

VIDYAVARDHINI'S COLLEGE OF ENGINEERING & TECHNOLOGY

I - TECH COMMITTEE

PRINCIPAL

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STAFF INCHARGE

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From HOD's Desk

The Department of Information Technology Engineering has come up with another edition of its departmental magazine, "Login". It is good to see that today's generation has not lost its literary roots, despite the perpetual efforts of e-Technology to extinguish the flames of the written words. Innovation, orientation and an ever expanding base serve as a firm foundation for the latest development in the department of Information Technology Engineering. Login also gives an insight into the initiatives taken by the department to inculcate superior virtues in the students and encourage them to reach for the stars. The department endeavors to produce confident professionals tuned to real time working environment and aims to offer excellent academic environment with a team of highly qualified faculty members to inspire the students to develop their technical skills and inculcate the spirit of team work in them.

Reflecting upon all the activities taking place in the department, the face of the department has changed considerably whether it is the number of co-curricular activities to new course offerings, the environment continues to grow and evolve. I attribute this success to the winning combination of a dedicated faculty that works hard at imparting quality education, a well-planned syllabus and last but not the least, our students.

The strength of the department lies in the highly motivated students who understand the dynamics of the industry and hone their skills accordingly. The efforts my students have put into the successful creation of the magazine, under the mentorship of my learned faculty colleagues, is commendable. I hope you will enjoy reading about the exciting things that have been happening in the department.

Dr. Ashish Vanmali
Head Of Department,
Information Technology (VCET)



From Staff-In Charge's Desk

The department works with the objective of addressing critical challenges faced by the Industry, Society and the academia. Even more important is our unceasing commitment to our students, helping them to learn, grow, develop and achieve their goals in their pursuit to excel in their professional career.

Magazine "**Login**" and **Newsletter** of our department facilitates our students and faculty members to publish their achievements and efforts. It provides a motivation to the students to —see and follow the steps on the success path taken by their seniors. This also gives a reason to be proud of their classmates, seniors and faculty members.

The inhouse annual magazine reflects the success stories of our students and the faculty members. It is circulated to all students and faculty members containing information including placements, sport events, paper presentations, conferences etc. It also highlights the top-notch rankers in University and other competitive examinations. Whereas the newsletter gives insights of all the greatest accomplishments of the IT industries around the world.

Every day is a chance to begin again. Don't focus on the failures of yesterday, start today with positive thoughts and expectations. I wish and pray that our younger generations may always hold the lamp of love, peace, harmony and above all responsibility. You are here for reason, follow your passion, learn and change the world.

Prof. Bharati Gondhalekar
Staff-In Charge,
I-TECH Committee.



From Chairperson Desk

“Technology requires knowledge and expertise more than it requires money” ~ Jonathan Raymond

I feel Jubilant to present to you the 11th edition of LOGIN, The Annual Technical Magazine of the Department of Information Technology, in which the I-TECH committee aspires to brief the studentson how the technological advancements are changing society and what that means for the future. The I-TECH committee, through“LOGIN”, attempts toprovide the students with the latest advancements and researches in the field of Information Technology and also showcases how IT is fusing with many other industries giving rise to many astonishing developments. It also admires the co-curricular and extra-curricular achievements of the students.

I would like to extend my sincere gratitude to our honorable H.O.D., Dr. Ashish Vanmali, and our respectable staff-in-charge, Prof. Bharati Gondhalekar, for relentlessly guiding and encouraging the I-TECH committee. I would also like to thank the team members for their commitment and enthusiastic attempt in the making of this magazine.

The I-TECH committee will continue to enlighten the students with the latest technical extravaganza and surpass in the same with a better version of the magazine each year.

HAPPY READING!

**Kinjal Prakash Patel
Chairperson,
I-TECH Committee**

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Blockchain/AI



A blockchain is a distributed, decentralized, immutable ledger used to store encrypted data. On the other hand, AI is the engine or the —brainl that will enable analytics and decision making from the data collected. It goes without saying that each technology has its own individual degree of complexity, but both AI and blockchain are in situations where they can benefit from each other, and help one another. Additionally, blockchain can also make AI more coherent and understandable, and we can trace and determine why decisions are made in machine learning. Blockchain and its ledger can record all data and variables that go through a decision made under machine learning. Moreover, AI can boost blockchain efficiency far better than humans, or even standard computing can. A look at the way in which blockchains are currently run on standard computers proves this with a lot of processing power needed to perform even basic tasks. If you were to operate a blockchain, with all its encrypted data, on a computer you'd need large amounts of processing power.

The hashing algorithms used to mine Bitcoin blocks, for example, take a —brute force approach – which consists in systematically enumerating all possible candidates for the solution and checking whether each candidate satisfies the problem's statement before verifying a transaction. AI affords us the opportunity to move away from this and tackle tasks in a more intelligent and efficient way. Imagine a machine learning-based algorithm, which could practically polish its skills in real-time if it were fed the appropriate training data. The development of artificial intelligence applied to big data together with the security offered by blockchain technology creates the perfect combination for the management of large databases. Medical or financial data are too sensitive to hand over to a single company and its algorithms. Storing this data on a

blockchain, which can be accessed by an AI, but only with permission and once it has gone through the proper procedures, could give us the enormous advantages of personalized recommendations while safely storing our sensitive data.

Artificial intelligence holds significant potential for business. While we have yet to achieve the full spectrum of capabilities frequently at the center of futuristic cinema, AI is poised as a tool of choice for businesses and solution providers. As is often seen with social media, AI, combined with machine learning, can be a powerful combination. Businesses can use AI to achieve cost-saving benefits, streamline workflows, enable more efficient communications, improve customer satisfaction, and provide insight into purchasing behavior. Businesses can also employ AI to identify new product and service opportunities. Past discussions of blockchain are often hinged on cryptocurrency, but the real power lies in the immutability and transparency of a blockchain. Due to the fixed and highly visible nature of blockchains, this trend has been widely accepted to have financial applications, and often informs discussions of bitcoin. However, the business benefits are much more far reaching. The blockchain is an information system that holds promise for supply chain management, enabling transparency into the origin and journey of materials from origin to product. Blockchain technology will also allow for better record management, providing a snapshot of any record from its origination. This could be used to verify orders, purchases, returns, receipt of product, you name it. Another cryptocurrency utilizing blockchain technology is Ethereum. This cryptocurrency uses smart contracts to ensure delivery of conditions. Smart contracts release data when both participants have met the criteria of an agreement. Smart contracts offer endless capabilities for ensuring agreements are carried out and therefore can help position you as a trusted brand.

The beginning of 2020 has seen the emergence of coronavirus outbreak caused by a novel virus called SARS-CoV2. The sudden explosion and uncontrolled worldwide spread of COVID-19 show the limitations of existing healthcare systems to timely handle public health emergencies. In such contexts, innovative technologies such as blockchain and Artificial Intelligence (AI) have emerged as promising solutions for fighting coronavirus epidemic. On the one hand, blockchain can combat pandemics by enabling early detection of outbreaks, protecting user privacy, and ensuring reliable medical supply chain during the outbreak tracking. On the other hand, AI provides intelligent solutions for identifying symptoms caused by coronavirus for treatments and supporting drug manufacturing. Motivated by these, in this paper we present an extensive survey on the use of blockchain and AI for combating coronavirus (COVID-19) epidemics based on the rapidly emerging literature.

First, we introduce a new conceptual architecture which integrates blockchain and AI specific for COVID-19 fighting. Particularly, we highlight the key solutions that blockchain and AI can provide to combat the COVID-19 outbreak. Then, we survey the latest research efforts on the use of blockchain and AI for COVID-19 fighting in a wide range of applications. The newly emerging projects and use cases enabled by these technologies to deal with coronavirus pandemic are also presented. Finally, we point out challenges and future directions that motivate more research efforts to deal with future coronavirus-like epidemics. It is believed that blockchain and AI could potentially have a considerable impact on the management of pandemic situations and the dissemination of treatment. To date, the literature lacks comprehensive reviews and studies on the applications of blockchain and AI for coronavirus (COVID-19) fighting.

AI can be incredibly revolutionary, but it must be designed with utmost precautions —blockchain can greatly assist in this. How the interplay between two technologies will progress is anyone's guess. However, its potential for true disruption is clearly there and rapidly developing.

SHRADDHA PAWAR
TE IT

Can Health be Measured by Body Sweat??

During workout, you take care not to get your wearable sweaty. But what if the whole point was to get your tracker sweaty?



Imagine how interesting it would be, if your Sweat could instantly tell you “How Healthy You Are?”. While you kept imagining about it, Researchers at North Carolina State University have already built a prototype fitness tracker that measures the metabolites in sweat which tell overall health of a person

Sweat detects health?

Sweat, which we usually relate to body odour contains all manner of substances apart from water which is secreted from our body. These substances help's open a window into the body's internal workings which in-turn helps to check a person's health. Sweat provides a significant amount of information, as it contains important electrolytes, metabolites, amino acids, proteins, and hormones, which allows monitoring of metabolic diseases, physiological conditions, or a person's intoxication level.

Device Overview

This new kind of wearable, is a device of the size of a wristwatch that relies on your sweat to monitor individual's body chemistry. It uses a replaceable test strip embedded with chemical sensors, which measures the amount of certain metabolites present in your sweat to detect your overall health.

“This technology allows us to test for a wide range of metabolites in almost real time,” says Michael Daniele, co-corresponding author of a paper on the work and an assistant professor of electrical and computer engineering at North Carolina State University and in the Joint Department of Biomedical Engineering at NC State and the University of North Carolina at Chapel Hill. The researches related to the device are mainly focused on measuring four metabolites that could tell about a person's glucose, lactate, pH, and temperature levels just through sweat analysis.

“What are Metabolites?”

Well, Metabolites are markers that can be monitored to assess an individual's metabolism. They are small molecules your body forms in the process of metabolism, so these biomarkers can tell you about your health by measuring those metabolite levels against your normal parameters. So, if someone's metabolite levels are outside of normal parameters, it could let trainers or health professionals know that something's wrong.

Device Design

Design of the device consists of replaceable strip on the back which is embedded with chemical sensors. The strip rests against a user's skin, where it comes in contact with the user's sweat. Data from the sensors in the strip are interpreted by hardware inside the device, which then records the results and relays them to a user's smartphone or smartwatch. Although the device is of the size of an average watch, but it contains analytical equipment equivalent to four of the bulky electrochemistry devices currently used to measure metabolite level, which is highly impressive and which makes it portable and can be used in the field.

Applications

Applications of the device includes detecting dehydration, tracking athletic recovery, and it also ranges from military training to competitive sports. For athletes, it could also be used to help tailor training efforts to improve physical performance.

Potential Problems

“Innovation is created as a result of constructive conflict”- Jeff DeGraff. Although, the device created is impressive but suffers from some potential problems which is highlighted by Jan Halánek, an assistant professor of chemistry at the University at Albany. According to Halánek, applying electrochemistry to the body is not easy at all.

Halánek says, “Attempting to measure multiple metabolites on a small device is even trickier because some of the metabolites the researchers are measuring actually break down into

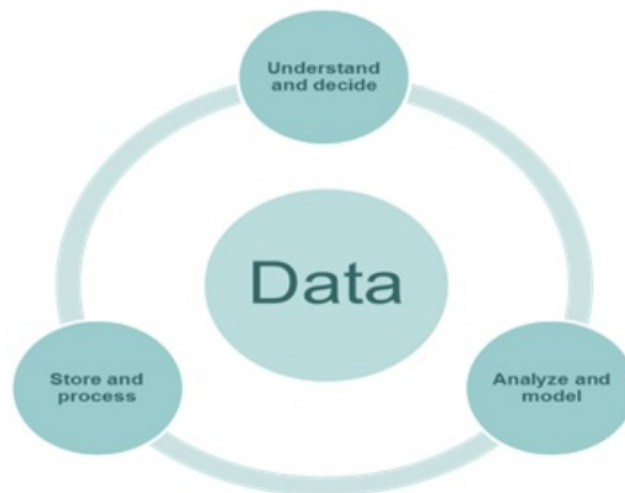
similar groups of compounds. For instance, both lactate and glucose break down to peroxide. Since the electrodes to measure each are close together, there's a risk that measurements will be off”.

There are further problems that will be affecting the prototype as it involves electrochemistry. Halánek overall emphasize that the research is sound and believes the design is promising, but he says the electrochemistry will require further research.

The technology is still under further research and hence it becomes difficult to estimate what the device might cost to the consumers, when launched. Currently, the device costs tens of dollars to make and the cost of the strips which last for a day should be comparable to the glucose strips used by people with diabetes. According to Daniele, they are currently looking for industry partners to help explore commercialization options for this technology.

SAIMA SAYED
TE IT

Data science; What is it really ?



Data science is the study of data. It involves developing methods of recording, storing, and analyzing data to effectively extract useful information. The goal of data science is to gain insights and knowledge from any type of data — both structured and unstructured. It is a multidisciplinary blend of **data inference, algorithm development, and technology** in order to solve analytically complex problems.

At the core is data. Troves of raw information, streaming in and stored in enterprise data warehouses. Much to learn by mining it. Advanced capabilities we can build with it. Data science is ultimately about using this data in creative ways to generate business value.

It's about surfacing hidden insight that can help enable companies to make smarter business decisions.

For example:

- As Netflix uses users data to like his watch history, skipping patterns, age, place to analyse the interey of that particular user. And by showing them the content of their interest.
- Target identifies what are major customer segments within it's base and the unique shopping behaviors within those segments, which helps to guide messaging to different market audiences.
- Proctor & Gamble utilizes time series models to more clearly understand future demand, which help plan for production levels more optimally.

These algorithms uses data products for calculating and making decisions. These data products are nothing but user's analytical data.

For example:

- 1) Gmail's spam filter is data product – an algorithm behind the scenes processes incoming mail and determines if a message is junk or not.
- 2) Computer vision used for self-driving cars is also data product – machine learning algorithms are able to recognize traffic lights, other cars on the road, pedestrians, etc.

Data science five-stage lifecycle:



Capture: Data acquisition, data entry, signal reception, data extraction.

Maintain: Data warehousing, data cleansing, data staging, data processing, data architecture.

Process: Data mining, clustering/classification, data modeling, data summarization.

Communicate: Data reporting, data visualization, business intelligence, decision making.

Analyze: Exploratory/confirmatory, predictive analysis, regression, text mining, qualitative analysis.

Does This Apple Patent Mean What We Think It Means?

Does Apple have a foldable phone in the works?



The invention described in the U.S. Patent and Trademark Office filing, granted to Apple on February 4, shows an electronic device with a flexible display and a novel hinge system that would ensure the screen doesn't crease, and that there's no gap in the spine of the device when closed.

Because the patent doesn't explicitly state what kind of device is being described, it's unclear if the aim is foldable iPhones or iPads. But based on the recent trend in foldables that Samsung ushered in, it's most likely a smartphone concept.

In the invention description, Apple describes a novel hinge mechanism that could potentially set an Apple foldable apart from the rest of the pack. The hinge ensures "adequate separation between first and second portions of the housing when the housing is bent," according to the patent. That basically means the two flat portions of the device will fold together with a hinge that keeps them from touching, while bending the display as little as possible to prevent creasing.

The patent also shows two extendable flaps that open when the device is opened and in an unbent state. These moveable flaps extend parallel to the spine of the device, supporting the display while it's flat. They retract when the device folds, leaving "room for a bent portion of

the display along the bend axis." So there won't be a terribly awkward gap in the spine of the device when it's folded, as is the case with the Huawei Mate X. Intently focusing on the hinge is no mistake, lest we should forget the complete debacle of the first Samsung Galaxy Fold, with a plastic cover that looked like a protective film holding the entire device together. When media reviewers peeled off the plastic covering from the \$2,000 device, calamity ensued.

Hinges have been a sore subject in the electronics industry since foldables first hit the scene. For its part, the Samsung Galaxy Fold has a pretty noticeable crease in the middle when you unfold the phone, and so does the Royale Flexpai, which The Verge called "charmingly awful" after the Consumer Electronics Show in 2019. Now it looks like the Samsung Galaxy Z Flip is taking a new hinge approach.

This isn't Apple's first tango with foldable patents. One of the most interesting pieces of evidence is a patent application for a foldable battery. Per that filing, which dates back to 2017, the battery cells will be put together in a configuration that allows the entire battery to be flexible, integrating effortlessly into the display. You can also see graphite padding to help keep heat at bay between the screen and battery. A caveat with all patents, as we've warned in the past, is that the company may not have any intention of actually using its newly acquired intellectual property. There are plenty of reasons why Apple may have pursued this patent, outside the possibility of a new iPhone with a folding hinge.

For one, the company may want to ensure that other firms can't take the same approach to a foldable it's already thinking about. Think about it like insurance for the future: When the company wants to pursue the foldable, it's already sitting on a pile of patents that protect that future work. Or Apple may want to sell off these ideas to other manufacturers working on foldables.

Apple tends to perfect the concepts that other smartphone manufacturers first introduce. Apple wasn't the first to use a pull-down notification bar— that was software developed by Android—but the design is far sleeker now that iOS does support that notification shelf. Apple wasn't the first to introduce a fingerprint scanner, remove the home button, or even make larger-than-life displays, but in every case, the company has dominated the execution.

Whatever happens, let's hope Apple actually does pursue a foldable iPhone, so that at least one company gets it right.

Edge computing

In the beginning, we learned how to connect to computers by using terminals. Right now, today, in 2020, we're firmly in the cloud computing era where almost every person uses pc's to access services like Gmail, Drive, Amazon, etc. Many companies are trying to upgrade their centralized "cloud services" for the clients worldwide. But, you should perhaps pay attention to the realization that there isn't much growth left in the cloud space. Almost everything that can be centralized has been centralized. Most of the new opportunities for the "cloud" lie at the "edge."



So, what is edge?

The word edge in this context means literal geographic distribution. Gartner defines edge computing as "a part of a distributed computing topology in which information processing is located close to the edge – where things and people produce or consume that information." So we can say that edge computing is computing that's done at or near the source of the data, instead of relying on the cloud at one of a dozen data centers to do all the work. It doesn't mean the cloud will disappear. It means the cloud is coming to you. This is done so that data, especially real-time data, does not suffer latency issues that can affect an application's performance.

Why was edge computing developed?

Edge computing was developed due to the exponential growth of IoT devices, which connect to the internet for either receiving information from the cloud or delivering data back to the cloud. And many IoT devices generate enormous amounts of data during the course of their operations.

Take an example of one video camera transmitting live footage from a remote office to the centralized network. Instead of one camera, multiply that by hundreds or thousands of devices. Not only will quality suffer due to latency, but the costs in bandwidth can be tremendous. Edge-computing hardware and services help solve this problem by being a local source of processing and storage for many of these systems. The many benefits provided by edge computing are:

- Decreased latency
- Decrease in bandwidth use and associated cost
- Decrease in server resources and associated cost
- Added functionality

Edge computing isn't just for IoT

Many industry analysts and technology pundits have been focusing on IoT as the primary driver for edge computing. This makes a lot of sense since billions of things will need to interact with a nearby edge compute resource. But when you consider that a 'thing' isn't just a sensor, but could be a car or a drone or even a mobile phone, it becomes clear why we must think way beyond IoT when it comes to the edge.

What's the future scope of edge computing?

As edge computing has emerged out as a new approach to network architecture that eliminates the drawbacks of traditional cloud computing, certain reports have predicted its evident growth in the coming years.

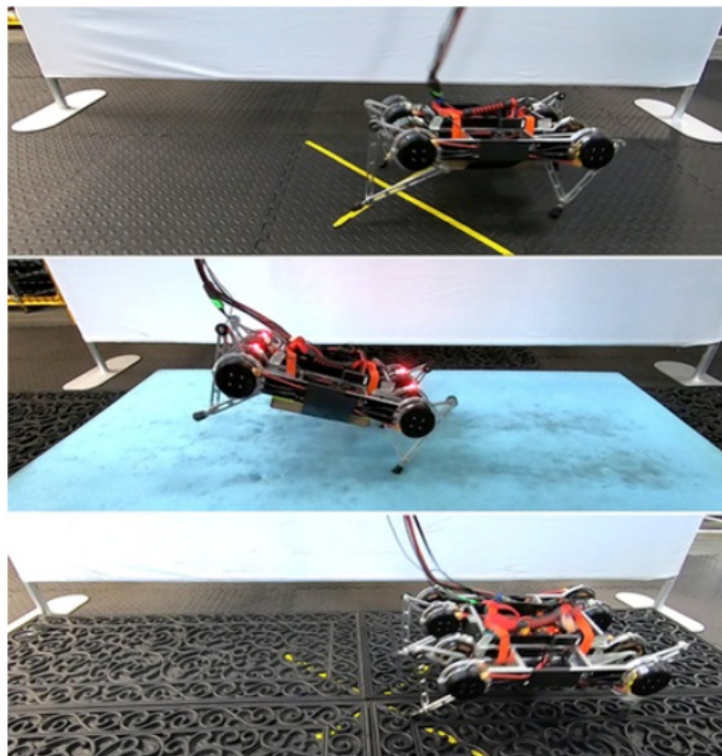
As for its short term commitments, edge computing will see a steady rise in its growing importance and maturity across the industry by 2020. Around 57 percent of mobility decision-makers surveyed in the Forrester Analytics Global Business Technographics Mobility Survey, 2019, affirmed that they have edge computing on their roadmap for the next 12 months.

Some significant predictions for 2020 made by Forrester in edge computing space are:

- In 2020, fit, form and function will drive the development of custom form factors.
- The edge cloud service market will grow by at least 50%.
- Companies will choose multi-vendor packaged solutions over single vendors.

With more and more internet-connected devices hitting the market, innovative organizations have likely only scratched the surface of what's possible with edge computing.

How This Robot Taught Itself To Walk In Just a Few Hours



Walking is hard, and what's hard for humans is equally confounding for robots. But with the help of machine learning, a robot learned to walk in just a few hours—a good 12 months faster than the average human. Not bad.

Usually, a roboticist must either hardcode every single robotic step or build a simulated world in which the robot can complete its trial-and-error training. But both of those methods take a lot of time, so researchers affiliated with Google used reinforcement learning so the robot could teach itself how to walk in the real world. This branch of machine learning uses software to gather more information about its surroundings through continually repeating trials and rewarding successful attempts.

Simulation is still an important ingredient of reinforcement learning, but the researchers' was meant to take that kind of testing to the next level. This means researchers let their Minotaur robot roam around a physical environment before ambling across the trial's differing terrains, like flat ground, a soft mattress, and a doormat with geometrical crevices.

Sehoon Ha, an assistant professor at Georgia Institute of Technology (a part of Google Robotics) and lead author of the study, says that it's difficult to build quick and accurate simulations for a robot to explore. You can model every individual crack in the asphalt, but that doesn't help much when the robot walks down an unfamiliar road in the real world.

"For this reason, we aim to develop a deep [reinforcement learning] system that can learn to walk autonomously in the real world," he wrote in the paper.

But there's a challenging engineering problem when trying to teach a robot to walk—the thing is going to fall...a lot. One way that Ha and the other researchers were able to ensure both automated learning in the real world and safety of the robot was to enable multiple types of learning at once. When a robot learns to walk forward, it may reach the perimeter of the training space, so they allowed the robot to simultaneously practice forward and backward movement so that it could effectively reset itself. Their methodology was so successful that the robot required no manual resets during its hours of training. For comparison, Ha's prior robot in December 2018 required 100 manual resets.

The other challenge was making sure that the robot really learned to walk by itself, meaning no human intervention whatsoever. The only hard-coding the team used was a command telling the robot to stand up after a fall, but they hope to eventually automate this part of the learning process as well.

Removing time-intensive coding and simulation trials helps roboticists spend more time seeing how the real thing interacts with its surroundings. That'll hopefully propel practical applications for walking robots, such as search-and-rescue and military applications where unfamiliar and often hostile environments are commonplace.

KINJAL PATEL
BE IT

Latest Trends in Information Technology Sector

Technology is an ever-changing playing field and those wanting to remain at the helm of innovation have to adapt. As the IT industry trends such as cloud computing and SaaS become more pervasive, the world will look to brands who can deliver with accuracy and real-time efficiency. But, where to begin? These are the emerging trends businesses need to keep their eyes on in 2020.



AI

Artificial intelligence holds significant potential for business. While we have yet to achieve the full spectrum of capabilities frequently at the center of futuristic cinema, AI is poised as a tool of choice for businesses and solution providers. As is often seen with social media, AI, combined with machine learning, can be a powerful combination. Businesses can use AI to achieve cost-saving benefits, streamline workflows, enable more efficient communications, improve customer satisfaction, and provide insight into purchasing behavior.

Block Chain

Past discussions of block chain are often hinged on crypto currency, but the real power lies in the immutability and transparency of a block chain. Due to the fixed and highly visible nature of block chains, this trend has been widely accepted to have financial applications, and often informs discussions of bitcoin. However, the business benefits are much more far reaching. The block chain is an information system that holds promise for supply chain management, enabling transparency into the origin and journey of materials from origin to product.

Drones

Drones are helping to transform certain verticals, giving an edge over competitors and offering a technologically powered physical connection between businesses and end users. The remote capabilities of drones coupled with AI applications are transforming business in the industrial, public safety, construction, and insurance sectors, just to name a few. As the drone industry continues to mature, more and more applications are coming to light and businesses are embracing the possibilities. Gartner predicts that drone shipment will increase by 50% in 2020. Drones offer a unique opportunity to identify actionable tasks with much less leg work.

IoT

As the world becomes more and more digitized, informed business is the key to success and internet of things provides greater clarity into consumer behavior. The IoT is increasingly offering business opportunities in the form of data collection and analysis. Unlike traditional data collection methods, IoT is a conglomeration of devices that interact, providing substantially greater insight into how products and services are being applied for everyday tasks. As more devices become IoT enabled, businesses will be able to design products with a greater understanding of pain points.

Quantum Computing

Quantum computing offers businesses a powerful tool for predictive analytics and big data analysis. As we encounter new problems, quantum computing will help predict viable solutions, though it may not be on the radar for many solution providers or channel partners just yet.

Virtual Reality/Augmented Reality

When we think of virtual reality and augmented reality technologies, we often drift to possibilities in gaming. But there is real potential for businesses and solution providers as well. Consumers and businesses may know that they need a solution but have difficulty visualizing how a product or service will enable a particular outcome. Businesses can use XR to enhance their offerings and inform effective decision making.

3D Printing

The ability to customize a product according to personalized specifications will allow businesses to provide nearly limitless possibilities. Providing this kind of customization required either reprogramming or manual intervention. Personalization is also one task that can be automated. 3D printing also enables the use of various materials that offer cost-saving and environmentally sustainable benefits.

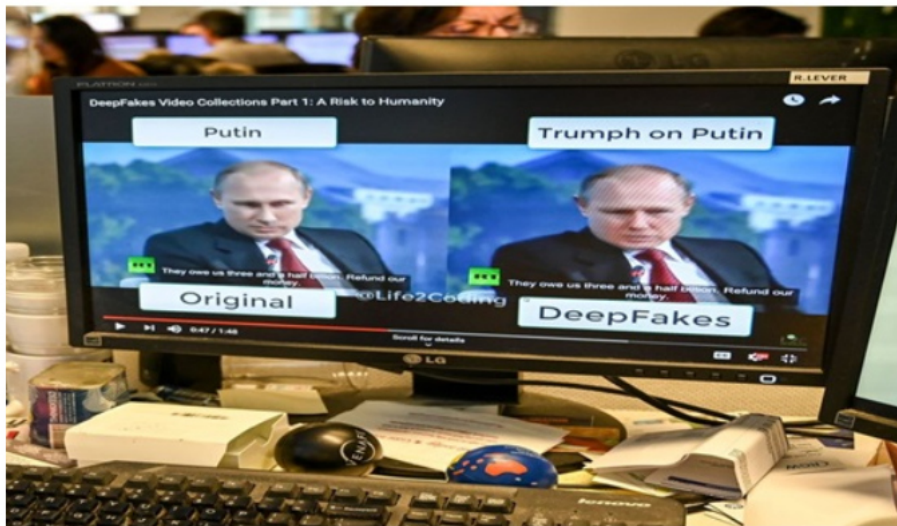
5G

The speeds accomplished with 5G greatly outpace those seen with previous networks. 5G offers the supporting foundation that businesses can leverage to embrace emerging technologies. Reaching consumer bases via mobile devices and smart phones will soar to new heights as the IT infrastructure for 5G expands and becomes more pervasive. Looking toward new technology trends is reaching a state of necessity in business as innovation continues to reach new heights.

**ABHINAV MAHAJAN
SAMIR POL
TE IT**

Twitter Takes a Step Toward Banning Deep fake - but It Isn't Big Enough

Twitter released a new policy on manipulated media this week, promising to label some "deceptive" images and videos and pull down others. While the ban is a step in the right direction, it isn't comprehensive enough to pull down every deepfake, including a widely circulated video of Nancy Pelosi appearing to drunkenly slur her words.



Ahead of the 2020 presidential election, when manipulated media like deep fakes are expected to be most rampant, Twitter has introduced some long-overdue guidelines for handling what it considers to be "deceptive" media. The move comes just over three months after Twitter first asked users for feedback on a new set of rules meant to address manipulative or synthetic content.

Seventy percent of users said Twitter "taking no action" on misleading altered content would be unacceptable. Ninety percent of respondents, meanwhile, said placing labels next to manipulated media would be acceptable. Still, just a little over half of the respondents said they believed Twitter should remove the posts entirely, showing an appetite for transparency.

But just as Facebook did last month when it openly banned manipulated media as part of a new policy to protect users from disinformation ahead of the election, Twitter also left some massive holes in the new rules, allowing some content that can be considered a deepfake to live on the social media platform.

Under the new policy, a viral deepfake video of Nancy Pelosi, which showed the Democratic Speaker of the House slurring in what appears to be a drunken soliloquy, would not be removed from the website at all, despite the video having been altered with artificial intelligence. Under the new policy, a viral deepfake video of Nancy Pelosi, which showed the Democratic Speaker of the House slurring in what appears to be a drunken soliloquy, would not be removed from the website at all, despite the video having been altered with artificial intelligence.

Notably, Facebook's new manipulated media policy also doesn't cover that video, which begs the question: What kinds of AI-altered content can we expect to continue seeing on social media during the election cycle and beyond? What will make it through the cracks of these broad policies?

What's Banned?

Right now, the litmus test for what Twitter considers to be "synthetic or manipulated" media is three-pronged, and each part includes a few key factors that Twitter will take into consideration.

1) Is the media synthetic or manipulated?

- Has the content been "substantially edited" in a manner that fundamentally alters its composition, sequence, timing, or framing?
- Has any visual or auditory information (like video frames, overdubbed audio, or modified subtitles) been added or removed?
- If the media depicts a real person, has it been fabricated or simulated?

2) Is the content likely to impact public safety or cause public harm?

Twitter will consider the context in which media has been shared. If the post could result in "confusion or misunderstanding," or if it suggests "deliberate intent to deceive" people about the nature or origin of the content, like saying that a deepfake video is actually real footage, Twitter considers it an aggravating factor.

In addition, Twitter will assess the following:

- Text accompanying the tweet or within the media itself
- Metadata associated with the media
- Information on the profile that shared the media
- Websites linked to in the profile of the person sharing the media, or in the tweet sharing the media

3) Is the media shared in a deceptive manner?

Tweets with manipulated or synthetic media are subject to removal from the site if they're likely to cause harm in any of the following ways:

- Threats to the physical safety of a person or a group of people
- Risk of mass violence or widespread civil unrest
- Threats to the privacy or ability of a person or group to freely express themselves in civil events, such as stalking or unwanted obsessive attention; targeted content that includes tropes or material that aims to silence; or voter suppression/intimidation

What Will Actually Be Removed?

Twitter will use what looks like a sort of scoring rubric to determine next steps. In some cases, Twitter will completely pull the post from its website and app, but Twitter sees other scenarios as more of a gray area and will, in response, simply label these posts to call attention to the fake media. We may label Tweets containing synthetic and manipulated media to help people understand the media's authenticity and to provide additional context," the company wrote in a blog post announcing the rules.

Is the media significantly and deceptively altered or fabricated?	Is the media shared in a deceptive manner?	Is the content likely to impact public safety or cause serious harm?	
✓	✗	✗	Content may be labeled
✓	✗	✓	Content is likely to be labeled, or may be removed.
✓	✓	✗	Content is likely to be labeled.
✓	✓	✓	Content is very likely to be removed.

Under this framework, the Pelosi video—and a similar viral video depicting Joe Biden making what appear to be racist remarks—would not be removed, but labelled. Instead,

Twitter says, it will do one (or likely all) of the following:

- Apply a label to the tweet
- Show a warning to people before they retweet or like the tweet
- Reduce the visibility of the tweet on Twitter and/or prevent it from being recommended.

Type your text

Virtual And Augmented Reality



In the last 5 years, virtual reality (VR) and augmented reality (AR) have attracted the interest of investors and the general public, especially after Mark Zuckerberg bought Oculus for two billion dollars. Currently, many other companies, such as Sony, Samsung, HTC, and Google are making huge investments in VR and AR. However, if VR has been used in research for more than 25 years, and now there are 1000s of papers and many researchers in the field, comprising a strong, interdisciplinary community, AR has a more recent application history. The study of VR was initiated in the computer graphics field and has been extended to several disciplines. Currently, videogames supported by VR tools are more popular than the past, and they represent valuable, work-related tools for neuroscientists, psychologists, biologists, and other researchers as well.

Virtual Reality Concepts and Features

The concept of VR could be traced at the mid of 1960 when Ivan Sutherland in a pivotal manuscript attempted to describe VR as a window through which a user perceives the virtual world as if looked, felt, sounded real and in which the user could act realistically. Since that time and in accordance with the application area, several definitions have been formulated: for example, defined VR as “real-time interactive graphics with 3D models, combined with a display technology that gives the user the immersion in the model world and direct manipulation” described VR as “The illusion of participation in a synthetic environment rather than external observation of such an environment. VR relies on a 3D, stereoscopic head-tracker displays, hand/body tracking and binaural sound. VR is an immersive,

multi-sensory experience”; and “Virtual reality refers to immersive, interactive, multi-sensory, viewer-centered, 3D computer generated environments and the combination of technologies required building environments”.

As we can notice, these definitions, although different, highlight three common features of VR systems: immersion, perception to be present in an environment, and interaction with that environment. Specifically, immersion concerns the amount of senses stimulated, interactions, and the reality’s similarity of the stimuli used to simulate environments. This feature can depend on the properties of the technological system used to isolate user from reality.

Augmented Reality Concept

Conceptualized the Virtual-Reality Continuum that takes into consideration four systems: real environment, augmented reality (AR), augmented virtuality, and virtual environment. AR can be defined a newer technological system in which virtual objects are added to the real world in real-time during the user’s experience.

AR system should:

- (1) combine real and virtual objects in a real environment;
- (2) run interactively and in real-time;
- (3) register real and virtual objects with each other.

Furthermore, even if the AR experiences could seem different from VRs, the quality of AR experience could be considered similarly. Indeed, like in VR, feeling of presence, level of realism, and the degree of reality represent the main features that can be considered the indicators of the quality of AR experiences. Higher the experience is perceived as realistic, and there is congruence between the user’s expectation and the interaction inside the AR environments, higher would be the perception of “being there” physically, and at cognitive and emotional level. The feeling of presence, both in AR and VR environments, is important in acting behaviors like the real ones.

Augmented Reality Technologies.

Technologically, the AR systems, however various, present three common components, such as a geospatial datum for the virtual object, like a visual marker, a surface to project virtual elements to the user, and an adequate processing power for graphics, animation, and merging of images, like a pc and a monitor. To run, an AR system must also include a camera able to track the user movement for merging the virtual objects, and a visual display, like glasses through that the user can see the virtual objects overlaying to the physical world. To date,

two-display systems exist, a video see-through (VST) and an optical see-through (OST) AR systems

Augmented Reality Applications

Although AR is a more recent technology than VR, it has been investigated and used in several research areas such as architecture, maintenance entertainment, education medicine and psychological treatments; see the review More in detail, in education several AR applications have been developed in the last few years showing the positive effects of this technology in supporting learning, such as an increased-on content understanding and memory preservation, as well as on learning motivation For example, developed a AR application on electromagnetism concepts' learning, in which students could use AR batteries, magnets, cables on real superficies, and the system gave a real-time feedback to students about the correctness of the performance, improving in this way the academic success and motivation.

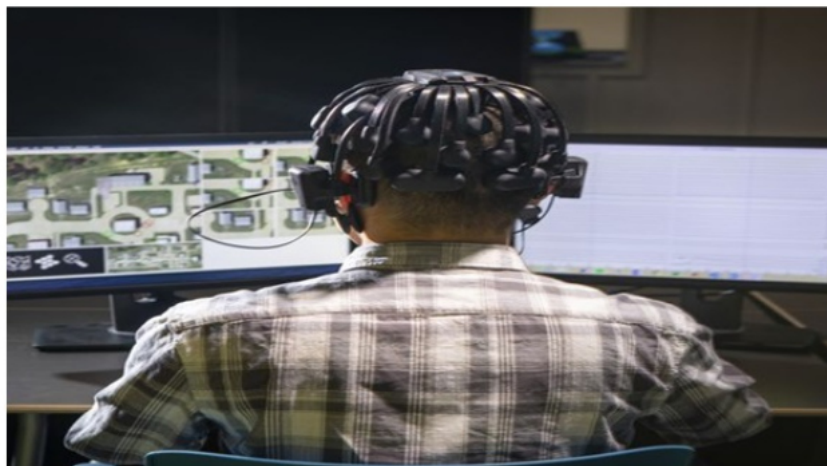
Results

The analysis of the literature on VR shows a complex panorama. At first sight, according to the document-type statistics from the Web of Science (WoS), proceedings papers were used extensively as outcomes of research, comprising almost 48% of the total (10,392 proceedings), with a similar number of articles on the subject amounting to about 47% of the total of 10, 199 articles. However, if we consider only the last 5 years (7,755 articles representing about 36% of the total), the situation changes with about 57% for articles (4,445) and about 33% for proceedings (2,578). Thus, it is clear that VR field has changed in areas other than at the technological level.

BHAKTI GORE
TE IT

Your Brainwaves To Train Swarms Of Military Robots

- Researchers at the University at Buffalo are using gamers' brain waves to advance the progress of robot swarms that could be used in the military.
- Using groups of simple robots to complete complex tasks, rather than one extremely advanced robot, is referred to as "swarm intelligence" in AI theory.



DARPA hopes this new training method will improve groups of autonomous ground and air robots used on the battlefield. In what sounds like a Black Mirror-esque approach to military strategy, the U.S. Defense Advanced Research Projects Agency (DARPA) is funding a study that will use gamers' brain waves to teach hives of defense robots how to swarm together to complete missions.

DARPA has given a \$316,000 federal grant to the University at Buffalo Artificial Intelligence Institute to study gamers' brain waves and eye movements. The aim is to improve organization and strategy among autonomous air and ground robots. Why would the U.S. want to invest in robot swarms? Because beives of bots are already being pursued elsewhere in the world, like Russia. Flock-93, for example, is a vision of 100 kamikaze-like drones, each armed with an explosive charge, swarming targets like vehicle convoys. In theory, these hordes of robots are drastically more difficult to defend against, so the U.S. certainly doesn't want to lag behind.

The idea is to eventually scale up to 250 aerial and ground robots, working in highly complex situations," said Souma Chowdhury, assistant professor of mechanical and aerospace

engineering at Buffalo, in a press statement. "For example, there may be a sudden loss of visibility due to smoke during an emergency. The robots need to be able to effectively communicate and adapt to challenges like that." To put it simply, groups of more primitive robots can complete certain tasks better than one really intelligent robot could on its own. This theory in artificial intelligence is referred to as "swarm intelligence."

In Chowdhury's study, experts will play real-time strategy games similar to StarCraft, Stellaris, and Company of Heroes, which force players to use resources to build units and defeat opponents. The researchers are developing their own unique strategy-based game. As gamers play, the decisions they make are recorded, and researchers will track their eye movements through high-speed cameras. In tandem, their brain activity will be monitored through electroencephalograms. (Those are the headsets with a bunch of electrodes on the cap that you might wear during a sleep study). Then, based on the data they've gathered, the scientists will build new algorithms that will guide autonomous drones and ground robots used in military applications.

"We don't want the AI system just to mimic human behavior; we want it to form a deeper understanding of what motivates human actions," Chowdhury said. "That's what will lead to more advanced AI." The latest threat for the Pentagon to worry about: swarms of unmanned aerial vehicles designed to overwhelm their under-equipped target. ISIS combatants abroad and hostage takers in the United States have started using squadrons of off-the-shelf drones to annoy, surveil, and even drop munitions. But there's a new way to fight back.

Armed Forces and law enforcement have surprisingly few effective anti-drone tools, and none that are declassified to target multiple unmanned aerial vehicles (UAVs), or swarms. Shotgun shells that fire nets to snare the propellers work only at close range. Missiles, like the \$38,000 Stinger, aren't cost-efficient for taking out \$900 drones. And high-power lasers and signal jammers are effective but must be fixed on a target for precious seconds before they disable a UAV. But this spring, Raytheon released details on a new type of drone defense using high-power microwaves (HPM).

The system is largely autonomous, detecting, identifying, and tracking targets with AESA (active electronically scanned array) radar. It's the same radar found on modern fighter jets. AESA uses an array of thousands of modules that change direction almost instantaneously, detecting targets more quickly and more accurately than an older spinning-disc system or infrared systems that might not pick up the minimal heat signature of a quad copter. Though the HPM system requires little human input, the order to engage targets remains with its operator.

AVAHAN ACHIEVEMENTS (IT Department)

Sr. No	Participants	Event	Achievements
1.	Kadambari Mhatre, Kasturi Redkar, Anvita Suvarna, Ruchi Bari, Aakanksha Mohite, Hitakshi Patel, Shruti Menon, Komal Acharekar, Nishmi Amin	Box Cricket (Girls) Departmental	Winner
2.	Komal Acharekar, Pranita Redkar, Kasturi Redkar, Shruti Menon, Hitakshi Patel, Yukta Upadhye, Anvita Suvarna, Shraddha Mahala, Jaspreet Kaur	Volleyball (Girls) Departmental	Winner
3.	Hitakshi Patel, Pranita Redkar, Jidnyasa Raut, Mrunmayee Apte, Anvita Suvarna, Ankita Chaurasia, Yukta Upadhye	Tug of War (Girls) Departmental	Winner
4.	Kasturi Redkar, Jidnyasa Raut, Aditi Gaur, Pranita Redkar, Shruti Menon	Basketball (Girls) Departmental	Winner
5.	Anvita Suvarna, Ankita Kawade, Nishmi Amin, Akanksha Jadhav, Mrunmayee Apte, Yukta Upadhye, Jidnyasa Raut, Anjali Chaurasiya, Ruchi Bari	Girls Cricket (Girls) (SE-IT)	Winner
6.	Mrunmayee Apte, Yukta Upadhye, Ruchi Bari, Anvita Suvarna, Aakanksha Mohite, Anjali Chaurasia, Ankita Kawade, Jidnyasa Raut	Tug of War (Girls) (SE-IT)	Winner
7.	Heemali Save	Chess Singles (Girls) (TE-IT)	Winner
8.	Hitakshi Patel	Arm Wrestling (Girls) (BE-IT)	Winner
9.	Punit Prajapati, Harikrishan Chauhan, Mayur Koul, Milind Purohit, Aditya Manze, Yash Meghani, Yash Raut, Shashank Kamble, Swaraaj Singh	Volleyball (Boys) Departmental	Winner
10.	Ronak Mali, Aditya Manze,	Basketball (Boys)	Winner

	Yash Dalvi, Milind Purohit, Shivam Jaiswal	Departmental	
11.	Yash Dalvi, Shivam Jaiswal, Pawan Sharma, Dhruv Parekh, Swaraaj Singh	Basketball (Boys) (TE-IT)	Winner
12.	Isha Vartak, Kasturi Redkar, Shweta Sawant, Reeya Shah, Kadambari Mhatre, Saima Sayed, Shraddha Pawar, Bhakti Gore, Riddhi Vartak	Throwball (Girls) (TE-IT)	Runner-Up
13.	Komal acharekar, Pranita Redkar, Shruti Menon Milind Purohit, Ronak mali,	Badminton (Girls) (BE-IT)	Runner-Up
14.	Shraddha Mahala, Nivedita Bhore	Carrom Doubles (Girls) (BE-IT)	Runner-Up
15.	Laxa Devda	Athletics 100m (Girls) (BE-IT)	1 st Runner-Up
16.	Laxa Devda	Athletics 200m (Girls) (BE-IT)	1 st Runner-Up
17.	Hitakshi Patel	Shotput (Girls) (BE-IT)	2 nd Runner-Up
18.	Milind Purohit, Swapnil Gamre, Punit Prajapati, Yash Meghani, Dhairya Chandarana, Hari Chauhan, Jenil Shah, Samir Pol, Shashank Kamble, Dhruv parekh, Shivam Jaiswal	Box Cricket (Boys) Departmental	Runner-Up
19.	Mayur Koul, Dhairya Chandrana, Hari Chauhan, Aditya Manze, Milind Purohit, Pranay Bhoir, Yash Dalvi, Vedang Koli	Tug of War (Boys) Departmental	Runner-Up
20.	Aditya Manze, Dhairya Chandarana, Hari Chauhan, Mayur Koul, Milind Purohit, Pranay Bhoir, Yash Meghani, Umesh More	Tug of War (Boys) (BE-IT)	Runner-Up
21.	Aditya Manze, Yash Meghani, Hari Chauhan	Basketball (Boys) (BE-IT)	Runner-Up

ZEAL ACHIEVEMENTS (IT Department)

Sr. No	Participants	Event	Achievements
1.	Yash Meghani	Duet Dance	Winner
2.	Shashank Kamble	Neon cricket	Winner
3.	Mayur Koul, Yash Meghani	Antakshari	Winner
4.	Ashwini Walawalkar, Akansha Mohite	Rangoli	Runner-Up
5.	Akansha Mohite, Dhruv Kator, Abhineet Menon	Facts and Furious	Runner Up
6.	Mayur Koul, Hari Chauhan Komal Acharekar, Keerti Suryawanshi Punit Prajapati, Aditi Pandit Shreyash Mhashilkar, Milind Purohit Buddhagohosh Shirsat, Kinjal Patel, Yash Meghani, Shruti Menon, Dhairya Chandarana, Parmar Tarun, Pranita Redkar, Hitakshi Patel	Group Dance	Runner-Up

TECHNICAL EVENTS

ELIXER 2019

Event	Winners	Achievement
FE POSTER PRESENTATION	Manthan Sarfare Yogesh Jain Aayush Vishwakarma	First Prize
	Aayushi Ghag Isha Kule	Second Prize
SE POSTER PRESENTATION	Mayank Agarwal Adnan Ansari Abhishek Dhule	First Prize
	Jayesh Deorukhar Chirag Darji Ankit Chaudhary	Second Prize
	Yukta Upadhye Mrunmayee Apte Ruchi Bari	Third Prize
SE OPEN SOURCE SOFTWARE	Ashwini Walawalkar Sweety Singh Nishmi Amin	First Prize
	Prathamesh Suryavanshi Shubhamkar Thavi Dharmesh Thorgavankar	Second Prize
TE OPEN SOURCE SOFTWARE	Devdoot Maji Ravi Lamkoti Hitesh Shetty	First Prize
	Aditya Parekh	Second Prize
	Yash Raut	Third Prize

BEST PAPER WINNER AT VNC TASU 2020

The VNC TASU 2020 was conducted online on 27th June 2020. So here are the winners of INFT department in four tracks.

Tracks		Paper name	Winners	
TRACK 1	INFT-1	High Speed Networking and Information Security-1	Aditya Manze	Re-invention of Apparel shopping Automatic body feature extraction and Analysis
TRACK 2	INFT-2	High Speed Networking and Information Security-2	Samiksha Mane	Predicting price of cryptocurrency-A deep learning approach
TRACK 3	INFT-3	Software Engineering and Emerging Technologies-1	Dr.AshishVanmali	Analysis of Ringing Artifacts in Image fusion Directional Wavelet
TRACK 4	INFT-4	Software Engineering and Emerging Technologies-2	Raj Kotadia	LexiContext – Understanding the Context of a sentence

Placement Record

Company	No. of Placed Students
Infosys	27
TCS	20
LTI	17
Raw Engineering	6
Cognizant	4
Atos Syntel	3
Media. net	3
Amazon AWS	3
Zycus	1
IBM	1
Zeus Learning	1
Bnp Paribas	1

No. of Offers: 87

Department Of Information Technology



I-Tech Committee



Department Of Information Technology