also about yields, weather, farmers' psychology and ecosystem – as we dig out in this interview

Pratima H



**K**unal Prasad, Co-founder and COO, Cropln explains why transforming underlying processes, changing farmer skepticism, empowering lending and insurance entities with data, and understanding India's farmers and farms are important seeds to sow before hoping to grow AI in the agriculture sector.

### **AI for agriculture—Are the issues of tech-aversion, unpredictable environments, climate control parts, variance and land topography daunting ones?**

A lot of farmers and even agri-businesses view technological upgrades or interventions with skepticism. If companies introduce new tech without modifying the established patterns of work, the tech is less productive, and so are the field-extension teams. If the field staff does not adapt to technology-driven processes then their companies can't win as a team. Climate change and land topography-based issues are definitely challenges that need to be addressed with focus. We need to build solutions that are adaptive to these challenges and can work well under changing scenarios.

### **How does AI play out for Agri-Lending?**

One of the most critical components to achieve a fruitful yield is adequate access to finance that helps farmers with their diverse needs such as purchasing and upkeep of agricultural land, investing in the right farm machinery and tools, buying quality inputs such as seeds and agro-chemicals, and for crop insurance too. One of the ways farmers obtain financial support is through credit that banks provide. The AI and Machine-Learning-based platform of Cropln detects cropping patterns and predicts the future of the crop, thus, highlighting the associated risk and opportunity for agri-stakeholders. Businesses can also establish the historical performance of every pixel at the farm/postcode/state/country level by utilizing easy-to-use connector APIs.

### **Where exactly does it bring something new and powerful?**

It is a common practice to collect data from the farmer verbally, without enough evidence to verify the details provided for the loan applications. These details pertaining to their demographic, financial and agri-data, including the farmers' personal details, the crops being cultivated, plot acreage, and yield estimations are vital to establishing the farmer's creditworthiness, and enable banks to reduce the risk of NPAs (Non Performing Assets). The lack of such



**KUNAL PRASAD**, Co-founder and COO, Cropln

reliable and structured data also means that the loan appraisal process can take many weeks to complete.

After having disbursed the loans, banks have yet another colossal task of evaluating the performance of the farm plot periodically, which is at present accomplished by bank employees paying visits to farmlands every once in a while. Not only is this cost- and time-consuming, but these visits prove futile when they are ill-equipped to provide advice or support to farmers to help achieve optimum yield, and ultimately this results in poor harvest and more NPA.

SmartRisk, Cropln's AI solution, further enables lending institutions to validate the information furnished by farmers by comparing it with historical and predictive insights gleaned from a combination of data from multiple sources, including the platform's global agri-ground intelligence, weather and satellite-imagery.

### **How did you make SmartFarm descriptive to prescriptive to predictive, diagnostic and cognitive?**

The data gathered on SmartFarm enable descriptive and diagnostic analytics for various stakeholders with an agribusiness. Over the years, CropIn has managed over 9,000+ crop varieties on SmartFarm, which enabled it to build a predictive and prescriptive solution called SmartRisk. It is a unique agri-AI/ML solution leveraging multiple sources of data including global agri-ground data, weather and satellite-imagery. It can help detect crops, estimate acreage, monitor crop health, forecast the yield and do much more to strengthen the supply chain.

### **You mentioned something about crop-cutting experiments and water savings too.**

Yes, using this solution, stakeholders can optimise crop-cutting experiments using smart, scientific sampling points to make yield prediction more accurate, and process insurance disbursement with more efficiency using accurate ground-truth data. Plus, stakeholders can leverage CropIn's AI-powered platform to promote sustainable use of water by assessing parameters including regional weather, precipitation, and water stress.

### **Is it tough to offer a full-stack solution when ecosystem fragmentation is a major block - especially on the side of insurers, commodity players etc.?**

We believe although it is a major challenge to provide a full-stack solution because of ecosystem fragmentation, it is not impossible to achieve. Some of the solutions need to be customized to the specific needs and the segment that is being catered to. To be fully effective, it is required that the platform is adopted by stakeholders at the right scale. CropIn is building a universal platform that will be a one-stop solution for all the stakeholders involved in the ecosystem.

**AI can reduce crop damage significantly, if not completely eliminate it. AI helps insurance companies evaluate insurance claims using historical performance of the affected plots**

### **What help can AI bring—from what we saw in the recent spate of hail-storm/rain crop damage?**

AI-based solutions can provide timely alerts and weather forecast predictions based on the data procured through satellite integration which can help the farmers take necessary action on their plots. This can reduce crop damage significantly, if not completely eliminate it. AI helps insurance companies and the government to evaluate insurance claims on crop loss/damage using the historical performance of the affected plots. This ensures proper risk assessment is done and it enables impartial settlement of claims, which is of immense benefit for farmers. It cuts down the stress on the farmer to provide proof of his/her claims, thereby also reducing the effort and time spent in the process.

### **Is India a different set of challenges and outcomes when compared to Africa, Europe, and America?**

One of the biggest issues facing the agricultural sector in India is low yield: India's farms' yield is 30-50 per cent lower than that of developed nations. Average farm size, poor infrastructure, low use of farm technologies and best farming techniques, decrease of soil fertility due to over-fertilisation and sustained pesticide use, are leading contributors to low agricultural productivity in India. Indian farms are small (70 per cent are less than 1 hectare, the national average is less than 2 hectares) and therefore have limited access to resources such as financial services, credit (or lenders), support expertise, educational services or irrigation solutions. Most of the farmers in India suffer due to poor rural connectivity.

In the short-term, yield directly impacts a farmer's cash flow and the ability to respond to fluctuations in the market. In the long-term, yield limits a farmer's ability to invest into their farm's future to increase productivity and decrease risks associated with their crops. Along with this, technological aversion and skepticism, lack of knowledge about the advantages of technological interventions add to the complexity of the challenge.

### **What outcomes assure you that your goals and innovation are moving in the right direction?**

We have successfully implemented and achieved traceability for potato seeds for PAGREXCO in Punjab. CropIn collaborated with the Government of Karnataka as a technology partner to digitise farmlands across 29 districts. In the 'SmartFarm' project, 3,68,632 plots were digitized and 1,33,812 farmers impacted positively. Another project worth

mentioning here is the Sustainable Livelihoods and Adaptation to Climate Change (SLACC) Project for India in association with the Government of India's National Rural Livelihoods Project (NRLP) and supported by the World Bank. Cropln solutions digitized 12,000 plots and 8,209 farmers were benefited through this project.

**Tell us something about how you use Machine Learning (ML) to do what you do? And what prompted the choice for AWS? What specific solutions did you pick?**

Around six years ago, Cropln started out as a monolith application deployed on Amazon Elastic Compute Cloud (Amazon EC2) using AWS Auto Scaling. For the work we do, Amazon EC2 was the right choice. It allowed us to scale the instances without downtime. We are able to build strong solutions with the help of Amazon EC2. Since then, our customers and usecases have grown. We moved into a microservices architecture and started running huge ML workloads (using Amazon SageMaker), ETL and analytics pipeline on AWS. We even started building a data lake on AWS. We also started to deploy our ML trained models on serverless frameworks using AWS Lambda. Today, we use solutions like AmazonAthena, Amazon Elastic MapReduce (Amazon EMR), Amazon Kinesis, AWS Lambda, and Amazon Elastic Container Service (Amazon ECS), amongst other services from AWS. We are comfortable with these services, and have some in-house implementation as well. AWS has always been the preferred choice, even though today there are choices like Azure.

**Anything that stood out for you on the AWS deployment and outcome experience here? What is the before-after scenario like?**

The AWS deployment and outcome experience has been remarkably great. Back when we started, we found handling higher loads a challenge to deal with. The AWS deployment has made it smooth and enabled us to handle higher loads and stand up servers in a very short time and scale for the demand we have aimed at. We were able to meet the customer growth, without much change to our system by using AWS. AWS provided us data security and auditability across services like AWS Lambda, Amazon SageMaker, Amazon Elastic Container Service (Amazon ECS), Amazon Kinesis and Amazon Athena.

Today, we have successfully helped 2.1 million farmers digitise their farmlands totaling to about

**We plan to achieve unbroken traceability from 'Farm to Fork'. End-to-end traceability through digital visibility across the agri-ecosystem is the key to avoiding this wastage**

6.1 million acres, working closely with over 225 enterprises and government institutions across 52 countries, digitizing 388 crops and 9,400 varieties. AWS has played a significant role in this achievement.

**What about other innovations in UAVs, remote sensing/IoT etc.? Can they help to expand and augment the AI impact?**

One could say if AI is the brain of the solution, IoT and Remote Sensing, UAVs are its sense organs and motor organs. Using IoT and Smart Sensors will almost eliminate the human error factor and provide real-time data that can be analysed using AI. This can bring greater revenues, augmented safety standards, and reduced costs.

**What else can we see happening in AgTech next? What are your plans?**

We believe there is no end to innovation or stagnation when it comes to technology. Adding immense value to the agri-value chain would be technologies like Blockchain, Farm Robotics, Deep AI, Artificial General Intelligence or AGI, to name a few. We have been working on the newer and a more advanced version of SmartFarm since last year and we aim to have it ready by the end of this year to hit the market. Also, we are in the course of integrating IoT, sensors, drones, farm machinery into our solutions as multiple sources of data input, to add more strength and increase capabilities. Majorly, we plan to achieve unbroken traceability from 'Farm to Fork' (End-to-end traceability through digital visibility across the agri-ecosystem is key to avoiding this wastage.) and intelligent farms that are better connected. Everyone working on the farm will be connected and a digital platform can tell them exactly what they need to do, and how to go about it.



# A SHRINK YOU CANNOT SEE, AND VICE VERSA

If your Mom cannot find it, consider it lost. If your Mom cannot pick it from your voice, consider yourself depression-free. Well, some of these rules may be about to change

Pratima H



**A**lia Bhatt's character would find a new therapist if the movie *Love you Zindagi* gets a sequel in the next five to eight years. In fact, she might not even need to travel to Goa, an alert on her social media page would warn her well, and in advance, about the blues.

When AI used Facebook language to predict depression (as per a PNAS research – Proceedings of the National Academy of Sciences of the USA— Johannes C Eichstaedt and others), another AI latent power popped on the healthcare radar. Yes, using AI to smell a mood monster will not be so hard to conjure as a thought now.

May be because we need some help on this front. Whether we like it or not, whether we accept it or ignore the sad elephant in the party room, we cannot take our eyes off from the fact that globally (As per WHO data), about 264 million people of all ages suffer from depression. Dig this—despite availability of effective treatments for mental disorders, 76 to 85 per cent people in low- and middle-income countries receive no treatment for their disorder—and social stigma is quite a barrier to blame here.

To top that, India has only 0.75 psychiatrists for every 100,000 citizens. Here is a company that thought of bringing in an answer to the 'seen' problem with mental therapy. It has achieved more than 3 lakh conversations so far with 10K+ subscribers; and is turning over successfully to long-term healing. **Vikram Beri, Founder, BetterLYF**, explains why AI's use in mental health diagnosis and treatment is a good idea – Like an answer to hesitation and a subtle way to ensure anonymity. He also addresses the questions that still hang in the air—like context, privacy, abuse, the human-loop gap and bias. Grab a couch.

### **What spurred this idea and what have been the highlights so far?**

The concept of therapy as a hush affair and apprehension of being 'seen' while reaching out for help stirred the idea of online anonymous, and confidential, counseling platform. When we started, a lot of individuals reached out for 'advice' and 'tips'. But we saw a surge in repeat clients and more progress with their concerns when we switched our short-term approach to long-term healing. We started incorporating a lot of psycho-education in our first 10 minutes of the conversation that helped clarify expectations from therapy. We have been building quality therapy and initiating steps to



**VIKRAM BERI**, Founder, BetterLYF

also focus on counselor development like weekly (personal as well as professional) supervision. It has helped us retain a network of professionals and a cohesive passionate team that truly 'care' for the clients and their experience with the platform and therapy.

### **Where does India stand on the use of tech for mental healthcare in comparison to other regions—start-ups as well as existing infrastructure?**

There have been wonderful changes in the last decade in India concerning technology-driven intervention in the field of mental health. The gradual shift from computer-based to Internet and, now, mobile-based interventions has made it easier and affordable for people to reach the right help at the right time. The Internet has widely penetrated the lives of Indians with its reach being 34.8 per cent at the moment but this isn't enough to reach the 150 million population which suffers from some form of mental health issue.

## **For helping doctors handle data and scans, for diagnosis, for treatment prediction, for counselling –what’s the sweet spot? And how do they come together?**

Currently, India has only 0.75 psychiatrists for every 100,000 citizens; the number should be well over three psychiatrists. With this shortage and an increasing number of mental health cases, AI comes as a boon. It eases the task to classify the case in terms of the severity, it helps identify the client which would benefit from therapy or medication. It also helps in tracking the treatment progress and the documentation of it. To put it simply; AI can help in descriptive, predictive and prescriptive functions in the mental health set-up.

## **Can voice assistants and sentient robots lead the way to better outcomes? Is it still critical for humans to be in the AI loop?**

With the advent of technology in mental health set-ups (like chatbot Replika has helped people fight loneliness and depression) it has its shortcomings. Many people, themselves, are clueless on how to respond to someone who is at a fragile mental state, relying on AI to provide that support completely is a long road to reach. Any AI can only be as effective as the data on which it is trained. AI cannot replace human interaction and relationship but they can lend support at times of emergencies or even encourage people to reach out for help.

## **How do we ensure that AI’s use is safe, non-biased and respects the privacy angle?**

Exploitation is one of the major threats when dealing with technology, with frequent news about systems being hacked and sensitive information being leaked. So privacy becomes a pressing and urgent issue. The company must be transparent about how the data would be used and notifies its users about the same. Providing the option to decline consent also helps in giving the power to

**Many people, themselves, are clueless on how to respond to someone who is at a fragile mental state, relying on AI to provide that support completely is a long road to reach.**

the users about how they wish their data to be used. Anonymous sign-ups should help as well where the information, which helps to identify the person, is not collected by AI. Lastly, measures need to be taken to avoid any hassles where AI algorithms do not lead to any consequences like unfair outcomes for social or economic strata of the population.

## **Any thoughts on the value of context in assessing mental health?**

AI can be a huge support in identifying high-risk clients, algorithms can be used where certain words or feelings that people use help in making an earlier diagnosis, alert the user and their practitioner. To provide a comprehensive treatment for complicated mental health conditions like depression or trauma, professionals do need to rely on the context.

However, AI can be used to make the process simpler, faster and efficient for the mental health practitioner.

## **What about the MIT prediction/detection tool for depression which is context-free? How reliable can this be compared to human experts, especially when mental disorders do not have clear and tangible indicators, where a lot depends on contextual diagnosis and interpretation of a human expert?**

It has taken a huge data and thorough parameters to diagnose and predict depression. There has been no research yet which claims there could be an error in the process or outcome. Although for therapy work, relapse prevention and understanding the nuances of the causes of how AI can replace a professional seems implausible.

## **What challenges remain and how can technology rise up to them? Trust in any particular? How do we ensure that these tools are used correctly? What if they find their way to recruiters, law enforcement and citizen surveillance?**

India is a country that has dense data and it also lacks robust regulations to avoid its misuse. Along with the challenges of lack of investment in AI infrastructure, other issues stay—like our labor forces falling behind concerning developing new skill-sets to adapt to AI changes, the lack of communication-understanding between app builder and the end-users also poses a challenge. By having transparency, explainability, credibility, ability to recover manual control if needed, and legibility; India can depend on working along with AI models in the healthcare sector.



# POSSIBILITIES OF AI-POWERED VIDEO SURVEILLANCE

AI makes it possible for security and business systems to recognise people, vehicles, as well as identify customer interests, and certain scenarios that used to have human oversight like shelf items running out of stock, and more

Ashish Dhakan



**A**rtificial Intelligence (AI)-based Video Analytics will become the number one game changer over the next few years for the video surveillance business, influencing the growth of most products that make up this business. Significant improvements in AI-based Video Analytics software are making this possible and over the next few years, it will become a standard requirement across Video Surveillance solutions.

The traditional video surveillance companies naturally see AI and Deep Learning as a feature to both differentiate themselves in the market and add further value to their products. AI enables cameras and control room equipment to identify a wide range of threats automatically, and in real time—helping security teams take immediate action to protect people and assets.

## Work smarter and safer

When it comes to delivering the insights today's organisations need, AI technology is empowering Video Surveillance in multiple ways. There are smart cameras and infrastructure solutions, engineered with AI technology which can integrate a range of tools to support smarter decision making starting from people

counting and facial recognition, to vehicle recognition, and automated security alerts.

The applications of AI-based Video Surveillance solutions are growing rapidly. It can help banks to protect employees, customers, branch offices and ATMs. It can help retailers to understand footfall in their stores, buying behaviour of customer and optimise their merchandising strategies. And it can help city authorities to reduce congestion and pollution with smart traffic management solutions.

## Smart Video Surveillance

In order to help organisations protect their people and assets from security threats, the next level of Smart Video Surveillance requires a broad range of transformative technologies from next-generation cameras equipped with AI and Deep Learning technologies, to smart edge infrastructure and deep data analytics capabilities in the cloud.

## Smart security with 'proactive' detection and prevention

AI has matured to the point where it is starting to be used as a mission critical application in most

coveted Video Surveillance projects. Organisations are empowering their cameras, control-room equipment and back-end infrastructure with AI to strengthen their security postures. AI recognises potential threats before they impact people or assets, allowing security teams to react immediately to neutralise any potential threat. In the This capability means that it's now possible to automate many key surveillance tasks and business processes.

### Smart AI-Enabled Applications

A wider proliferation of AI Applications into various realms of security segments beyond the Video Surveillance has also been recorded. AI makes it possible for security and business systems to recognise people, vehicles, as well as identify customer interests, and certain scenarios that used to have human oversight like shelf items running out of stock, and more. We are optimistic that AI will further spur the growth of Video Surveillance in Retail, BFSI, Transport, Smart Cities, Safe City, and Critical Infrastructure verticals.

*AI applications has empowered Video Surveillance solutions to offer the following smart solutions...*

**Law Enforcement:** AI technology serves best where identification of the suspect is most critical, including government offices; borders and customs areas; travel nodes such as airports and sea ports, just to name a few.

**Face Recognition:** AI-enabled Facial Recognition technology helps retailers to identify different kinds of customers like VIPs, loyal customers, existing customers, frequent customers and shoplifters. So staffs can provide the right kind of service at the right time or keep eye on shoplifters.

**Time & Attendance Reports:** Now there is a better way to track attendance based on facial recognition technology. This new method is quicker, safer, and more accurate.

**People Counting:** Counting People in a retail store through cameras can help retailers optimise their strategies and maximise conversion and revenues. It helps in resource planning and understanding the effectiveness of brand advertisement.

**Heat Map Solution:** Heat map is ideal for use in locations such as supermarkets, retail stores, etc. to help businesses identify the most popular merchandise and where to place products in order to increase sales. It can record the customer traffic over a period of time as well as temporal density and spatial statistics to identify the areas customers visit most frequently and tend to stay longer.

**Queue Management Solution:** Surveillance cameras specifically designed to support queue management can provide useful data to show the way people move through a space and give alert to retailers



**ASHISH DHAKAN**, MD and CEO, Prama Hikvision India Pvt Ltd

for opening new counter or use queue busting solution, which is very valuable to the retail industry.

#### **Vehicle Identification Management applications:**

The ability to identify vehicles can provide major benefits for local authorities, businesses and a range of other organisations in improving traffic management, and vehicle and site security.. It can be used to improve entrance and exit management to schools, offices, shopping malls, commercial premises and factories and parking lot management.

#### **Recognising vehicle number plates in real time:**

The latest Video Surveillance Cameras specially designed for traffic and ANPR application captures a vehicle's license plate in real time, compares or adds it to a pre-defined list. Once a number plate has been recognised and stored, an appropriate action is taken, such as opening a gate, adding a cost, or generating an alert.

**Recognising vehicles:** The latest vehicle recognition feature uses a Deep Learning algorithm to distinguish between small and large vehicles, with the added ability to detect the make, model and colour. The system can be programmed to search for anomalies and identifying traffic violations such as cars travelling in designated bus lanes, or vehicles driving without license plates, etc.

The author is MD and CEO, Prama Hikvision India Pvt Ltd.

# QUANT FUNDS: DOES AI HOLD THE KEY TO SMART INVESTMENT?

A quant framework eliminates human judgement and therefore benefits from structured, emotion free decision-making aimed at generating superior long-term returns

Utpal Sarma



Indian mutual fund industry ranks 17th in the world with INR 27.86 trillion of assets under management. In the last 10 years Indian mutual funds have grown at a CAGR of 17.4 percent as compared to the global average of 9.6 percent. This growth has not just been in terms of size, but also in terms of maturity and robustness. India currently has

20 million mutual fund investors. Millennials form an increasing proportion of new investors. There are 44 asset management companies offering 1,912 different mutual fund schemes. Open ended equity schemes, account for nearly 42 percent of the overall AuM with 87 percent participation from retail investors. Despite the growth, mutual funds continue to be under

penetrated as compared to other nations or other financial services in India and thus has large growth potential. One of the key drivers of future growth would be the ability of the industry to deliver superior core customer experience. This will involve leveraging technology across the value chain.

Based on their investment approach, mutual fund schemes can be classified as actively or passively managed. 94 percent of all equity schemes in India are actively managed. Actively managed funds employ human judgement or heuristic methods for investment decisions. These styles are essentially qualitative in nature and favour depth of information on individual stocks. They depend on the art of investments for generating superior returns. The objective of actively managed funds is to generate superior long term returns as compared to benchmark. On the other hand, passively managed funds are index based and do not involve human judgement. The objective of passive investing is to match market returns.

According to SPIVA India Scorecard mid-year 2019, published by S&P Global, 10-year rolling average returns generated by actively managed open-ended equity schemes, in the categories (i) Large-cap, (ii) ELSS, (ii) Mid/Small-cap, less than 60 percent outperform their respective benchmark. Designing and employing innovative investment ideas that generate market beating returns continues to be a challenge for the industry. Fast flowing information, constant volatility and intertwined global markets are today's market realities. One must consistently analyze a deluge of information for quick and precise investment decisions. Quant Models would intuitively be strong contenders among possible technology solution. These however are at a nascent stage in India.

Passive funds along with quants are rapidly gaining popularity in advanced markets like the US and Europe. A quant fund would have algorithms or statistical models to drive the investment strategy. These models can be effectively tested and thereby provide proven and disciplined way of investing. Development of quant systems require employing advanced statistical techniques, enabling technologies that process very large volume data, analyze complex correlations, identify hidden patterns and formulate predictive models. A quant framework eliminates human judgement and therefore benefits from structured, emotion free decision-making aimed at generating superior long-term returns.



**UTPAL SARMA**, Head-Business Analytics, Tata Asset Management

Passive rule-based strategies eliminate human biases or errors. However, they would be non-responsive to changing broad market sentiments or trends. This can prove restrictive for possible incremental returns. Artificial Intelligence and Machine Learning can add another dimension to quant strategies. AI-ML powered quant frameworks can be built that self-adjusts to changing market conditions and still retain the benefits of disciplined passive investing. AI-ML powered systems can process large and diverse data sets, learn from actual historical events and employ optimal models for maximizing future returns.

The primary challenge in designing and managing AI frameworks, is obviously the underlying statistical rigor and techniques required. The resources needed to harness the power of these technologies would have been a major challenge until only a few years back. With rapid strides in related open source technologies and their wide adoption, these challenges are lot more manageable today. Although small, India today has a budding pool of skilled data scientists that are delivering encouraging results in the area of AI based solutions.

The author is Head- Business Analytics, Tata Mutual Fund

Disclaimer: The views expressed in this article are personal in nature and in is no way trying to predict the markets or to time them

# TRANSFORMATIVE ROLE OF AI IN DIGITAL FINANCIAL SERVICES

AI is already being used in Indian financial services for chatbots, automating repetitive processes/decisions or RPA, credit sanctions, ID verification and fraud check, along with claim processing

Varun Sridhar

**A**I is a big word. Most don't understand it and even fewer actually know how to work with it. A very limited set of companies or people actually deploy AI to a feasible purpose. In Indian financial services, the coffee corridors have a lot of chatter on AI or Machine Learning (ML) or Natural Language Processing and so on. Over the past few years this chatter has led to quite a few interesting use cases and we can now start to say some companies are able to demonstrate some very cool use cases.

**What's the driver behind AI becoming the new gold?** There are three factors. Firstly: Increased availability of data/digital footprints/triangulated data. Secondly: Availability of skilled data scientists with a willingness to disrupt leveraging data. Lastly: Abundance of PE/VC funds or corporate willingness to invest in transformative projects even if the payback period is 4 to 7 years. There is a strong realisation amongst CXOs that ML could be an important competitive advantage and yield high returns. So the race in India is now on!

At realmePaySa, we are trying and piloting multiple small projects and currently evaluating how we could use AI/ML to solve something for our consumer. It is important at the end to either save costs for customer or for us or improve accessibility to financial products or improve the user experience. We are very clear that technology and data projects are cool but sustainable only if they generate value for some or all stakeholders. As a leading smartphone company we see ourselves as a techfin with access to

hardware, software and consumer data and want to bring magic to the customer, always respecting their privacy, sharing preferences and data security.

AI is already being used in Indian financial services by both fintech's and large players in chatbots, automating repetitive processes/decisions or RPA, credit sanctions, ID verification and fraud check, claim processing. However, it is still not a major driver of either business or cost reduction as most projects are in early stages of launch. In retail financial services, we see the following use cases where AI can become a complete game changer and work well for both the financial institution and consumer.

**A different app for every user:** In financial services we make one app and expect a young digital adult, a mid-30s family man working at a manufacturing plant, an old couple, a businessman and everyone else to follow the same journey. What if the banking app could recognise you and automatically make an app that perfectly fits you, like your custom tailored suit! This is possible and requires combining TBs of data and as you evolve from being in college to getting your first job to getting married, the app auto evolves. Imagine what this could do for security, customer education, simplicity and so on!

**Lower pricing depending on who you are and what you do:** Health insurance, personal loans, car insurance, credit card interest rates, fee charged to manage mutual funds and many more charges in banking are standard for all customers. If your phone could automatically share carbon footprint or activity



tracker or sleep patterns or financial transaction data with relevant financial institutions then the yearly life insurance premium for a customer could up or down depending on his well-being index real time! Or you could get a loan cheaper because AI helps identify that the probability of default for this customer is far lower than normal

Growth of AI in the Indian fintech industry also brings some challenges such as data privacy, unfair

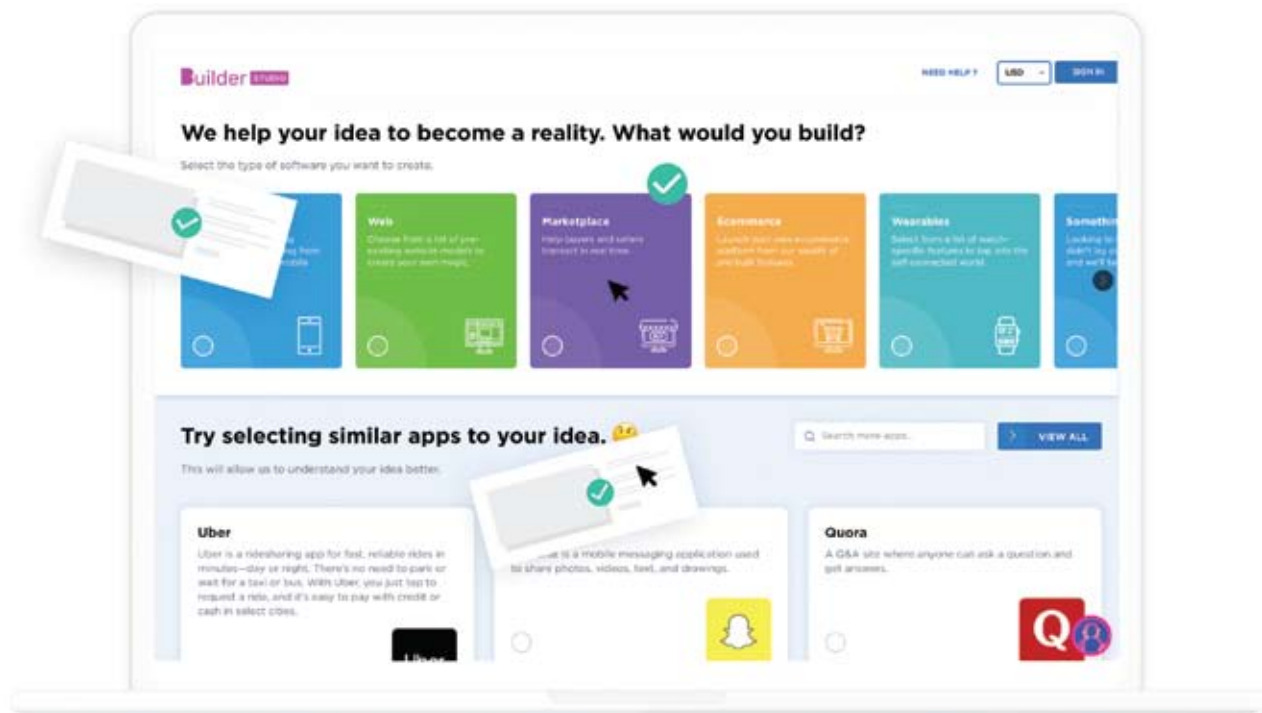
competitive advantage or incorrect decisions as human emotion is still a mystery and data sometimes does not represent why people do what they do. We expect in India in the coming years much more regulation, many success stories of how AI made a fintech the next unicorn and we hope as realmePaySa to be able to implement a few use cases ourselves.

The author is Lead, realmePaySa

# DEMOCRATIZATION OF SOFTWARE DEVELOPMENT AND ENTREPRENEURSHIP

Builder.ai presents an instant prototyping tool that helps anyone take the first step in designing an app and making their business idea a reality in as little as 10 minutes. Founder and CEO Sachin Dev Duggal talks about how they go about doing it

Sunil Rajguru  
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**Can you explain briefly what Builder.ai is and how it came into existence?**

The premise behind Builder was to make software development accessible to anyone, anywhere. It stemmed from the belief that everyone should be able to unlock their true potential, to make

their vision come to life irrespective of what they know, what they have and what they are afraid of. The industry did not support this stance though. Traditionally, building software proved to be risky and inefficient, mostly managed by a cottage industry of small web shops and generalist developers. A lack of

process and poor communication with clients results in an astounding 78% of projects ending in failure. This high rate of failure means many ideas don't get started at all. Entrepreneurial clients often struggle to navigate the software and technology required, plus the capital necessary. They end up fearing the failure of their idea, their business and their ability to maintain their livelihood. They worry their ideas won't be relevant for the market. This cycle of fear followed by inertia leads to wasted human potential on an epic scale. I decided this reality was unacceptable and sought to offer a solution.

### How does your app prototyping feature work?

The feature Builder Now is an instant prototyping tool that helps anyone take their first step in designing an app and making their business idea a reality in as little as 10 minutes.

Builder Now lets people explore ideas and show how they can work, before investing time and money into development. It's fast, free, and trims out hours of specification writing and meetings, by letting you try rather than talk about user journeys.

Before Builder Now, those with an idea for an app would have to identify a development team, wait to be assigned a product expert and a design team, sort out the user flow and create designs from scratch—before even getting started. Whether someone already owns a business or an employee of a company wanting to launch a new project, or an aspiring entrepreneur – Builder Now takes all these barriers away.

Builder Now keeps a user focused on solving the 'what we need', and 'why we need it' questions rather than the 'how do I code', by visualising the app from an idea in as little as 10 minutes. The experience is designed to provide confidence to take the next step with an idea.

Builder's goal of making the creation of tailor-made software accessible to everyone drove the decision to launch Builder Now as a free product. After refining their app idea with Builder Now, they can click through to price, build, deploy and maintain their new app all within the Builder platform.

### How much AI-ML do you use? Does it make it continuously better?

We're proud to share that every product within the Builder platform is now powered by AI (Artificial Intelligence) and ML (Machine Learning), with varying levels of contributions. Overall, the contribution of AI and ML continue to increase as we productionise



**SACHIN DEV DUGGAL**, Founder and CEO, Builder.ai

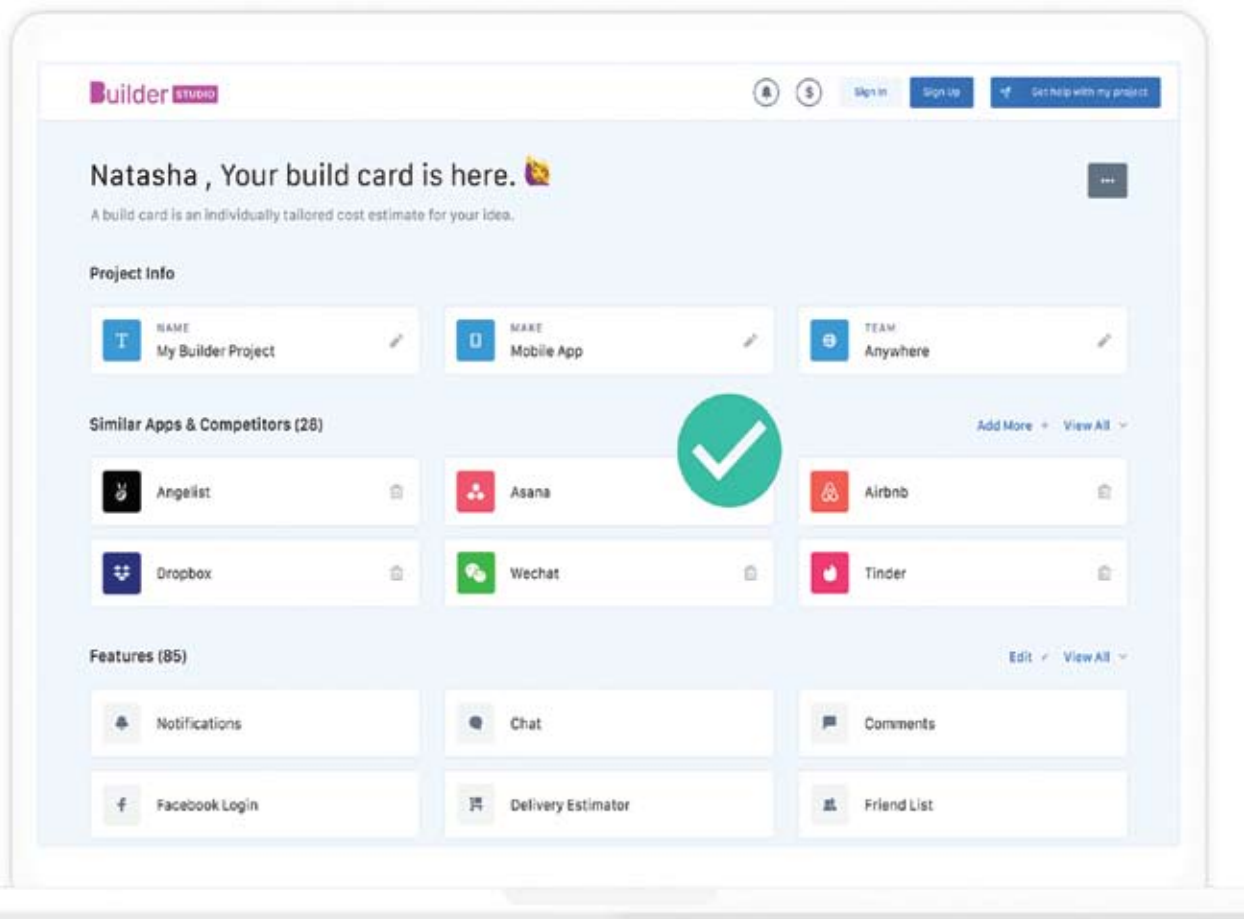
more use cases and grow the team. Quantitatively, this contribution amounts to at least 35-40% of the technological innovations in the Builder platform, which we project will double in the next two years. This growth is being led by a team comprised of data scientists and engineers recruited from top UK and global universities with advanced degrees (PhD, MSc) in quantitative disciplines such as computer science, mathematics, physics and engineering.

### There is talk of democratisation of tech where anyone can build bots and design their own online apps. How do you take this forward?

Builder.ai aims to democratise software development in a way that it is accessible to anyone, anywhere. It stemmed from the belief that everyone should be able to unlock their true potential, to make their vision come to life irrespective of what they know, what they have and what they are afraid of.

So, Builder.ai is a platform that helps you build, run and scale just about anything you can think of. Our human-assisted AI builds your tailor-made software





using the collective knowledge of what's been built before. It's an assembly line. You pick reusable features that can then be customised by specialists around the globe. It's as easy as ordering a pizza. We also offer aftercare, so your software never goes out of date; and cloud capacity from all the big providers (in fact, we saved our customers \$4.5m last year).

### How can SMBs benefit from this?

No matter what the nature of a business, succeeding means staying ahead of the competition at all times. And in this increasingly digital age where an average person spends over 3 hours on their mobile phones each day, true business potential lies on digital media. Customers now prefer to communicate with businesses via online and digital channels – whether it's through an app or a website. However, while businesses recognise this, traditionally a lack of skills or technical knowledge has been a barrier. At Builder, we want to make it as easy and as cost effective as possible for these businesses to amplify their digital presence.

### Key benefits of Builder Now include...

- Generating a clickable visualisation of an app, via a click and play system.
- Sharing the link to this prototype lets you test the concept of the software and its flow to gather early feedback.
- Visualising the user journey is an important aspect of software development – flow built in a few simple clicks.
- Save time in the design process by getting quick feedback, which saves money and reduces time to market.

# THE GLASS CLIFF OF MACHINE LEARNING

Explosive, Exponential, Exceptional – clearly, hopes and numbers for Machine Learning are blowing everyone’s mind. But why is the word ‘Evasive’ still lurking around? There is still something that is clipping ML’s wings, or manicuring them too much. What’s that!

Pratima H



**W**ho knew that machines could learn too? And so fast, so well! But then, if we need the world to get artificially-intelligent, that intelligence has to have its roots somewhere. To reason, to comprehend, to be cognizant, to be perceptive and hopefully, intuitive – it all needs something to build upon – the alphabets of intelligence – learning.

The question is – how adequate and spot-on this learning is?

Machine learning (ML) is still dealing with issues that are, at best, predictable (like energy consumption of compute-intensive learning or scalability of these huge models) and at worst, totally out-of-the-blue (like accuracy or black box problems or the hardware envelopes of a good ML application).

That’s possibly why the 2020 State of Enterprise Machine Learning report by Algorithmia shows that even when 22 per cent respondents are in production with ML learning for a year, most still spend eight to 90 days in just deploying one model. Scalability, model development lifecycle efficiency, version control and model reproducibility stay as major pain-points even now.

To add to these men-still-at-work lists, there are issues like context and reference points that MIT has highlighted in its research (image recognition experiments that show that any ML tool will only predict

what it learns from – so limited or out-of-context data will keep teaching it the wrong answer) as well. Without the element of overall big-picture awareness in place, a ML algorithm can be fast, clean and accurate – but it can still be the dumb one on the table.

That can be iffy, specially when one is talking about something that is building up strongly to billions of bucks. An HTF Market reports puts the value of the global ML market at INR 543.18 Billion by the end of 2023. As to India, AI investments were noted at about INR 773.64 Billion in 2017 and are already at a sprint of a CAGR of 33.49 per cent during the 2018-2023 period.

But would these jumps go anywhere? Would ML models learn well, without curtains and without ceilings? And how do these models deal with the need for reinforcement learning, for cutting the noise in data, for being tilted towards stochastic and not deterministic maths, for handling feedback loops and for ensuring that once anything good is cobbled together, it can be replicated well – without tumbling down in a clueless way, the next time you try it?

We get a chance to sit with **Dr. Bratin Saha, VP, Amazon AI Group, AWS** (the company just came out with the Embark program for ML training, Kubernetes capabilities for SageMaker, and – of course – the much-talked about ML musical keyboard called DeepComposer). Here, we find

out spots to put some rope-ways around, at least, some of these invisible cliffs that ML is bumping into. Saddle up

### **What's AWS approach to ML? Tell us more about the plot you have been working through, specially when every major name in the industry is now chasing this breakthrough?**

We have been investing in ML for the last 20 years. Lots of engines connect through ML and make it possible to give recommendations to customers (that our intelligent assistants do so effortlessly). We have been taking this knowledge to develop ML at scale and making it available to our customers. We want this to be accessible to all customers, easy for developers, without any heavy-lifting, and making ML usable with all tools and information that are needed. We do not dwell on our competition but I can say that a vast majority of ML in cloud is happening in AWS (be it TensorFlow or PyTorch). After SageMaker, the number of developers has shot up considerably. We have also been adding strong tools for interpretation, prediction and analysis. We are working on data weights, innovative engineering, designer science and research on explainability.

### **What about replicability?**

If you think of SageMaker's Bring Your Own Container feature, you would be doing ML in any place and still able to plop it right into SageMaker and vice versa. That's what enables reproducibility.

### **Does the opacity of current ML models and research sound like a big concern?**

Our features, for one, try to reduce this opacity issue. SageMaker has features where the data used to generate output comes into a clear core in a notebook. We looked at existing tools and shaped our algorithms to address some limitations.

### **The tussle between multiple data-sets vs. good data-sets is also a major one, do you agree?**

Having the right training data is definitely important. That is why our leaders at AWS talked so much about debugging ML models during the Re:invent presentations. These tools let you introspect the data and get to the nature of data. We have also added explainability features. Our model monitors can detect change in data drifts.

### **Are decentralised data-places going to resolve some gaps that centralised ones failed to?**

Privacy and security are number one priorities for us. The data still resides in a customer's account and they encrypt it with their own key. SageMaker, for



**DR BRATIN SAHA**, Vice President of Machine Learning Services in Amazon AI

instance, is HIPAA (Health Insurance Portability and Accountability Act) compliant. We never make any copy of the customer's data.

### **Feedback loops – how strong is this part for ML models? Can we really train algorithms with timely feedback to reinforce the right path instead of the shortest path?**

Within the model monitor, we have first-party rules. But customers can add their own rules. SageMaker monitors the model for adherence to confidence threshold of rules. Any slip will automatically trigger an alarm. You can bring in your own rules. So it is very easy for customers to customise their models and they can fix a lot by retraining the data. That is possible because they can detect errors fast and well.

### **Any challenges or big turning points that ML faces – in your opinion?**

The supervision aspect of learning can be one area. As ML becomes more and more prevalent, we will see a lot of ways in which customers transform their businesses. All the tools that we have added, so far, are going to be exciting for our customers.

At AWS, a vast majority of ML helps us – be it insights into pain-points or new possibilities. The expertise we have strengthened for the last 20 years is blending superlatively with what we are making today, and I really look forward to our customers using these ML advantages. I am very excited about the momentum we are witnessing.

*(Saha has more than 70 patents granted (with another 50+ pending) and more than 30 papers in conferences/journals)*

# WILL AR & VR BECOME THE BREAKOUT STARS OF THE POST-PANDEMIC WORLD?

The post-pandemic world is likely to see people and businesses evolving to make room for newer experiences and newer modes of engagements enabled by digital technologies, especially the immersive ones

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**T**he ongoing Coronavirus crisis and the subsequent lockdown measures by countries have taught brands and organizations some hard lessons on managing the operations, employees, and customers. By bringing life to a near standstill, the pandemic has also made them see how crucial it is to embrace digital technologies for survival in the long run.

Immersive technologies such as augmented reality (MR), virtual reality (VR), mixed reality (MR) that blend the real and virtual world seamlessly to create an immersive experience- could have played a big role, had they penetrated the market.

Sadly, although promising, they are yet uncharted territory for many businesses. Rests are still grappling with the cost, complexity, and talent needed to develop compelling solutions. For example, adapting to the new remote work culture can be particularly challenging for many businesses, especially the industrial ones.

But altered scenarios have made businesses look at these technologies more optimistically, and therefore prodding the solution providers to create more pragmatic use cases.

“As per the VR technology adoption curve, the mass adoption and true immersion of people with VR still remains a far-off dream. It is likely to be attainable, but not as per the timescale anticipated on its climb up the hype cycle. The acceptance ratio will go positive when its early market of acceptance



**DEBASHIS CHATTERJEE**, MD & CEO, Mindtree



**SAURAV BHAIK**, Founder & CEO, Tagbin

will help create an optimistic view of the technology,” said Saurav Bhaik, Founder & CEO, Tagbin, an experience-driven technology service company.

### **Bringing pragmatic use cases to the fore**

Humanity has realized that they need to adapt quickly with new realities wrought by the pandemic, which certainly brings an opportunity to the technology and solution providers to come to the fore and facilitate the shift.

As the world has started getting used to working from home and using virtual meeting tools, a VR startup has designed a VR application, named Spaces that aims to create a bridge between the VR world and the virtual meeting tools such as Zoom, Teams, Skype, Hangouts, etc. It places users in a virtual environment with a virtual whiteboard, markers, and with an adjustable virtual camera. Unlike other people in the video calls, the user in VR will be represented by an avatar in the virtual environment with a virtual whiteboard and markers.

To make collaboration easy for offsite and on-site employees during this crisis, AR platform provider, PTC has been offering businesses free access to its AR-based remote assistance product, Vuforia Chalk. The tool helps frontline workers share live views of a problem with the experts and fix them with guided solutions. Not only does it reduce the travel burden on businesses and the workforce, but also helps them run their operations, maintenance, and repair works



**SRAVANTH ALURU**, Founder and CEO, avataar.me

smoothly during this unprecedented crisis.

There are many such scenarios that have been spurred by the ongoing crisis.

### Ushering into 'The Experience Age'

The world is gradually ushering into the 'Experience Age' and immersive technologies can be at the forefront of this change.

Debashis Chatterjee, MD & CEO, Mindtree said, "We are likely to see a big shift in the ways customers perceive and interact with the digital world today. In the coming years, multisensory and multimodal user experiences driven by interactive and immersive solutions are going to be the real game-changer for the businesses. Gartner says 100 million consumers will shop in AR online and in-store by 2020. At least one-third of the enterprises will have deployed a multi-experience development platform to support mobile, web, conversational, and AR development."

This is particularly true for a pandemic-stricken world, where social distancing has become an absolute necessity. The post-pandemic world is likely to be more digital and brands are likely to turn more toward digital and immersive technologies powering the contactless experience, feels Sravanth Aluru, Founder and CEO, avataar.me, an AR-enabled digital marketing & commerce experiences company.



**NARENDRA GHATE**, Chief Designer-User Experience Design, Tata Elxsi

"The 'touch and feel' experience which used to be the biggest reason for people shopping offline until now, has suddenly become a liability during this Coronavirus crisis now. But it could be a true inflexion point for immersive technologies like AR and VR that have the potential to create a seamless bridge between the virtual and physical," said he.

User Experience design will also play a major role here, as your online existence will now have to make up for the offline experiences that you need, said Narendra Ghate, Chief Designer-User Experience Design, Tata Elxsi.

"In the good old days before the lockdown, there were two distinct experiences for all of us: The one that you had online and the one that you had, when you stepped out of the house. The coronavirus crisis has completely collapsed the latter. However, you still crave for those experiences, whether it is shopping in a mall, eating in a restaurant or working in an office with colleagues. This is where the sensorial elements of a restaurant, the immersive experience of going into a shop, the collaborative experience of working in an office. All of these can be recreated (to some degree) through good use of digital design elements and a deep understanding of the human psyche. Digital-twins of all outdoor experiential elements can help fill some of this gap," explained he.

# SKILLS REQUIRED TO BECOME A VR APP DEVELOPER

Developers need to focus on which SDK to choose from to develop their skills. The technology still has limitations in terms of hardware, cost and standard best practices and it is a still a growing community

Ritesh Ranjan



The talent required for VR/AR development is more in demand in today's world than ever before. In the past couple of years, we have seen the quality of applicants we have received reflect more relevant skills and experience. However, it is still a niche market in India and may take time for fresh graduates and professionals to match the industry requirements for VR app development. This could be also because the expectation is an amalgamation of skills like 3D modelling, object-oriented programming, game development, UI/UX designing, and an innovative outlook towards problem statements.

*There are three things that we need to pay attention to while deep diving into VR development.*

**1. Environment:** Creation of an environment for the virtual world would mean developing assets and objects that you can import into a game engine to create a scene. This involves modelling textures, layers, and taking assets through the production pipeline. Ability to balance the 3D aesthetic with real-time performance and optimization is important. Being well versed with software like 3Ds Max, Blender, or Maya is a plus in the longer run. 3D environment artists on a game engine like Unreal engine would add an edge owing to its wider acceptance due to better graphics and power or platform like Unity which is easier to learn and has more resources.

**2. Design sense and visualization:** We are not merely putting design principles to test here, context is everything. To create a virtual environment which resembles the real world, skills like attention to detail is vital, which is utilized to eliminate any kind of dissonance that the user would experience while looking at the objects in the virtual environment. UI/UX designers would find it easier to bring that skill to

Ability to balance the 3D aesthetic with real-time performance and optimization is important. Being well versed with software like 3Ds Max, Blender, or Maya is a plus in the longer run



**RITESH RANJAN**, Director, Partner, Flipspaces

the development and could work towards picking up platform-based skills required.

**3. Interactivity:** Learning about C# scripting and script optimization helps create a seamless experience by eliminating unnecessary slowdowns and an impact on performance. C, C++ and C# coders with skills in game engines like Unity and Unreal would be an ideal choice in the industry.

The VR industry is still fragmented with non-availability of device-agnostic VR experiences and far from providing immersive Web VR experience. SDKs for the Oculus Rift, PS4 VR, HTC Vive, Gear VR, and Cardboard/Daydream are available at present. The developers need to focus on which SDK to choose from to develop their skills in it. The technology still has limitations in terms of hardware, cost, and standard best practices, however, it is a growing community and skills like C# programming can be utilized in other areas of software development and game development in the future.

The author is Director, Partner, Flipspaces



# BEATING THE LOCKDOWN BLUES

During the shutdown, many people will turn to AR and VR because they offer the freedom of traversing the real world. Undoubtedly many will also use these devices to increase productivity

Fawaz Syed



Over a billion people across the world are in lockdown now. Most of them are worried not just about becoming infected with COVID-19, but also about how they will work during the lockdown. They have another fear as well; what to do with the ample amount of time they have on their hands?

The lockdown is not a long holiday because most people who can work from home are working. It is also not a holiday because people cannot go outside as they do during weekends. Most people who are unaccustomed to spending days and weeks locked indoors are feeling anxious. They miss the excitement of going to the movies, eating out, going for a stroll in a lush park, or spending time with close family and friends. While the lockdown is essential, many are frustrated because of it.

During the lockdown, there is a way to experience new environments without stepping outside. Technologies like Augmented Reality (AR) and Virtual Reality (VR) immerse users in virtual worlds that are as rich as or richer than those found in the real world.

## New Worlds Enter Homes through AR

Those who have never used AR and VR don't know how realistic the experiences created by these technologies are. They immerse people in other worlds; teleport them to distant realms.

A school kid trapped in his or her house needs only to wear an AR headset to bring the house alive. By wearing the headset, the kid has the opportunity to transform the home into a vast playground. For instance, fantastic creatures magically appear before the kid's eyes after wearing an AR headset. The kid can not only see them and talk to them but even play with them. The newest AR technologies make digital creations that are contextually aware. A contextually aware digital avatar will be mindful of the fact that a house has a dining table, sofas, chairs, and beds. Meaning a person wearing an AR headset will see a digitally created monster circle around a dining table rather than pass through it.

For people trapped in homes, AR opens up new ways to spend time at home. It serves as an outlet for pent up frustration. Even the most introverted person wants the freedom to venture outdoors from time to time. AR grants people such freedom without putting them at risk of catching a deadly infection.

## The VR Experience

Virtual reality is even more immersive than augmented reality. While augmented reality merges



**FAWAZ SYED**, Co-Founder & Director, Digital Jalebi

digital images with reality, virtual reality transports people to other worlds. At a time when billions of people are quarantined inside, virtual reality can be a panacea to their frustration at being shut-in. Virtual reality can be used to roam the sunny streets of a tree-lined city or to traverse through the air in a plane. The numbers of new worlds that can be created using virtual reality are as infinite as the human imagination. Whatever world the mind can conceive, can be created in a virtual world.

During the shutdown, many people will turn to AR and VR because they offer the freedom of traversing the real world. Undoubtedly many will also use these devices to increase productivity. Meetings that earlier could only happen in person can take place in virtual boardrooms through virtual reality.

The shutdown was sudden and unexpected. The public knows how quickly a shutdown can be put in place. This knowledge will undoubtedly lead many to buy AR and VR devices because not only can they transport them to other worlds but also because they make virtual meetings possible.

The author is Co-Founder & Director, Digital Jalebi

## TECH CAN ADDRESS LOOPHOLES OF TRADITIONAL CREDIT MODELS

Sandeep A, Co-Founder & CPO, Crediwatch, says that despite the tremendous progress it has made in recent years, FinTech's disruptive power is yet to be fully exploited, especially in the credit risk sector

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**How is the financial industry handling the absolute data explosion that has taken place in the last couple of years? There are also issues of security, data privacy and residency. Are we able to cope?**

The Financial Technology industry has been on growth trajectory over the past few years because of a supportive environment by the RBI and government policies. Given the effort to digitize several information sources by the government has helped bring transparency on businesses, Fintechs have emerged to capitalize on this data explosion. Unfortunately, several Fintechs still look at becoming a data aggregator and add little or no value to the datasets itself—leading to increased efforts by the ultimate consumers. The real value-add, hence, is in bringing insights as a solution.

Another game changer was data protection bill that came in early this year, even though it might take a while for FinTech companies to adapt to the new

data protection guidelines. A quick makeover won't suffice; they must make continued efforts to build a robust privacy system for storing and processing of personal data. Despite the initial hiccups, however, the Personal Data Protection Bill, 2019 can be revolutionize FinTechs wherein they can derive immense value from free sharing of data between the customer and the service provider as a result of newfound end-user comfort due to the proposed bill.

**In what ways can Artificial Intelligence-Machine Learning tools help the financial services industry? Can they reduce credit risk?**

We realized that focusing on quality risk and business insights using a proprietary AI based predictive engine is the way forward for financial services industry and this has helped us differentiate ourselves as a leading analytics player.

At Crediwatch, we employ AI/ML algorithms on

alternative data points such as statutory payment statuses, litigations, media sentiment, GST invoice data, bank statements as well as traditional data points such as financial ratios, industry outlook etc. We have completed the development of the enterprise version of our flag-ship product, Early Warning System. This product is compliant with the RBI framework and is based on a proprietary library of 190+ early warning signals. The system comes with a case management module to track each alert and manage post-alert actions from the respective portfolio manager.

### **What about predictive analytics? What is the tech behind that?**

Human bias is a major influence on the decision-making process that has previously resulted in loan frauds and NPAs. AI can streamline the credit underwriting process with little to no human intervention. By running the acquired data against the set of rules that are designed to determine acceptability, it helps lenders to take an unbiased decision that eliminates the scope for any anomalies or discrepancies. A predictive analytics-driven vertical approach enables lenders to analyze quantitative and qualitative risk factors to create a comprehensive borrower profile for assessment. Additionally, AI allows credit underwriters to focus on more complex aspects that like looking into other contingencies that the data may not reveal. Hence, the final decision ultimately lies with the lender, but AI-based technologies facilitate more accurate decision making in a much faster manner.

### **What are the data tools used in all of the above?**

FinTech has rapidly evolved beyond its early stages to offer a broad array of financial products and services. From net banking to mobile phone payments, peer-to-peer lending and automotive insurance, FinTech is offering enhanced capabilities, convenience, or lower prices and fees. Despite the tremendous progress it has made in recent years, FinTech's disruptive power is yet to be fully exploited, especially in the credit risk sector. By leveraging advanced AI applications such as machine learning, deep learning and predictive analysis, FinTech startups can help banks to get more insights from available data, evaluate loan applications and minimize defaults.

### **How easy is API integration, now that so many services and parties are involved?**

The Crediwatch platform allows for seamless integration of its data and services through API. Clients can either ingest our data and analyzed scores



**SANDEEP A**, Co-Founder & CPO, Crediwatch

via API into their internal systems or use API calls to request for reports from our engine. Several banks and NBFCs have requested to integrate our solutions with their LOS and LMS helping them have a seamless experience.

Also, the Crediwatch platform has capabilities to ingest data from the bank's CBS (core banking solution) as well in order to merge both public and private data for a comprehensive analysis. This has already been implemented for our Early Warning Signals solution.

### **What is the future of Fintech and Insurtech? What trends are we likely to expect in the coming future?**

Technology can address the loopholes that exist in traditional credit models, whether in terms of data, process automation, or prediction of loan defaults. Large Indian banks like SBI, Indian Overseas Bank, Karur Vysya Bank, as well as many NBFCs like Aditya Birla Finance and CapitalFloat, have also successfully employed the solutions provided by Crediwatch to strengthen their AI capabilities as well as their decision support systems.

The advent of open banking and the implementation of standard protocols in most of the BFSI companies as well as the increased integration with external systems will further help build rich datasets which FinTechs can use for development of AI and improve predictions.

## WORKING IN THE ZERO TRUST ERA

David Wakeman, Business Leader for APJ, End-user Computing, VMware, talks about his company's holistic vision where no matter what the cloud or what the application, you've got to simply deliver the experience down easily into someone's hands

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## End user to “employee experience”

I started at VMware 12 years ago when we had one product called ESX and we decided that we wanted something now called “end user”... clients, PCs, phones etc. We launched desktop virtualization or VDI (Virtual Desktop Infrastructure). We got into mobile phone management and bought web identities. That space has become huge. We call it “end user computing”, but we could probably rename it into “employee experience” or “modern workplace”.

In the old days, you would have a desktop PC admin whose responsibility would be keeping the lights on, putting patches, antivirus and things like that. It wasn't really user computing. Today we facilitate what I call the last mile of data and application. For example, insurance sales used to go out with a piece of paper, drive out to a client fill the form and drive back. Today we use an iPad. But, how do we secure it? How do we make it easy? Some sellers are inexperienced. How do you make it simple for them? How do you deal with compliance? These are the kind of issues that we talk about now.

Say you've built this amazing data centre, database applications and user interface. It's got some front end that the users got to interact with. That's where my piece of the business comes in. In this case it's the last mile delivery of the cloud. We manage corporates and take on responsibility for every kind of OS: Windows 10, iOS, Android, Macintosh OS, Tizen, smart glasses, printers... We also do pretty much every platform, all the hardware form factors. Inside of that we take on the responsibility of delivering the applications that sit inside of them. We take on the delivery of the core-end of corporate apps. We do those things in a way that makes it very simple for a user to consume. We obviously understand all the security elements too. So how does end user computing fit in VMware as they're a data centre company? But if you look at it holistic all your vision is that of any cloud, any class, any application, you've got to get the experience down to someone's hand.

## The smartphone revolution

It's well documented. With the advent of the smartphone Steve Jobs said that now everything changes and he was right. Everything did change. Fundamentally. I remember we were trying to make a sort of sub-US\$1000 PC to give to people and now



**DAVID WAKEMAN**, Business Leader for APJ, End-user Computing, VMware

suddenly you can go and buy a phone in India for say US\$80. The second thing is you had access to data to people in regional townships in India. A fairly ubiquitous Internet paired with an inexpensive device is really powerful. It's changed the way people want to work and consume data. One of the largest banks here talked about how they empowered 35,000 women to not have to walk to the office to go to their bank branches in villages and they could simply use their mobiles. We are hearing really positive stories around mobility and putting applications. I think it also broke down the complexity around technology. PCs are complex. They're not intuitive. Mobile certainly has been a driver for businesses. I think we'll look back in time and say mobile has been the new steam to drive the engine of industry in society.

## Managing all the complexity

In fact when we look at organizations, very very roughly, it's about one-third PCs and two-thirds mobile devices. It varies of course. You may have

traditional manufacturing without much mobility but in other organizations with two to one and even three to one mobile devices. The interesting thing is that haven't we haven't seen the PC shrink. It was almost like mainframes are going away, but guess what? Every bank still has a mainframe. Then client server came in instead of having two applications you had maybe 50 applications per user. Then web came along and that added another 50. Then mobile came along and we maybe have 150 apps but we still have mainframes, PCs and client servers. But the poor IT person is now trying to manage maybe 500 applications.

I guess the opportunity for us is to make all of that simple. That's where we've made a business from managing that complexity. For example at VMware we have a Hub app. It has every application that I use. I can have my IT department put it into catalogue. It tells me about mobile applications that are available. I can download them from a corporate app store provided by the company and use it on my mobile. I can put it on an Android phone or MacBook and even use legacy Windows apps. They work well on both mobile web apps. We just virtualize it.

### **Security and the era of Zero Trust**

In the old days you had a PC behind the firewall, LAN and a blue cable. You trusted the network and you trusted the device. Now the big shift is that rather than thinking about security based on physical location of device, we encourage clients to think about Zero Trust. So all your devices are on a network, but let's assume we don't trust the network and we don't know device you are using. So each time you access a resource, we seamlessly in the background

check the user in a very robust modern way, not passwords, but something with more strength. We check the device and do we trust it? Has it got some security software and our software? What network is it on? Do I trust the network? We may also only allow certain resources only the corporate Wi-Fi network. It's all done seamlessly. We have a Privacy Guard. We can't see as the text messages, personal messages and photos, but what we only look at work apps. We have a privacy officer to look into that too.

### **What is Digital Transformation?**

India is a country where there's a rapid adoption of technology with great technical depth. However different organisations move at different paces. Also, digital transformation is not just about taking a piece of paper and putting it onto an iPad. You've got to think about the people that are sitting in the middle of this. You look at the culture that you want to drive. You look at the physical deployment of assets and resources, where they sit and finally the technology that enables all of that. I think everyone got tied up on just the technology bit but it's a cultural and physical shift as well. What about people no longer working in offices anymore? What about people who are left behind or feel fragmented? You've got to think about those dimensions. It's not like we just have to digitise the process and get rid of paper. As you go through digitization, something happens and lot changes and people resist. Finally it means that you have to have the right culture in place and you need to attract and retain the right talent. There's a whole bunch of well documented business benefits for that as well. If you can drive more digitization faster and the right people drive it, it leads to more productivity and more profits for the company.

### **Predictive tools for the workplace**

We have Workspace ONE Intelligence and Virtual Assistant, which is on Watson, but we'll build across the other big Artificial Intelligence providers as well in the marketplace. Virtual Assistant brings Natural Language Processing that leads to a solid chatbot experience. We're using intelligence data to look into employee experience. So we can predictively tell when the battery's going to die or the hard drives going to fail. We can look at crash monitoring analytics and tell if there's a group of users who have suddenly got a high percentage of crashing in particular applications. We can actually start to see problems before the users see themselves. That's from algorithms that come out of Machine Learning.

**Separation of work and personal data is done seamlessly. There's a Privacy Guard. We can't see the text messages, personal messages and photos of employees, but we only look at work apps. We have a privacy officer to look into that too**

## EMERGING TECH LEADS THE WAY TO PAPERLESS VERIFICATION

The biggest risk of paper-based verification is identity/data theft in addition to it not being environment-friendly. With many new technologies combined with stringent GDPR regulations for privacy protection, the world needs to move to paperless verification

Naveen Chava



**W**ith the paradigm shift in technology value, identity management is getting innovative daybyday. Factors such as real-time access, need for best practices, security, data integrity and protection, advent of newer technology and so on are accentuating the

need for robust and seamless identity management system across industries. The key use-cases or industries of identity include: Travel, banking, financial transactions, land transactions, employee verification, welfare scheme disbursements, insurance claims, corporate deals and agreement between individuals.



In India, the traditional or paper-based method continues to take the leap in identity verification. The biggest risk of paper-based verification is identity/data theft in addition to the fact that it is not environment-friendly. There are multiple identity verification technologies available like Iris, biometric, phone-based, voice recognition, facial recognition, OTP based using phone etc. With these technologies combined with stringent GDPR regulations for privacy protection, the world needs to move to paperless verification.

The emergence of smart phones and deep Internet penetration has set for a change over the years. Mobile phone has become undeniable option and simplest way of carrying out identity verification using mobile as a verifiable ID. For instance, financial transactions have also become paperless which has eluded paper-based consent or multiple signatures or physical visit to the financial institution. For many recent years, banks have supported online transactions by using OTP based with the availability of mobile phone which is a private device assigned to individuals. There are many available solutions and prevalent applications where the welfare scheme disbursements are possible by similar and simple technology available on mobile phone. Insurance claims, employment verification etc., are easy to transform to becoming paperless verification by using similar concept of using digital identity.

But there are still endless applications or need of paper consent prevail in crucial cases for Identity verification which will primarily be time consuming and delay the closure of a transaction. For example, land transactions still need a lot of paper to be printed as well as signed by showing physical identity. And in most cases the physical identity copy is submitted with a physical signature. But we could witness some work going on in the area to eliminate the paper based verification for land transactions by using technology that can protect the legality of the transaction by ensuring identity as well as authenticity of the transaction

Other applications which might take a lot of effort to transform to digital paperless identity verification are getting a new identity like a voter card or a driver license since the systems are all government based which have dependencies on technologies that exist for many years and it takes time for the transformation to happen.

Coming to the agreements between individuals or corporates which can be digitized without having to use paper based verification of identities for signing.



**NAVEEN CHAVA**, CEO, IDSign

Digital signature has existed in India for many years and only corporates and company directors have been using it which can be more appropriate and used for any kinds of agreements including invoices, PO's and even corporate filings. But when it comes to single one time sign between individuals, there is still a paper based agreements signed on paper after identity is verified. However, with the newer solutions rolled out by new-age players in the domain which support legally valid e-sign without having to use any paper and ensuring the authenticity of the signers can vacuum the gap.

The last and most significant paper based identity usage is in onboarding for bank accounts, loan applications, credit cards, insurance applications etc. There is also a risk of paper based identity information being misused for purposes other than the initial consented purpose. Private data of the individual in paper form can easily be misused. This digital process is going to reduce paper, courier and delivery wastage, manual effort spent on uploading the data into systems, verification etc., in addition to ensuring privacy and compliance with applicable privacy laws. Therefore, it is significant to say the optimum and efficient adaptation of emerging technologies that sync well with industrial change will lead the way for revolutionized identify management in India.

The author is CEO, IDSign

# 5G KEY FOR INDIA TO ENABLE A CONNECTED FUTURE

Damien Stephens, Associate Vice President, Mobility & IoT, Tata Communications, feels 5G will lead to the growth of embedded SIMs to manage the network connectivity of each car, ultimately ensuring a seamless driving experience

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## **What is the status of the global connected vehicle industry and how important will the implementation of 5G be for India to catch up with the rest of the world in that regard?**

Connected vehicles are the new growth drivers of the auto industry. The global connected vehicle market is expected to expand at a CAGR of 14% and grow to US\$ 122.51 billion by 2023 and the India connected car market is not far behind, estimated to grow at a CAGR of 22.2% and reach US\$ 32.5 billion by 2025. As connectivity makes rapid in-roads in India's transportation system, Internet proliferation supported by 5G will further boost this connected car market.

Currently, the market is booming and automakers all over the world are investing in R&D to enable a connected future. According to a report by PWC, sales of 5G enabled vehicles are expected to reach 16 million in the EU, US and China by 2030 and countries world over are busy laying the framework for a 5G network. There is little doubt that it is pertinent for India to jump on the 5G band-wagon sooner to enable a connected future and bring in a new change of transformation.

Further, this wave of 5G will lead to the growth of embedded SIMs (eSIMs) in connected cars and make connectivity simpler. An eSIM will also allow car manufacturers to manage the network connectivity of each car, diagnose vehicle faults in real-time, and analyse driver habits and patterns to support the design of new vehicles, ultimately ensuring a seamless driving experience.

## **When do you think we can see regulation in allowing autonomous vehicles both in India and abroad?**

There are different degrees of regulations across the globe and these vary at various stages of the vehicle's lifecycle, right from development and testing, to deployment and launch. There are also variations depending on existing laws for motor vehicles, insurance, consumer protection, data protection, and cyber security.

While some countries, such as Netherlands and Germany, have passed comprehensive regulations to monitor the testing of autonomous vehicles (AVs), the U.S. Department of Transportation has passed laws for commercial platooning in some approved states only and a majority of freight ton-miles now occurs in platooning. India on the other hand, is the world's fourth-largest auto market and is set to make a paradigm shift to autonomous mobility. Though



**DAMIEN STEPHENS**, Associate Vice President, Mobility & IoT, Tata Communications

AVs and the necessary regulations are still in the future for India, law makers and automotive players need to focus on regulatory and privacy issues. At the same time, India has been toying with the concept of driverless vehicles and conducting experiments, such as driverless metro in Delhi, driverless pods in Gurugram and even driverless shuttles that will replace manually driven carts and mini-buses in university and company campuses, large industrial sites and other areas where suitable.

## **If we had self-driving cars, then we could do away with the driver and seats. That would lead to cars becoming mobile conference/hotel rooms. Then wouldn't the entire industry itself change?**

It's well accepted by now that AVs are causing a paradigm shift in vehicle ergonomics and design. Future vehicles will witness interior design becoming the key brand differentiator and AV manufacturers would focus on creating an optimised technology platform conducive to passenger comfort, entertainment, productivity, and connectivity. Further, as connected technology begins to control the interior elements, there will be seamless data sharing between the passengers and the vehicle itself. This will result in soaring spending caused by dependence on software and electronics in the automotive supply chain.

In a similar vein, the auto industry could also be the next entertainment destination. This

extends way beyond radio and video. Customers can potentially get everything in their car, and automakers are planning for this already today. There is high throughput capability going into vehicles and combined with 5G, this will enable cognitive-speed response times that will help to bring about autonomous vehicles. And when we don't need to drive the vehicle anymore, we can sit and watch movies, or work, or read, or scroll through news feeds. This will impact all of us as consumers of course, but the impact on the automotive, telecoms, advertising and content/streaming industries will be immense.

### **What about electric vehicles in India and the challenge of setting up charging stations all over in a country as big as India?**

The Indian government is continually pushing for faster adoption of electric vehicles (EVs) to achieve a goal of 30-percent penetration by 2030 and there are a number of incentives to support this drive. However, the gap between the price of Internal Combustion Engine (ICE) and electric vehicles is hindering the mass adoption of EVs. This is followed by the lack of charging infrastructure, which is creating range anxiety among drivers. Thus, transpires the need to combine refueling stations with battery-swapping stations to make better use of available land and eliminate charging wait time. Further, there is also a need to standardise the country's charging infrastructure considering that the existing norms require charging stations to install Europe's CCS and Japanese CHAdeMO charging platforms, which will significantly increase the capital cost.

Despite these challenges, major auto manufacturers are looking at this as an opportunity

**However, the future and success of mobility apps and ride-sharing giants depends on the technological capabilities that go in to each vehicle, including the much talked about 5G technology. AVs will become a new reality**

and have started testing the waters in the Indian market for electric vehicles.

### **What is the future of mobility apps and ride-sharing giants like Uber/Ola?**

In the last decade, mobility has been the only sector in the shared economy that has truly flourished and impacted a large segment of the population. It has introduced a new way of commuting and reduced car ownership patterns among Indians significantly. Likewise, in the next decade, traditional elements of the automotive industry will witness a major disruption and mobility-as-a-service will experience accelerated adoption.

However, the future and success of mobility apps and ride-sharing giants depends on the technological capabilities that go in to each vehicle, including the much talked about 5G technology. AVs will become a new reality that will enable consumers to utilise the driving time to work, watch movies, read or do other productive or relaxing things. On one hand, this will open up new revenue streams for the telecom, advertising and content/streaming industries; while on the other, it will generate invaluable customer data that can be leveraged in multiple ways. As connected-car growth coincides with an expanding conversation about data, the value attached to the information collected from connected vehicles will open doors for infotainment and telematics.

The ability to analyse data and make intelligent decisions will revolutionise businesses across sectors, improve lives and make cities more livable and mobility, more efficient.

### **Tell us something about your initiatives.**

The Internet of Things has been a game-changer all over the world and has transformed how businesses work. As we continue to understand the benefits of this disruptive technology, there are concerns around security and privacy plaguing the sector.

What we identified was that organisations require truly global connectivity while ensuring the integrity and security of data to achieve cross border connectivity. This is where Tata Communications MOVE™ platform came into play. The idea behind the platform was to provide seamless connectivity and create an accessible usage agnostic, cross border mobile experience for people and things. A noteworthy part of the technology is that it overcomes the limitations of local cellular networks and offers services across local networks and country



borders, underpinned by Tata Communications' global wholly-owned IP network, which today connects 4 out of 5 mobile subscribers and carries around 30 percent of the world's Internet routes.

Organisations can use this platform to its full potential in areas such as connected vehicles, fleet management or asset tracking which require massive bandwidth. To also accelerate development in connected cars we combined the IoT connectivity and network intelligence capabilities of Tata Communications MOVE™ with the Microsoft Connected Vehicle Platform to enable automotive manufacturers to offer consumers worldwide more seamless and secure driving experiences. Another key partnership for us was with Thales, a global leader in digital security to develop a secure global IoT connectivity solution.

### **Tell us something about DRVR, the Thailand-based international fleet management application provider**

DRVR is a Bangkok-based start-up that provides a fleet intelligence platform for the logistics industry. The company was founded in 2015 to turn Asia's vehicle fleets into the smartest and cost-efficient in the world. It currently operates in Thailand, Myanmar, the Philippines, Hong Kong and Indonesia, addressing a Southeast Asian market estimated at US\$1 billion. Its ambition is to enable the smartest and most cost-efficient vehicle fleets in the world. At present the company is focused on using data analytics and gamification to improve the operations of its clients' fleets.

They wanted to revolutionise their international fleet management by making it smarter, borderless and seamless. We partnered with them to help them achieve this goal through our MOVE™ platform. How this works is the vehicles in the fleet using the DRVR technology have been fitted with Tata Communications' MOVE-IOT Connect™ SIM technology. The sensors embedded in the vehicle then transmit the data collected in real-time. The Thai based start-up then processes and analyses the data into actionable intelligence and improves cost savings.

The DRVR fleet intelligence platform uses smart IoT sensors equipped with Tata Communications MOVE™ SIMs for cross-border mobile connectivity. Installed in vehicles and vessels, those sensors reliably transmit usage data over the air (OTA). That reliability comes because Tata Communications MOVE™ gives network choice, so DRVR always gets optimal network availability with seamless connectivity from the best local mobile network. That OTA usage data is routed to the Microsoft Azure cloud-hosted DRVR application engine. Centred on DRVR-developed proprietary software, it processes the usage data into actionable, real-time intelligence to notify companies of how their fleets are performing. Via APIs, gigabytes of data are passed back and forth in the cloud between the DRVR software and customer ERP and CRM platforms. Products like MapBox Visions and HD Insights, which contribute to the augmented reality effects intrinsic in the DRVR user interface, are supplied by Microsoft as managed services.

# HOW DATA AND ANALYTICS ARE RESHAPING HR ROLE

Data analytics can be used to manage risk, look at employee safety, manage costs and reduce bias. It can change the traditional way that we look at human resources to bring about a lasting transformation

Prof. (Dr.) Kartikeya P. Bolar



**T**echnology is becoming important to Human resources (HR) in contemporary times. Consequently, HR no longer pertains to only operational roles but also to strategic roles. Data and analytics are enablers for this transition.

For many organizations, reporting and dashboarding are some of the basic tenets of using data and analytics. This involves the aggregation of data, data quality maintenance, and the analysis of data. Mature organizations have automated these basic activities. Thus, the focus can be on analyses that add more value than basic reporting such as predictive analytics.

### **Human resources versus human capital**

During the early years, HR departments were responsible for processing payroll and other documents for the employees. The role such as this was mainly administrative or operational. However, now HR professionals prefer the term “human capital” to human resources. The term human capital recognizes the value that employees bring to an organization. This focusses on the strengths and talents of employees and allowing these strengths and talents to influence and define the business. The strengths and talents of employees can be captured through data of different events. For example, the importance of the employee can be ascertained through Social Network Analysis of the corporate social network. This further helps to formulate an appropriate change management strategy of identifying the right person to be convinced about the strategic goals of the organization.

### **Managing risk and employee safety**

One of the important strategic roles to keep the work environment safe and avoid risking the life of an employee. This has also an impact on the insurance involved with each employee. Data and analytics can be deployed in order to understand the potential sources of distress and accident. This shall help in dealing with substantial losses from injuries and serious fatalities. Proper steps can be taken based on the insights provided on dashboards analytics.

### **Managing costs versus managing revenue**

During the early years, one of the strategic roles of HR was to cut down costs in order to appear profitable. However, this is not considered to be a sustainable and healthy approach as it affects the brand image of the organization in a negative way. Also cutting down costs has inherently led to



**PROF. (DR.) KARTIKEYA P. BOLAR**

the adoption of bad practices such as the hiring of individuals with low skills in order to keep the costs low. As a healthy alternative to this approach, was to increase revenue. Increasing revenue is possible with high quality products and services delivered by people with great skills. Data and analytics on the same are useful for identifying people with required competencies and linking the same with individual productivity.

### **Recruitment and training versus talent management**

Recruitment and selection are important HR functions. However, it is also an important element of employee relations when it comes to hiring for quality output from the individuals. Training and Development on the other prepare the employees of the organizations for future positions within the company. Succession planning, promotion-from-within, performance appraisal consider straining

and development as a key input and thus makes it as another important element of employee relations. These elements can be combined under an umbrella term of talent management which starts right from the entry point of an employee in the organization. Talent management itself is the strategic role of HR which helps in building the brand of the organization.

Using social media data from professional networking sites like LinkedIn and analytics applied on the same, potential candidates can be identified even before they apply for a job.

Using text mining and analytics, the candidates can be enabled to learn more about the organization and answers to the likely queries can be automated. Notifications and alerts can be done. Historical data can be analysed the pattern of hiring carried out and the pattern can be deployed for the new set of applications received for a job position.

By using data and analytics, flight risk probabilities can be assessed based on performance, absenteeism and other contextual factors. This will help in taking steps towards the prevention of ultimate turnover.

An organization's reputation is also determined by the compensation and benefits structure. Employee satisfaction is influenced by pay scales and employee benefits. Data and analytics can aid in planning compensation smartly while considering factors such as the market rate for different skill sets, the demand for these skills. Overall, data and analytics can accelerate the development of individual skill set while optimising learning at the organization level.

One more important aspect of talent management is the assessment of an important measure called the promotion rate. A high number of promotions could be an indication that an organization might be experiencing a lot of change like the acquisition of new business or merger with another organization. Low promotion rates could indicate the organization's culture. Employees would have to stay for a longer duration to be promoted in that case. Hence a dashboard involving metrics with different perspectives on promotion rate will provide insight into organization culture and change management.

### **Data analytics as a tool of bias mitigation**

In any organization, different types of biases happen when employees allow irrational judgements into their thinking and reasoning. In such situations, there is a tendency to search or interpret information in a way that confirms one's preconceptions. Mitigating the biases is crucial for organizations

**Data analytics is essential for understanding & applying the right approach involving the expertise of HR software, statistical analysis, data mining, big data and ML. This further involves understanding the data and knowing the right tools to use when cleaning, extracting, combining, analysing or visualizing data sets**

to foster a competitive environment. The use of appropriate data and analytics algorithms will help in giving up such biases and will allow an objective assessment of one's hypothesis.

### **Framework of strategic HR role using data and analytics**

The framework for strategic HR Role enabled by data and analytics comprises three inter-related blocks. They are as follows...

The HR domain knowledge is essential for understanding the basic concepts of HR and their relationships. It is the key to applying statistics and analytics to ensure that the right problems are addressed with the right approach.

Business logic knowledge is essential for developing a hypothesis, key performance indicators in a business context. This further involves converting data into actionable insights, communicate those insights, and make data-driven recommendations for the business.

Data analytics knowledge is essential for understanding and applying the right statistics and analytics to the problem. This involves the expertise of HR software, statistical analysis, data mining, big data, and Machine Learning. This further involves understanding the data and know the right tools to use when cleaning, extracting, combining, analysing, and/or visualizing datasets.

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# YOU WANT A SMART EDGE THAT'S A GATEKEEPER

V Padmanabhan, Vice President, Engineering and South Head, GlobalLogic, talks about the journey of data and how Big Data is delivering the goods off late and that's also powering the whole concept of Machine Learning

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**W**e have multiple core themes of work. One is around cloud native or hybrid native. We deal with whole tech products or Greenfield products but born in the cloud. Another side of the offering is around Big Data. The entire data stack. That's wherever you need to have a strong embedded ecosystem in the front end, a strong Edge or a strong IoT (Internet of Things). We take a turnkey type of approach. Then a big part of the pie is user experience. We have multiple approaches. One is a typical agency or studio approach. We do user, empathy and persona studies and sometimes recommend business model changes, like say mobile may not be suitable in a particular situation. We are also into business consulting. A majority of our work is very closely connected to customers' business

outcome. Most of the platforms we develop directly impacts revenue, brand and market reach.

## The journey from data to Big Data

From a historic data availability standpoint and our ability to use it, what you're seeing is banking and healthcare having good data collection purely because of compliance needs that have been there from the beginning. The consumer industry started collecting data properly at the start of e-commerce. Auto industry started getting into the space in the last five six years with the on board dongle. Apart from that it was largely retail data, shops and stuff. Now you want to solve modern world problems with historic data. That is where the application comes into play. One is quality of data and the second is

applicability.

Over the last three four years, Big Data delivering results have increased, especially in marketing, for example micro targeted lead generation campaigns. It has also increased in healthcare, travel and leisure. Telecom was always using it for rating and pricing. So, accuracy has increased. Most importantly, culturally people have started going towards data driven decisions. Earlier people used to look at data with suspicion, but now people are asking for it before they make a decision. All these things will push towards better data collection. But interestingly, the poorest quality of data is in CRM. Because CRM comes with 30 fields, nobody has the patience for anything else: Customer name, first name, last name, contact, location etc. But nowadays we look at, especially in B2C, things like demography, age, family patterns etc.

### Data-ML feed off each other

There is a lot of investment going on in the data engineering side to get ready for the data deluge that is on the way. That is also helping Machine Learning because the more the data there is the better it becomes, they feed into each other. There is also a democratisation of ML that is going on and that is making things simpler. When I started coding, the open source resources I used in a project were maybe 5%. At that time people were not contributing. Then it became 15-20% and Apache picked up. Today open source libraries are quite rich. Productivity has increased and costs have come down. The ML community is quite strong and has gone mainstream in the last 2-3 years. You don't have to re-invent models any more. There are so many publicly available ones. You can choose whatever learning you want, unsupervised or supervised, regression studies, binomial classification...

### Building the right talent pipe

We have to build talent and also do retraining. What we see is when you are very fresh on mathematics and when you teach coding, you are good on the data side. We have GLADE (GlobalLogic Academy for Data Engineering) and various other academies to deal with each problem. We found a way to collaborate with academia, especially in the Big Data area. Customers come back to us and say, don't take a lot of time with the data. Take 30-45 days, but tell us what you can do this data. College kids do great on the R&D side and they're very close to mathematical problems. In this regard colleges set up labs and are good at providing recommendations. It's



**V PADMANABHAN**, Vice President,  
Engineering and South Head, GlobalLogic

a very transparent process. Sometimes these kids are bright enough for us to absorb into the ecosystem. Campus to corporate is becoming a big differentiator for us in terms of attracting talent. We also partner with Coursera and Udemy. It is very important that we are getting fresh talent to solve our problems. We have set our talent pipeline accordingly. Data engineering is open to only software engineers, but data science has phenomenally opened up to all skills. For example, in ML itself, there is no code there; it is just the machine picking up patterns.

### A look to the future

GPUs have a long way to go before they reach a limit. For example, some of the smartphones are actually they are multiplying the GPU capability by say 12x. Unlocking a phone which used to take 2 seconds, they want to bring that down to nanoseconds, that's using the GPU. Then you want to look at the quantity of data too. You want a smart Edge which churns streams of data, keeps looking like a gatekeeper. It can look for patterns and maybe declare a Red Alert when things go down and shut down a factory which it is powering. Edge compute is becoming faster, but the speed is used to analyse larger and larger streams of data. Right now it's about higher velocity but lower volumes of data. Edge needs velocity processing. For volume processing you go to the cloud.

## TOOLS FOR THE AUTOMOTIVE INDUSTRY

Sejal Chokshi Pietrzak, President and CEO, DealerSocket, talks about how they have managed to integrate Artificial Intelligence and Machine Learning tools to anticipate the customer's every move

PCQ Bureau

**D**ealer Socket is a leading SaaS B2B company in the automotive sector, working with all of the major manufacturers. It started in the garage of our founder and has now grown to be about 1000 employees. We also work with independent dealers, used car dealerships in the United States and Canada, also Australia. 8000 dealerships utilise our software, everything from the sales process to helping the websites, digital retail sales, all the way through inventory management.

### Multitude of tools, with AI-ML

We're investing in Artificial Intelligence and Machine Learning to create ways for the dealers to be able to find the right vehicle for the right customer at the right time, maybe even before the customer knows it. Consumers are more and more coming online to do their research. They figure out all the different pieces and they figure out all of the different options that they want and the financing etc. Our digital retail Precise Price software allows someone who wants to do zero percent, all the way up to maybe 95% of the research, sitting on their couch at home. When they walk into the dealership, they have the exact same price, the exact same features and the exact same functionality as what they created at home.

We have an equity mining tool called Revenue Radar that has a Ping Score which pops up, based on a lot of different algorithms and ML in the background. It says: Here's a great offer for you that can perhaps lower your monthly payments, but put you in an even better vehicle. The Ping Score gives you a score of predictability and behaviour based on what others like and what you have done in the past.

We build websites for our customers and do all of the digital marketing. The pay per click is really helping customers—that's another product called Dealer Fire. We have an inventory management product that's specifically for the dealerships to be able to understand inventory, what vehicles they have on their lot, the ability to be able to know which ones



**SEJAL CHOKSHI PIETRZAK**, President and CEO, DealerSocket

to acquire at what price and how to merchandise the vehicles. There's also a dealer management system for independent dealers.

### Mobile first and tablets

We focus on a widget based customer customizable and configurable screen so that, depending on what role you have within the dealership, you can create the look and feel that you want. We have everything's mobile first development as well. There are some dealerships that have now gone hundred percent mobile and tablet and mobile. Anything I do on the mobile app on the CRM, real time shows up on the desktop. So if I'm walking around or we're going for a test drive and I put some information in, by the time we come back and sit at the desk, we're talking about the next steps with the vehicle purchase. It's all there. It's all real time seamless integration. Overall our software is truly for the entire consumer/dealer lifecycle.

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## GIVING CONSUMERS A PERSONALISED AND SEAMLESS EXPERIENCE

Abhay Tandon, Director and Head, Lowe's Innovation Labs, feels that the rapidly changing retail environment is reflective of more aware customers who are looking for higher convenience, specific products and faster access

Sunil Rajguru  
sunilr@cybermedia.co.in

### How is Big Data driving decisions in merchandising, store operations, finance and the supply chain sector?

Data analytics and intelligence has become critical across the retail operations and more so with the omni-channel approach to provide consumers a personalised and seamless experience.

Big Data plays a crucial role in understanding the data points across various stages of retail be it merchandizing to enhance the customer experience of providing them specific products at specific time and at a specific cost; at stores to enhance the assortment mix, right promotions at geo specific locations; to understand leakages, variances and pricing; to ensuring that we hold the right inventory and deliver the products to the consumers in the most efficient ways.

### What about advances in Artificial Intelligence and Machine Learning? How are they helping the supply chain and anticipating customers' needs and enhancing their experiences?

AI and ML are gradually becoming an integral part of processing data, assessing needs and deploying the right measures through both predictive models



as well as prescriptive models, again across the organization. If you look at the whole value chain in supply chain and logistics, AI and ML can be applied across right from developing efficient sourcing strategies, efficient planning strategies, warehouse management – better demand forecasting, inventory holding, packaging and route optimization, geo-localizing the storage, faster and cost effective transportation, and so on and so forth.

### What other futuristic retail technologies are being used to streamline operations?

The rapidly changing retail environment is

reflective of more aware customers who are looking for higher convenience, specific products and faster access. Thus it is important for retailers to continue to evolve, keeping 'Customer Centricity' as the core of the transformation to develop unique and innovative solutions, creating seamless and frictionless experiences for the customers across channels.

The infusion of innovative technology is no longer a thing of the future but rather being considered as an essential tool in retail to power their strategy towards creating the best experience for customer, associates (team members) and other stakeholders with clear financial impact.

Technologies are being applied across the value chain of retail to enhance customer experience. Only when it is applied across the value chain like sourcing, supply chain and distribution, in stores, digital, omni-channel, last mile deliveries etc. will the customer benefit the most.

The technologies and their applications are continuously evolving. Data analytics along with technologies such as AI/ML allow for us to assimilate a lot of data, apply intelligence, generate insights which allow our internal associates to create more value for our consumers.

Technologies such as Blockchain, IoT (Internet of Things) and Alcan help us bring more transparency to our customers, increase sustainability, reduce carbon footprint and create a stronger circular economy.

Technologies such as robotics, haptics, AI, Augmented Reality/Virtual Reality can create a stronger visualization environment for the consumers and build an immersive sensory enabled e-commerce environment, consumer adaptable stores, faster fulfillments etc. blurring the lines between stores and digital.

### **What is the key focus of your Innovation Labs in India? Is India ready to be a big R&D player?**

Lowe's Innovation Labs is the innovation hub for Fortune 50 retailer Lowe's Companies, Inc., with locations in Kirkland, Wash., Mooresville, N.C., and Bangalore, India.

Lowe's Innovation Labs is what's next for home improvement retail. Through emerging technologies, the Labs accelerate the experiences our customers and associates expect today and develop the capabilities that will power tomorrow.

The Labs explores how emerging technologies can advance home improvement; rapidly prototypes solutions and puts them to the test in real-world, living labs; and scales solutions that drive value for



**ABHAY TANDON**, Director, Lowe's Innovation Labs

Lowe's customers and associates.

Lowe's Innovation Labs in India will focus on partnering with technology startups, enablers and other potential partners towards the same global intent of the labs. These partnerships would leverage the Indian startup ecosystem to co-develop solutions that can be applied to Lowe's and create a win-win for all the stakeholders.

Startups that we partner with will have potential access to North American market (GTM), potential paid PoCs, mentoring from functional and technical experts and a host of other benefits.

I personally think that India has made great strides in R&D as well as innovation space. In terms of rankings, India has risen 29 spots in Global Innovation Index in last 5 years to rank 52 in 2019, which shows the change in culture and the zeal behind the same. However, there is still more work that needs to be done to boost R&D in India. On the software front, India is leading on multiple fronts specifically on incremental innovation. However, we need to leap frog more on disruptive innovation specifically in emerging tech. Across the roadshows, we did find a few very interesting startups on their path to disrupt!

## REIMAGINE YOUR ENTIRE BUSINESS

Javed Tapia, Managing Director, Clover Infotech, feels that SMBs can reimagine their entire business in terms of processes, communications, customer engagement and data analytics to enhance business and brand recall

PCQ Bureau

### How important is Digital Transformation?

Digital Transformation is an organization-wide culture change. It is not easy to let go of status quo with respect to established processes and legacy systems. Organizations that can embrace the change in processes, technology and the business itself in a positive manner can leverage the benefits of digital transformation better than competition. Large enterprises can enhance every facet of their business right from customer facing interactions, engagement, enterprise applications and planning, to underlying technology platforms. SMBs should ideally work with a technology services provider with expertise on digital transformation. They can reimagine the entire business in terms of processes, communications, customer engagement, data analytics etc. and enhance business and brand recall.

### What about emerging tech for the above?

We must appreciate the fact that technology empowers businesses to enhance efficiency and accelerate growth. If businesses can identify and clearly define areas of efficiency enhancement and growth, then artificial intelligence, machine learning and Robotic Process Automation (RPA) are very relevant. These technologies can give a huge fillip to all areas from process improvements to risk mitigation and sales enhancement to customer engagement.

### What about the R&D space?

Our Centre of Excellence (CoE) is focused on areas such as RPA, Cybersecurity, Digital Transformation technologies, Cloud services and critical enterprise application services. I think India has the talent and the skills to become an R&D superpower. We are taking the right steps with our thrust on digital transformation and creation of a vibrant ecosystem for incubating new-age ideas and innovation.

### What about agility and microservices?

Agility is a norm in the digital age. Organizations must experiment fast and keep testing multiple



**JAVED TAPIA**, Managing Director, Clover Infotech

concepts. Companies that are very dynamic in terms of their interaction with customers and where applications constantly evolve to engage and interact with customers may be better served with micro-services architecture as against monolithic architecture.

### What are the benefits and threats of cloud?

The benefits are well-documented in terms of transforming from a Capex to Opex model of IT spends, enhancing access across locations and device types, and augmenting the security for applications and the technology layer. The on-demand nature of cloud services, flexibility in terms of provisioning to scale up and scale down storage, compute and network resources play a key role in enhancing agile deployments and practices. Threats might emerge due to lack of access management and identity management, inefficient and insecure APIs and integration layer, data breaches and deviations from compliance mandates which, at times, may be unintentional. However, organizations can take proactive measures to ensure that these threats are addressed and mitigated seamlessly.



# GROWING IMPORTANCE OF IOT-BASED SMART WATER NETWORKS

Internet of Things devices can be used to monitor the quality of drinking water, track water leakages, detect toxicity levels in the wastewater industry and automate the entire water distribution network of a city

Saravanan Panneer Selvam



India is currently one of the most water stressed countries in the world. According to the data from WRI's (World Resources Institute) Aqueduct, the country is in the 13th position among the top 17 most water stressed countries in the world. While India has made several progressive steps in mitigating this crisis, only an integrated water management system will be able to address several of the existing challenges, efficiently.

## Challenges in existing water networks

Traditionally, a water network extracts, treats, transports and distributes water from one location to another. Even though the functionality remains similar, the size and capacity of a water network might vary. For example, commercial buildings and industries might use smaller networks for their water consumption purposes in comparison to the networks in smart cities and other metropolitan areas.

Currently, most of the water networks do not have the capability to fulfil the expectations and manage the resources effectively. These ageing networks are heavily mismanaged and could lead to more problems than the ones it set out to solve. For example, almost 30% of all piped water is wasted in the country due to leaky pipelines. Similarly, fresh water is used extensively by individuals, businesses and industries due to the lack of awareness of the on water treatment and multiple use of treated water. Our water networks do not have the right infrastructure currently to process the wastewater and release the same instead of treated water for different purposes.

## IoT in water networks

Internet of Things (IoT) is one of the many technologies that has been revolutionizing industries across the world. This year, there is expected to be up to 30.7 billion IoT devices globally. An example testifying to this volume of growth is that this number is nearly triple the size of the current human population. The technology has embedded itself into every aspect of life, from smart cities to smart homes, traffic management, security, transportation and several other areas.

The water industry has also been adopting IoT in a phased manner to improve efficiencies and address the current challenges.

- *Growing role of data analytics:* IoT primarily uses sensors to collect real time data and turn them into actionable insights that help the user. In a smart water network, these sensors



**SARAVANAN PANNEER SELVAM**, General Manager, Grundfos India

can be used to understand elements such as the flow, temperature and speed of water coursing through the network. This will enable the customer with the right information to adapt or course correct according to their requirements. For example, in a high-rise building, IoT based sensors can detect the various consumption patterns of the residents and adjust the pressure and flow accordingly. The residents might require water with a good pressure during peak hours and the pressure can be reduced during lean hours to reduce wastage and unwanted pressure on the pipes. Additionally, the growing role of IoT across industries has significantly reduced the cost of sensors.

- *IoT to monitor quality of drinking water:* IoT enables real time monitoring of the quality of water. If the quality of water drops below

certain set parameters, the sensors will be able to notify the customer/user. It can also test the water at different periods of time by collecting the data and analysing. This is particularly beneficial in industries such as manufacturing (Food and pharma in particular) and energy that requires certain level of water quality for its processes.

- **Tracking water leakages:** Water leakages are typically caught only after significant loss from the pipelines. Through IoT technology, these leakages can be caught early on and minimize the loss and damages. IoT based systems also enable predictive maintenance and reduce overall lifestyle costs. Several state bodies and municipalities in India such as Hyderabad have enabled smart systems to monitor their leakage.
- **Toxic chemical detection in wastewater industry:** Sensors in wastewater systems can detect chemical leakage, temperature changes and changes in pressure levels. The information can be sent to the main server immediately to resolve the issue. The technology can also be used to calculate the residue chemicals present in the water.
- **Automating the water distribution network:** Distribution of water requires significant control and monitoring at various stages to ensure that water is not wasted unnecessarily. An automated system with an integrated adaptive technology will be able to seamlessly distribute water to various locations.

Besides this, IoT has been known to improve overall productivity, improve transparency through real-time tracking while minimizing lifecycle and maintenance costs.

### Connection between IoT and water pumps

IoT can be integrated with water pumps to augment its performance and increase water and energy savings. Currently, water pumps attribute to 10% of global electricity consumption. With the influx of the right technology, this figure can be brought down to 4%.

This has also ushered in a new age of digitally powered pumps that is able to supersede the performance capabilities of its predecessors. For example, periods of high consumption would require the pump to perform optimally. During periods of low water consumption, the sensors should be able to alert the pumps to reduce the energy usage

### The global water crisis



- Domestic water usage has grown more than 600% since the 1960s. Irrigation demand, industrial demand and domestic demand for water all have seen a steady increase during this period.
- A fourth of the world is looking at “extremely high water stress”, meaning more than 80% of their available supply is withdrawn every year.
- While Chennai is facing drying reservoirs, North India too is seeing a major groundwater table decline. While Cape Town avoided a total water shutoff, Rome had to ration its water resources.
- Water stress is a serious threat to both human livelihood and business stability.
- About a billion people live in water-scarce regions. This number could become 3.5 billion as early as 2025.

(Source: The Water Resources Institute website)

and match it with existing demand, particularly the pumps with latest PM (permanent magnet) technology IE5 motors.

Additionally, the intelligence gathered from the sensors should be able to alert customers if the pump is damaged or if any part requires replacement. This kind of predictive maintenance capabilities makes intelligent pumps a preferred option.

Leading companies such as Grundfos that manufacture water solutions use intelligent sensors to monitor and enable predictive maintenance for customers and water networks. When the 200-year old Shelbourne Hotel in Dublin needed a new cooling system, Grundfos was able to set up chilled water pumps with integrated sensors. These sensors provided the hotel management with data and control of the temperature. Their engineering crew is also immediately informed about any abnormalities or faults. This has exponentially improved their efficiencies from that of their past systems.

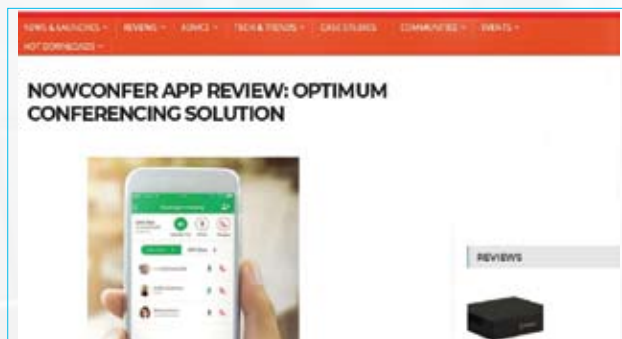
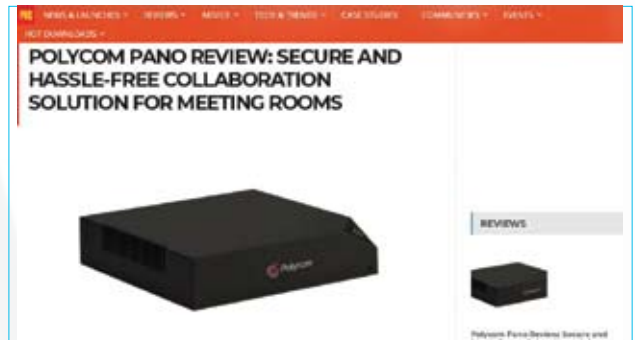
This new generation of pumps will also be embedded with artificial intelligence and cloud connectivity to improve its intelligence and functions.

The author is General Manager, Grundfos India

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VIDEO COLLABORATION UNIT

# AVAYA CU-360 REVIEW

— Ashok Pandey  
ashokpa@cybermedia.co.in

**D**o you remember how many meetings you did last month? The communication methods have changed and now with technological development, we not only meet people, but we also interact and collaborate with them.

But no more clutter of various devices and connectivity issues. Solutions like Avaya CU-360 has made it quite simple, just plug in and you are ready.

## Easy to Setup

You can easily install the CU-360 unit, simply add it either over the screen or any other convenient place. Now you need one HDMI cable to connect the unit with screen and then LAN or Wi-Fi to connect it with the internet.

The device comes integrated with video codec, microphones and Bluetooth connectivity means there are no cables on the table. Its remote control includes a full keyboard to further simplify setup and use.

## Features

The compact all-in-one video collaboration unit supports full HD 1080p performance that turns any space into a video collaboration room. It has a 4K wide-angle video camera and microphone. This can be easily integrated with Avaya UC – Equinox, Aura, and IP Office or can be set up independently.

The smart unit is integrated with cloud services, you can have workspace productivity application support for Office 365, Google Apps, Dropbox, Salesforce and more. It also supports the Android app enabling infinite potential.

The CU360 comes with Outlook calendar enabling you to join an IX Meetings/IX Meetings Online/OnAvaya invite in your Outlook and Join by only one tap/click on the calendar button 'Join meeting'. You can install Zoom, BlueJeans, WebEx, Pexip, etc. to have connect with more people.

The 4k camera has a feature to track you, with auto-tracking, it focuses on the active speaker in the room, thanks to the combination of audio tracking and face recognition, based on AI methods.

## Performance

After using the CU-360 unit for multiple meetings, and using



Price: ₹ 97,000

## SCORE

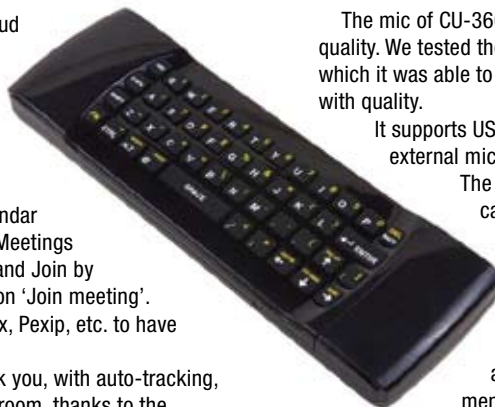
PRICE: **9/10**  
PERFORMANCE: **9/10**  
FEATURES: **9/10**

Overall: **9/10**

**KEY SPECS:** Camera Sensor: 4kp30; Video Input: Live video from built in camera up to 1920 x 1080p30fps, Wireless presentation with Screen Link up to 1920 x 1080p15fps; USB Ports, USB-C and USB 3; Microphone array (4mics); HDMI; Bluetooth

**PROS:** Easy to set up and use, AI-enabled camera, 4K support, powerful mic

**CONS:** None



different could services we found it really easy to use the device to turn any hurdle room into an interactive meeting room. The camera of the device supports HD quality (1080p or 720p), and it delivers quality video output. The zoom capability of the camera is impressive.

The mic of CU-360 is excellent in capturing your voice with good quality. We tested the mic capability in a meeting room of 15 feet, in which it was able to capture voice till the distance of 10 to 12 feet with quality.

It supports USB and Bluetooth as well, so you can connect an external mic or speaker system to it.

The UI of the device is quite intuitive, any person can easily operate it without any training. Once the setup is done, you can check the call menu to make a call to a SIP URI and IP address. There is an advanced call option as well that includes the call protocol (H.323, SIP, ISDN), call type (audio-video or audio-only), and call rate. You can see a contact menu as well to create and search contacts from a directory.

**Bottomline:** Clearly Avaya CU-360 is a perfect device to convert your meeting room into an interactive place.

# PEBBLE VOLT POWER BANK REVIEW

— Ashok Pandey  
ashokpa@cybermedia.co.in



Pebble has introduced a new power bank 'Volt' with 10,000 mAh of capacity. The sleek power bank supports fast charging as well as has USB Type-C support. Pebble Volt has multiple ports to charge more than one device simultaneously.

## Design and features

Pebble Volt has a solid body and comes in three different colors including – Black, White, and Blue. Volt is not only solid it looks stylish and has a sleek profile, enabling you to keep it in your pocket easily.

It features two USB power outputs, one Type-C, one micro-USB and an integrated LED indicator for the battery status. It supports DC 5V-2.1A USB output and DC 5V-2A micro-USB and Type-C input. Four LEDs indicate the power status of the power bank.

The Pebble Volt comes with 6 months replacement guarantee and weighs 220 grams. Packed with universal compatibility, Volt works well with all kinds of smartphones, tablets, and headphones. It also features 10-way circuit protection, meaning safety against overcharging and overheating.



## Performance

The Pebble Volt power bank takes more than 6 hours 32 minutes

Price: ₹ 1,499

Overall: **9/10**

## SCORE

PRICE: **8/10**  
PERFORMANCE: **10/10**  
FEATURES: **9/10**

**KEY SPECS:** 10,000 mAh Li-ion battery with fast-charging; Portable palm-size sleek design with 5v-2.1a output; 10-way circuit protection to keep the power bank safe even during voltage fluctuations

**PROS:** Solid-body, sleek design, 10-way circuit protection

**CONS:** A bit expensive

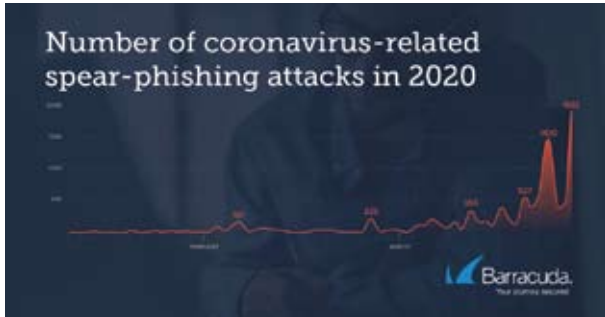
to be fully charged. The fully charged device can charge three devices simultaneously. Volt looks sleek but offers a power output of 10,00mAh with fast charging support.

During our test, we were able to charge 3 devices, OnePlus 6 (3300 mAh), Honor 9i (3000 mAh), and HTC Desire 12+ (2965 mAh) from completely drained to 100 per cent battery. The power bank offers more than 86 per cent conversion rate.

The fast charging feature lets us charge OnePlus 7T in only 40 minutes from 10 to 100 per cent.

**Bottomline:** The Pebble Volt is a perfect power bank with 10,000 mAh battery capacity, sleek design, and 10-way circuit protection, but comes at a little higher price point.

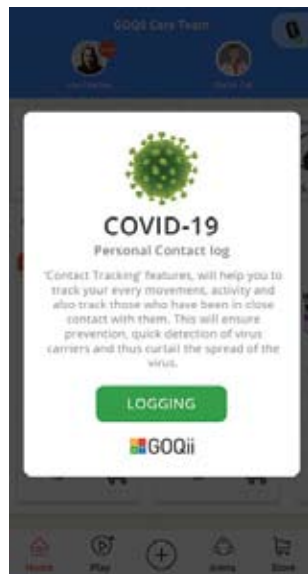
## COVID-19 RELATED PHISHING ATTACKS INCREASED BY 667%



Attackers are taking advantage of the widespread discussion of Covid-19 in emails and across the web. Barracuda researchers have seen a steady increase in the number of coronavirus Covid-19-related email attacks since January, but they have observed a recent spike in this type of attack, up 667-percent since the end of February. Between March 1 and March 23, Barracuda Sentinel has detected 467,825 spear phishing email attacks, and 9,116 of those detections were related to COVID-19, representing about 2 percent of attacks. In comparison, a total of 1,188 coronavirus-related email attacks were detected in February, and just 137 were detected in January. Although the overall number of these attacks is still low compared to other threats, the threat is growing quickly.

## GOQII APP LAUNCHES 'CONTACT TRACKING'

GOQii has launched 'Contact Tracking' features to help users track every movement, activity and also track those who have been in close contact with them. The updated feature will effectively help in social distancing. A first-of-its-kind initiative especially in cases of a positive detection, where users can immediately backtrack every movement and individuals that one has come in contact with, in the last few days. This will ensure prevention, quick detection of virus carriers and thus curtail the spread of the virus. Contact tracing is a mechanism closely linked with case detection and investigation processes so that subsequent symptomatic patients can be effectively managed.



## EXOTEL HELPS MOVE LARGE CALL CENTRES TO CLOUD

With the country going into a lockdown, Exotel, has worked with several organisations over the last few weeks to move their customer call center to the cloud. Businesses have embraced remote working as a way to contain the pandemic. This has particularly impacted their customer facing teams like sales and support since they traditionally are not remote functions. Over the last few days, Exotel has worked with banks, broking firms, fintech companies, education startups, NGO, BPOs, etc. to move their call centers to the cloud. Even in the case of organisations that relied on on-premise solutions, the transition was done quickly and with minimal to no-disruption. With Exotel's remote call center solution, calls from customer facing numbers can be forwarded to the agent's mobile phone directly.

## GENEO ANNOUNCES FREE LIVE CLASSES

To bridge the learning gap during the pandemic, Geneo, an interactive digital platform by Schoolnet India Limited, has announced free live classes by Geneo Mentors for students of Class 6 to 10 on its learning platform. Under the social initiative #LearningNeverStops, Geneo is offering live classes for Maths, Science and English, based on the first term syllabus of the new academic year of CBSE schools and those schools following the NCERT textbooks. #LearningNeverStops has been launched following the advisory for schools to remain closed to safeguard the health of students. To ensure learning continues seamlessly at home, Geneo mentors will conduct topic-wise classes based on the school curriculum. Sessions will include access to learning videos and exploriments on the Geneo platform to achieve concept clarity.

## AUTODESK OFFERS FREE-EXTENDED ACCESS TO COLLABORATION PRODUCTS

To better support customers facing this new reality, Autodesk is announcing a temporary Extended Access Program for several of our flagship cloud collaboration products. Customers can get free access to select Autodesk products and services. Products and services will include BIM 360 Docs, BIM 360 Design, Fusion 360, Fusion Team, AutoCAD Web and Mobile, and Shotgun – all for commercial use. Customers can take advantage of this program by visiting our Expanded Access Program center on Autodesk.com and following the steps they'd normally take to sign up for an Autodesk product trial. Customers can take advantage of the Extended Access Program until May 31.

## SLIGHT INCREASE IN FIXED BROADBAND DOWNLOAD SPEEDS



Ookla released updates with India data to its ongoing article tracking the impact of Covid-19 on the performance and quality of global mobile and fixed broadband internet networks. Fixed broadband download speed in India increased very slightly between the weeks of March 2 and March 9, while mobile download speed remained flat. When comparing other Asian countries, Ookla found that the internet speeds on both mobile and fixed networks in China took a dive during the outbreak of Covid-19 in the country.

## FAREYE OFFERS ZERO-FEE TECH TO HANDLE SURGE



To ensure seamless deliveries of groceries & daily essential items at every doorstep while maintaining social distancing amidst the pandemic, FarEye- predictive logistics platform, announced that it will work with companies globally and equip them with its home delivery optimization software to handle surge in home deliveries with available drivers, quickly onboard part-time drivers and make deliveries contactless. FarEye will provide its solution - FarEye SERVE, free of cost to organizations making home deliveries of daily essential items- like groceries, food, medicines until June 30, 2020, and will continue supporting the cause till situation is better, for all deliveries to hospital sites & for supply of food and medicines for non-government organizations that are responding to crisis until September 30.

## MICROSOFT HEALTHCARE BOT FOR SCREENING PATIENTS

Microsoft offering its Healthcare Bot service powered by Microsoft Azure to organizations on the frontlines of the Covid-19 response to help screen patients for potential infection and care.



U.S. Centers for Disease Control and Prevention (CDC) released a Covid-19 assessment bot that can quickly assess the symptoms and risk factors for people worried about infection, provide information and suggest a next course of action, whether it is contacting a medical provider or managing the illness safely at home. The bot, which utilizes Microsoft's Healthcare Bot service, will initially be available on the U.S. Centers for Disease Control and Prevention (CDC) website.

## ENABLEX OFFERS FREE VIDEO CONFERENCING SOLUTION

To support businesses during the pandemic, EnableX.io announced that the EnableX Video Meeting and Collaboration solution will be made available for free to help enterprises across Asia stay engaged



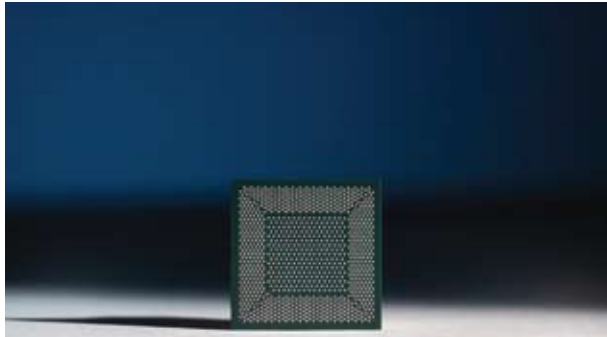
with their employees. EnableX Video Meeting solution is easily accessible on any device and comes with collaborative features such as screen sharing, whiteboarding and chat. The company is offering the service free of cost in all countries across Asia. Enterprises and individuals can sign up and get immediate access to Video Meeting with unlimited usage.

## SERVICENOW RELEASES 4 EMERGENCY RESPONSE APPS

ServiceNow announced a customer care plan to support its public and private sector customers globally in managing the Covid-19 pandemic. As part of this effort, the company has announced four new community apps to help its customers, including government agencies and enterprises, manage complex emergency response workflows. These apps are now available at [servicenow.com/crisisresponse](https://servicenow.com/crisisresponse) for customers to access free of charge through September 30. "In this battle to flatten the COVID-19 curve, none of us is as smart as all of us," said Bill McDermott, president and CEO of ServiceNow. "These ServiceNow applications will enable emergency outreach, self-reporting and exposure management, which are precisely what organisations need to do right now to help people get through this crisis."

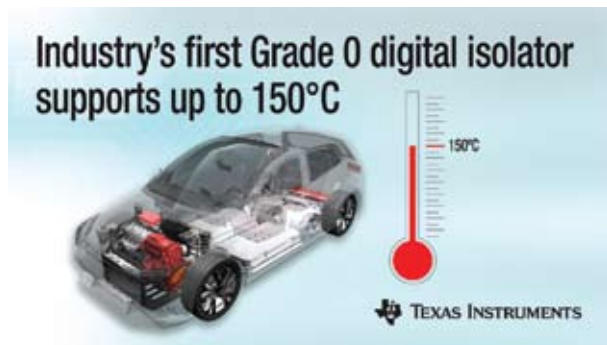


## INTEL'S NEUROMORPHIC CHIP CAN SNIFF HAZARDOUS CHEMICALS



In a joint paper published in Nature Machine Intelligence, researchers from Intel Labs and Cornell University demonstrated the ability of Intel's neuromorphic research chip, Loihi, to learn and recognize hazardous chemicals in the presence of significant noise and occlusion. Loihi learned each odor with just a single sample, without disrupting its memory of previously learned scents. It demonstrated superior recognition accuracy compared with conventional state-of-the-art methods, including a deep learning solution that required 3,000 times more training samples per class to reach the same level of classification accuracy.

## INDUSTRY'S FIRST GRADE 0 DIGITAL ISOLATOR ENABLES RELIABLE COMMUNICATION



Texas Instruments introduced the industry's first digital isolator that is qualified to the Grade 0 ambient operating temperature specification of the Automotive Electronics Council (AEC)-Q100 standard. The ISO7741E-Q1 features an industry-leading 1.5-kVRMS working voltage and supports temperatures up to the Grade 0 maximum of 150°C. The new isolator enables engineers to better protect low-voltage circuitry from high-voltage events in hybrid electric vehicle (HEV) and electric vehicle (EV) systems and avoid having to design in cooling systems to reduce temperatures to below 125°C – the maximum temperature Grade 1-qualified integrated circuits (ICs) can support.

## VIRTUAL ACCOUNT MANAGEMENT FOR REAL-TIME BANKING



Nucleus Software announced the launch of the latest version of its transaction banking solution FinnAxia 7.0. With this launch, Nucleus Software introduces a sophisticated virtual account management (VAM) solution designed to enable banks to open virtual accounts for their corporate customers - accounts that can replace real current accounts and instantly route payments and collections to a linked 'master' current account. Reducing the number of physical accounts helps streamline the corporate accounts receivable process, ensuring faster payee identification, error-free reconciliation, reduced days sales outstanding (DSO) and improved working capital management.

## MEDIA & ENTERTAINMENT INDUSTRY GREW BY 9%

The Indian Media and Entertainment (M&E) sector reached INR1.82 trillion (US\$25.7 billion) in 2019, a growth of ~9% over 2018 states the



FICCI EY report 'The era of consumer A.R.T. – Acquisition Retention and Transaction', launched today. With its current trajectory, the M&E sector in India is expected to cross INR2.4 trillion (US\$34 billion) by 2022, at a CAGR of 10%. While television and print retained their positions as the two largest segments, digital media overtook filmed entertainment in 2019 to become the third largest segment of the M&E sector. Digital subscription revenues more than doubled from 2018 levels and digital advertising revenues grew to command 24% of total advertising spend.

## AVEVA ACQUIRES PRODUCTION ACCOUNTING CAPABILITY

AVEVA announced that it has acquired production accounting software from South Korean based company MESAEnter to complete AVEVA's value chain optimization solution. MESAEnter's software offering, previously branded MESA ENTER ErrorSolver and now rebranded AVEVA™ Production Accounting, has been proven and tested by major producers in the continuous process industries since 2005. It opens the opportunity to improve accuracy of planning models, manage operations performance, identify loss detection and faulty instrumentation and ultimately move operations towards a plant-wide reconciliation. The newly added software will enable AVEVA to deliver a more robust offer that drives profitability across the value chain for its customers. AVEVA Production Accounting software furthers AVEVA's commitment towards its Value Chain Optimization strategy to help customers eliminate information silos and integrate critical business processes across their operations.

## POWER OF TECH TO EMPOWER THOSE WITH DISABILITIES



Microsoft India and NASSCOM Foundation launched of the Innovate for Accessible India campaign in partnership with the Department of Empowerment of Persons with Disabilities (DEPwD), Ministry of Social Justice & Empowerment, Department of Science & Technology (DST), Ministry of Science and Technology and ERNET (National Research and Education Network under MeitY). Innovate for Accessible India is a nation-wide innovation challenge aimed at empowering people with disabilities with the technology and tools required for better integration into society and access to equal opportunities. The campaign will be an aggregator of workable technology solutions developed using Microsoft Cloud, Artificial Intelligence and other technologies that address gaps faced by people with disabilities, especially in acquiring services and support in education, skill building, employment, mobility, rehabilitation and other government services.

## ACI ML CAPABILITY TO REDUCE BANK PAYMENT FRAUD

ACI Worldwide launched its new Incremental Learning technology – an innovative industry-first approach to Machine Learning (ML) that will enhance fraud protection for financial institutions and their customers. ACI has filed a patent application for its 'Incremental Learning' technology, which is being implemented in machine learning models within ACI's fraud prevention solutions, including Proactive Risk Manager, which delivers enterprise fraud management capabilities for financial institutions and intermediaries. This represents a significant advancement over current ML models that need to be retrained as fraud patterns change.

## DHONI INVESTS IN KHATABOOK

Khatabook announced a strategic partnership with international cricketer and former India captain, Mahendra Singh Dhoni. The legendary cricketer will not only invest in Khatabook but also become its brand ambassador. Dhoni's decision to invest in Khatabook comes at a time when the firm has crossed 2 crore registered merchants on its app. The firm has set aggressive growth targets for expansion across smaller towns and villages. Khatabook is aiming to onboard another 2 crore merchants over the next 12 months. The firm plans to use proceeds from the latest equity investment to expand its product portfolio and double down on its technology and capabilities.

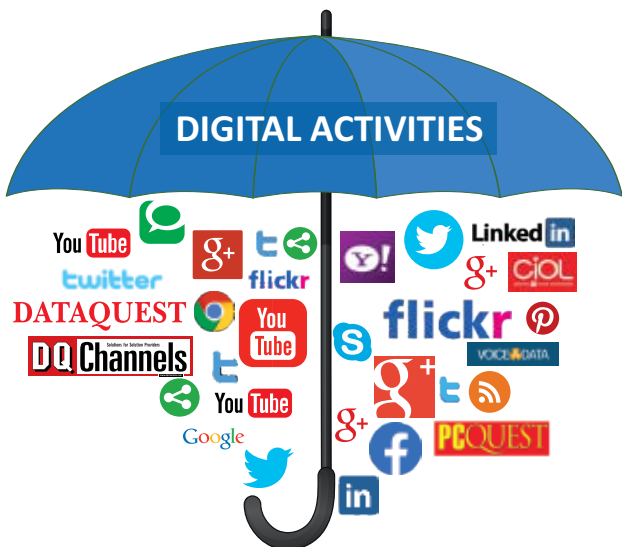


## GLOBAL BIOMETRICS TO REACH \$45.96B

The rise of Internet of Things (IoT) and smartphone usage has greatly expanded the market for biometric identity authentication due to the ubiquity of mobile biometrics. Technological advancements and higher biometric spending and implementations in the public sector due to the use of eGovernance are expected to drive the \$18.78 billion market toward \$45.96 billion in 2024 at a compound annual growth rate of 19.6%. Frost & Sullivan's recent analysis, Global Biometrics Market, Forecast to 2024, examines the key regional and technology trends as well as the growth drivers and restraints that are expected to impact the market. It analyzes the main competitors, their product offerings, and assesses if vendors are ready to go it alone or if they need partnerships to take their businesses to the next level. The study covers fingerprint, face, iris, vein, voice, and other technologies, such as DNA, palm print, hand geometry, signature, and behavioral.

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The advisory by the Govt. to avoid even small public gatherings of more than 10 people has put a lot of pressure on every business. It has brought all corporate life to a stand-still, and what's more, it's likely to stay that way for at least two more months.

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