



Jawaharlal Nehru Technological University Kakinada  
University College Of Engineering Vizianagaram  
Department of Computer Science and Engineering



# Scire

Know More



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I am gratified to know that the department of Computer Science and Engineering is bringing out the issue of our technical magazine “**SCIRE**” of this academic year (2019-2020). This is a productive technical material and subsidiary skill developing tool for the students. As head of the institution, I applaud the coordination and efforts behind the team to bring out this issue. The efforts taken to bring about innovative content is appreciable. Wish you all a grand operation throughout the year. Through this message, I wish them “All the very Best” for their future endeavours to and hope the students of CSE bring more laurels to the college on the whole.

Wishing you all the best..!

**Prof. G. Saraswathi**  
Principal

I congratulate the Head of the Department, Staff and Students of the Computer Science and Engineering department for the successful outcome of “**SCIRE**” Magazine.

Remember that honesty, hard work, friendship, sensitivity and respect for yourselves and others are not just empty words found only in the dictionary but rather personal goals for a lifetime as productive citizens. . Without a dedicated team putting in the hours to plan, collect content, design and distribute a yearbook simply wouldn’t happen. A special mention and **message of gratitude to those behind the scenes** will be much appreciated.

I wish you all the best that life has to offer and continued success in achieving your goals.

Wishing you all the best..!

**Prof. Ch. Srinivasa Rao**  
Vice-Principal



Scire magazine from our Department kindles the imagination of our learners. It gives me immense pleasure to pen a few words as prologue to our in-house magazine “**SCIRE**” exclusively meant for churning out the latent writing talent.

I congratulate the staff and students of CSE who used various mediums of expression to present their ideas . As long as our ideas are expressed and thoughts kindled we can be sure of learning , as everything begins with an idea.

I appreciate every student who shared the joy of participation in co-curricular and extracurricular activities along with their commitment to curriculum.

Happy Reading...

**Prof. A. S. N. Chakravarthy**  
Head of the Department - CSE

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Learning to program teaches  
you how to think.  
Computer Science is a Liberal Art  
-Steve Jobs

# Department Breakthroughs



Prof. A. S. N. Chakravarthy took charge as the Head Of The Department, Computer Science and Engineering.



Prof. R. Rajeshwara Rao received the best researcher award from Hon'ble Registrar JNTUK, Kakinada on the occasion of decennial celebrations of JNTUK, Kakinada.



Mr. K. Manoj Kumar CEO, PeerXP delivered invited talk on Enterpreneuership and startups



Mr. Ahmed Akram, Freelancer web developer delivered invited talk on Web Designing

Tilldate 30+ IV-B.Tech. students from CSE department are offered jobs in companies like 'TCS', 'WIPRO' etc...

Mr.B.Kotesh and Mr.M.Rohith from 3rd B.Tech. CSE won Eenadu Cricket Cup(ECC) District Level Tournament



Prof. A.S.N. Chakravarthy visited to Chicago State University under Indo-US 21st Century Knowledge Initiative grant.



Mr. T. Siva Rama Krishna selected as Fellow of India School on Internet Governance (inSIG) supported by Internet Society and Govt. of India. Qualified in UGC - National Eligibility Test, Dec-2018 with 99.82 percentile

# MACHINE LEARNING AND CYBER SECURITY



Machine learning techniques have been applied in many areas of science due to their unique properties like adaptability, scalability, and potential to rapidly adjust to new and unknown challenges. Cyber security is a fast-growing field demanding a great deal of attention because of remarkable progresses in social networks, cloud and web technologies, online banking, mobile environment, smart grid, etc. Diverse machine learning methods have been successfully deployed to address such wide-ranging problems in computer security.

With the increasingly in-depth integration of the Internet and social life, the Internet is changing how people learn and work, but it also exposes us to increasingly serious security threats. How to identify various network attacks, particularly not previously seen attacks, is a key issue to be solved urgently. Alongside of fast evolution of web and mobile technologies, cyber-attacks are also changing rapidly and attacks becoming more and more sophisticated in penetrating systems and avoiding generic signature-based approaches and the cyber security situation is not optimistic.

Where are we with machine learning in security? To answer that question, we first need to look at what our goal is for applying machine learning to cyber security problems. To make a broad statement, we are trying to use machine learning to find anomalies. More precisely we use it to identify malicious behavior or malicious entities; call them hackers, attackers, malware, unwanted behavior, etc. But beware! To find anomalies, one of the biggest challenges is to define what's normal. For example, can you define what is normal behavior for your laptop day in — day out? Don't forget all the exceptional scenarios when you are traveling; or think of the time that you downloaded some 'game' from the Internet. How do you differentiate that from a download triggered

by some malware? Put in abstract terms, interesting security events are not statistical anomalies. Only a subset of those are interesting. An increase in network traffic might be statistically interesting, but from a security point of view, that rarely ever represents an attack.

## Future Outlook

As we demonstrated, Machine Learning provides several practical applications for cybersecurity, but there is still a long way to go. More importantly, it is highly unlikely that ML algorithms will eliminate the need for human intelligence in application security at least in the short term. Instead, the relationship between human and artificial intelligence can best be described as symbiotic: In the first step, cybersecurity expertise is needed to prepare and classify training data, select appropriate algorithms and, in many cases, establish the right distance metric. Then, based on the results of the algorithm, human expertise is needed once again to make decisions based on the data classified or visualized by the machine.

## CONCLUSION

Thanks to machine learning, there's never been a more exciting time in the history of computer science. Machine learning techniques offer potential solutions that can be employed for resolving such challenging and complex situations due to their ability to adapt quickly to new and unknown circumstances. Diverse machine learning methods have been successfully deployed to address wide-ranging problems in computer and information security. Every day, new breakthroughs are changing what's possible with computers. You might be intimidated by machine learning or think it's something that only the top companies and research institutions can use, but that's not true. Machine Learning is for everyone—and it's fun!

Mr.B. SATHISH KUMAR REDDY  
III-CSE

# BLUE BRAIN

Human brain,most valuable creation of the god.The man is called intelligent because of 'BRAIN'.But the disadvantage is we loss the knowledge of the brain when the body is destroyed after the death.To discard these disadvantage a new technology called "BLUE BRAIN TECHNOLOGY".

The name "BLUE BRAIN" is the worlds first virtual brain.That means a machine can function as human brain. Everyone has a doubt "IS IT REALLY POSSIBLE TO CREATE HUMAN BRAIN".The answer is "yes",The IBM is now developing a virtual brain within 25 years,we will able to scan ourselves in a computers.

A virtual brain is similiar to human brain as it can take decisions, think, respond to actions,keep things in memory.

The research involves studying slices of living brain tissue using microscopes and patch clamp electrodes. Data is collected about all the many different neuron types. This data is used to build biologically realistic models of neurons and networks of neurons in the cerebral cortex. The simulations are carried out on a Blue Gene supercomputer built by IBM. Hence the name "Blue Brain".

Generally the functioning of natural brain involves different stages .They are

Sensory input:Receiving inputs such as sound,image etc through sensory cell.

Interpretation:Interpretation of the received input by the brain by defining the states of the nuerons in brain.

Motor output: Receiving of electrical responses from the brain to perform an action.

Processing: Through arithematic and logical calculations

Memory:Through permiannt states of neurons

Functioning of simulated brain involves,

Input: Receiving inputs such as sound,image etc through

The silicon chips or artificial neurons.

Interpretation: Interpretation of the received input by the brain by a set of bits in set of registers.

Output:Electrical signals recieived through silicon chips.

Processing:Through arithematic and logical calciulations and artificial intelligence.

Memory:Through secondary memory.

## BUILDING A VIRTUAL BRAIN:

There are three main steps to building the virtual brain: 1) data acquisition, 2) simulation, 3) visualisation of results.

### DATA ACQUISITION:

Data acquisition involves taking brain slices, placing them under a microscope, and measuring the shape and electrical activity of individual neurons. This is how the different types of neuron are studied and catalogued. The neurons are typed by morphology (i.e. their shape), electrophysiological behaviour, location within the cortex, and their population density. These observations are translated into mathematical algorithms which describe the form, function, and positioning of neurons. The algorithms are then used to generate biologically-realistic virtual neurons ready for simulation

One of the methods is to take 300  $\mu\text{m}$ -thick sagittal brain slices from the somatosensory cortex (SA1) of juvenile Wistar rats (aged 14 to 16 days). The tissue is stained with biocytin and viewed through a bright field microscope. Neuronal 3D morphologies are then reconstructed using the Neurolucida software package (pictured below, far right) which runs on Windows workstations.



Staining leads to a shrinkage of 25% in thickness and 10% in length, so the reconstruction process corrects for this. Slicing also severs 20% to 40% of axonal and dendritic arbors, so these are regrown algorithmically.

The electrophysiological behaviour of neurons is studied using a 12 patch clamp instrument (pictured below left). This tool was developed for the Blue Brain Project and it forms a foundation of the research. It enables twelve living neurons to be concurrently patched and their electrical activity recorded. The Nomarski microscope enhances the contrast of the unstained samples of living neural tissue. Carbon nanotube-coated electrodes can be used to improve recording.

## SIMULATION:

### SIMULATION SPEED:

In 2012 simulations of one cortical column (~10,000 neurons) run at approximately 300 x slower than real time. So one second of simulated time takes about five minutes to complete. The simulations show approximately linear scaling - that is, doubling the size of the neural network doubles the time it takes to simulate. Currently the primary goal is biological validity rather than performance. Once it's understood which factors are biologically important for a given effect it might be possible to trim components that don't contribute in order to improve performance.

The simulation timestep for the numerical integrations is 0.025 ms and the timestep for writing the output to disk is 0.1 ms.

#### Workflow

The simulation step involves synthesising virtual cells using the algorithms that were found to describe real neurons. The algorithms and parameters are adjusted for the age, species, and disease stage of the animal being simulated. Every single protein is simulated, and there are about a billion of these in one cell. First a network skeleton is built from all the different kinds of synthesised neurons. Then the cells are connected together according to the rules that have been found experimentally. Finally the neurons are functionalised and the simulation brought to life. The patterns of emergent behaviour are viewed with visualisation software.

## VISUALISATION OF RESULTS:

### RTNeuron:

RTNeuron is the primary application used by the BBP for visualisation of neural simulations. The software was developed internally by the BBP team. It is written in c++ and OPENGL. RTNeuron is ad-hoc software written specifically for neural simulations, i.e. it is not generalisable to other types of simulation. RTNeuron takes the output from Hodgkin-Huxley simulations in NEURON and renders them in 3D. This allows researchers to watch as activation potentials propagate through a neuron and between neurons. The animations can be stopped, started and zoomed, thus letting researchers interact with the model. The visualisations are multi-scale, that is they can render individual neurons or a whole cortical column.



### UPLOADING HUMAN BRAIN:

Uploading is possible by using small robots called nanobots. These robots are small enough to travel through our circulatory system. Travelling into the spine and brain they will be able to monitor the activity and structure of our central nervous system. They will be able to provide an interface with computer while we still reside in our biological form. Nanobots could also carefully scan the structure of our brain providing a complete readout of the connection. This information when entered into a computer, could then continue to function as us. Thus the data stored in the entire brain will be uploaded into the computer.

# EXPLORE THE DESTINATION

It's been arcane for what we have reached and what we imagined. There is no surprise in that because **life is erratic**. This article is related to our present educational life. There will be four categories of people after the graduation

- 1)Who correctly reached to the desired destination, but they are very few and they reached with lot of effort and stringent schedules.
- 2)Who reached to the good destination (not desired one) on compared to others but they may or may not satisfied. They have put their maximum effort but they are unable to reach their dream one.
- 3)Who didn't like for what they reached and they unable to put the effort of what they expected and regretting for it.
- 4)Who are in dilemma of what to do?

Now map your position to one of these above categories. The first category deserves a big round of applause for their success and they have to keep going. The fourth category have to find their **Hidden Face** as soon as possible and to get a clarity of what they are really passionate about. The remaining second and third categories have to **explore the reached destination** for what they have propelled from there journey. It's what you doing at this point is going to determine the rest of the life. You can either be a victim of your life or the master of it. But the choice, that's down to you. When you lose, it's an opportunity to improve but not the time to sit over in the corner and feel sorry for yourself and make excuses for why you lost. It's time to take full ownership of your **time**, of your **mind**, of your **day** but **It won't be easy**, it will be hard because life is hard. But don't let the challenges to push you down. The adversity you face today turn you into a better person tomorrow.

So, in the future you should be in the position to look back at these struggles and you have to say **thank you**. Because they made you better.

**Stop looking for a short cut and go find your discipline, and your drive, and your will then you will find your true freedom.**

**Mr.K.SAI VASANTH.  
IV-CSE**

# LAW OF NATURE

Our ancient country had not only given a message of peace and harmony to the world but also to the humanity. Enlightened persons have given a method that how to help harmony. When we talk about this, we can't ignore the individuals. If there is no peace in the mind of an individual, I can't understand how can they get real peace in the human world. If I have a mind which is full of anger how can I give peace to the world. Because I have no peace. I am an agitated person. Careful, the great enlightened persons have said that "FIRST HAVE PEACE WITHIN YOURSELF, SO THAT ONE HAS TO OBSERVE WHETHER REALLY THERE IS PEACE IN ME OR NOT". when you start experiencing the truth about yourself many of the problems get solved. From now we start understanding the universal law of the nature which is applicable to everyone. when I start observing myself I find that I am generating anger, hatred, ill-will, animosity. Then I immediately realized that I am the first victim of my anger, hatred and animosity which I am generating within myself. When I generate negativities in myself a lot of physical reactions occurred like my body starts burning and I become miserable. I don't keep this misery to myself and I usually keep throwing this misery on others. I make the entire atmosphere around me so tense that anybody who comes in contact with me becomes miserable. If I throw misery on surroundings, then immediately I receive same from surroundings. Then only I start harming others and make others to harm me. This is law of nature.

Now let's talk about peace. what is happening in me is more important to me than anything else. if my mind is free from negativities, then it is pure and again law of nature starts working. I observe myself, when my mind is full of happiness and look at the nature how it started rewarding me. when happiness comes within, I naturally become a more positive person. My heart is full of joy and the result is happiness. I give this happiness to others. I make the surroundings so pleasant. This is law of nature. Even today people from different communities, different traditions, different religions come and learn this technique they got the same benefit. The continuity remains in Hindu as Hindu, Buddhist as Buddhist, Muslim as Muslim, Christian as Christian makes no difference. human being is human being. But a big difference comes when they become real, spiritual people full of love, full of compassion, good for themselves but for other. when I generate peace in mind the entire atmosphere around me gets permeated with the vibration of peace. Anybody who comes in contact with me starts enjoying peace. This is the real conversion which is necessary nothing else.

if you keep on observing we understand the law of nature so clearly that when I generate negativity I started suffering. When I am free from negativity I start enjoying peace and harmony. No matter which religion or country people belong to, if one breaks the law of the nature or generates negativity in their mind they will bound to suffer. law of nature is such, if I keep my mind is pure full of love I enjoy the kingdom of heaven within myself. I call myself a Hindu or a Muslim or a Christian or a gain makes no difference, looks no difference. Human being is human being. your own mind is your mind. Conversion should be from the impurity of the mind to the purity of mind. How people get changed. such wonderful changes come no magic, no miracle. It is a pure science observing the interaction of mind and matter within ourselves. How mind keeps on influencing on the matter(the body). How body keeps on influencing the mind.

"WHAT YOU GIVE TO SURROUNDINGS WILL REFLECT YOU BACK".

Ms.R.DEVI  
III-cse

# GPS



**Global Positioning System (GPS)** is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil and commercial users around the world. It is maintained by the United States government and is freely accessible to anyone with a GPS receiver.

The Global Positioning System (GPS) is made up of at least 24 satellites. GPS works in any weather conditions, anywhere in the world, 24 hours a day, with no subscription fees or setup charges. The U.S. Department of Defence (USDOD) originally put the satellites into orbit for military use, but they were made available for civilian use in the 1980s

## The GPS Satellite System

Satellites are constantly moving, making two complete orbits in less than 24 hours. They travel at speeds of roughly 7,000 miles an hour. Small rocket boosters keep each satellite flying on the correct path.

Here are some other interesting facts about the GPS satellites:

1. The official USDOD name for GPS is NAVSTAR
2. The first GPS satellite was launched in 1978.
3. A full constellation of 24 satellites was achieved in 1994.
4. Each satellite is built to last about 10 years. Replacements are constantly being built and launched into orbit.
5. A GPS satellite weighs approximately 2,000 pounds and is about 17 feet across with the solar panels extended.
6. GPS satellites are powered by solar energy, but they have backup batteries onboard, in case of a solar eclipse.
7. Transmitter power is only 50 Watts or less.

## Basic structure of GPS

Three-block configuration

GPS consists of the following three segments.

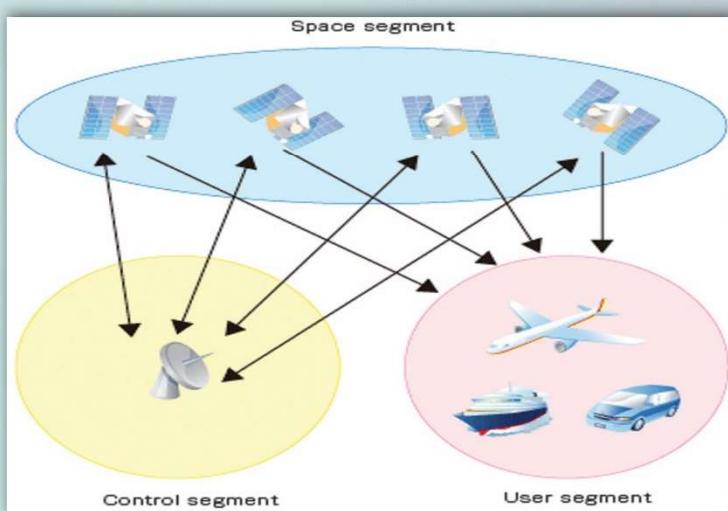
### Space segment (GPS satellites)

A number of GPS satellites are deployed on six orbits around the earth at the altitude of approximately 20,000 km (four GPS satellites per one orbit), and move around the earth at 12-hour-intervals.

### Control segment (Ground control stations)

Ground control stations play roles of monitoring, controlling and maintaining satellite orbit to make sure that the deviation of the satellites from the orbit as well as GPS timing are within the tolerance level.

### User segment (GPS receivers)



Today, GPS receivers are included in many commercial products, such as automobiles, smartphones, exercise watches, and GIS devices.

Each GPS satellite broadcasts a message that includes the satellite's current position, orbit, and exact time. A GPS receiver combines the broadcasts from multiple satellites to calculate its exact position using a process called triangulation. Three satellites are required in order to determine a receiver's location, though a connection to four satellites is ideal since it provides greater accuracy.

In order for a GPS device to work correctly, it must first establish a connection to the required number of satellites. This process can take anywhere from a few seconds to a few minutes, depending on the strength of the receiver. For example, a car's GPS unit will typically establish a GPS connection faster than the receiver in a watch or smartphone. Most GPS devices also use some type of location caching to speed up GPS detection. By memorizing its previous location, a GPS device can quickly determine what satellites will be available the next time it scans for a GPS signal.

## **How GPS works**

GPS satellites circle the Earth twice a day in a precise orbit. Each satellite transmits a unique signal and orbital parameters that allow GPS devices to decode and compute the precise location of the satellite. GPS receivers use this information and trilateration to calculate a user's exact location. Essentially, the GPS receiver measures the distance to each satellite by the amount of time it takes to receive a transmitted signal. With distance measurements from a few more satellites, the receiver can determine a user's position and display it electronically to measure your running route map a golf course and adventure anywhere

To calculate your 2-D position (latitude and longitude) and track movement, a GPS receiver must be locked on to the signal of at least 3 satellites. With 4 or more satellites in view, the receiver can determine your 3-D position (latitude, longitude and altitude). Generally, a GPS receiver will track 8 or more satellites, but that depends on the time of day and where you are on the earth. Some devices can do all of that from your wrist.

Once your position has been determined, the GPS unit can calculate other information, such as:

1. Speed
2. Bearing
3. Track
4. Trip distance
5. Distance to destination
6. Sunrise and sunset time
7. And more

## **How accurate is GPS?**

Today's GPS receivers are extremely accurate, thanks to their parallel multi-channel design. Our receivers are quick to lock onto satellites when first turned on. They maintain a tracking lock in dense tree-cover or in urban settings with tall buildings. Certain atmospheric factors and other error sources can affect the accuracy of GPS receivers. Garmin GPS receivers are typically accurate to within 10 meters. Accuracy is even better on the water. Some Garmin GPS receiver accuracy is improved with WAAS(Wide Area Augmentation System). This capability can improve accuracy to better than 3 meters, by providing corrections to the atmosphere. No additional equipment or fees are required to take advantage of WAAS satellites. Users can also get better accuracy with Differential GPS (DGPS), which corrects GPS distances to within an average of 1 to 3 meters. The U.S. Coast Guard operates the most common DGPS correction service, consisting of a network of towers that receive GPS signals and transmit a corrected signal by beacon transmitters. In order to get the corrected signal, users must have a differential beacon receiver and beacon antenna in addition to their GPS.

## **Other GPS Systems:**

There are other similar systems to GPS in the world, which are all classified as the Global Navigation Satellite System (GNSS). GLONASS is a satellite constellation system built by Russia. The European Space Agency is creating Galileo, while China is creating BeiDou. Most Garmin receivers track both GLONASS and GPS, and some even track BeiDou. You can expect a more reliable solution when you track more satellites. You could be tracking nearly 20 with newer Garmin products

## **The Future of GPS:**

Although GPS has performed extremely well and has generally exceeded expectations, it's clear some significant improvements are needed. As we continue to investigate the system's needs and deficiencies over the past decade we are better able to determine what capabilities and features should be incorporated into a future GPS to satisfy both military and civil users.

Efforts worldwide are being made to improve not only the accuracy but the cost and reliability, including:

1. Australian and New Zealand will trial a satellite based augmentation system, which would have the ability to calculate the error and send correctional information to the GPS device. The satellite based augmentation system would collect data from other systems such as, ionosphere data, clock drift, and more.
2. Adding new civilian signals and frequencies to the GPS satellites as part of the ongoing GPS modernization program.
3. New, low cost hybrid systems that are capable of continuous reliable positioning even when GPS signals aren't available.
4. A study on the interaction of the Northern Lights (Aurora Borealis) and GPS signals by research group from University of Bath and European Incoherent Scatter Scientific Association (EISCAT).

GNSS receivers are expected to become smaller, more accurate and efficient, and GNSS technology is set to penetrate even the most cost-sensitive GPS applications. The trend for the next generation of GPS satellites currently being developed is to include protection for the signals making them even more useful for worldwide users, and less susceptible to signal jamming. The future of GPS tracking is determined to be more accurate and effective for both personal and business use.

## THE LITTLE

FIRST DAY- Tears looking at unfamiliar faces  
LAST DAY- Tears coming out seeing familiar faces  
Two days separated by 4 years....  
Yet in total Contrast!!!!  
Those irreplaceable college days remain with us  
forever....

Ms. V. Rohini Samanvitha  
IV- CSE

There are few games which gives us fun  
We play ludo with friends and drink coffee at  
I love to eat spicy food

It is a place which encourages everyone to thrive individually and shows a better path to reach one's own respective goals by providing the required resources which helps to enhance our skills.

Mr. I. V. Subba Rao  
IV- CSE

Hey Guys!  
Stop telling lies

I wish everyone  
There are two main  
Don't you think  
I love all the balloons  
In my daily food

"This place brought us together. No emotion can express my feelings, that I developed here. Life has its way of teaching and this was a 4-year long lesson, which taught me so much. I will remember it till the very end."

Ms. P. Sravani  
IV- CSE

After some deep sighs  
my heart sighs  
My brain instruments  
goals it ties.  
I'll never be a victim  
Because i know

If you have a fear of failure, it's hard to ignore. Since behind every success story is an embarrassing first effort, a stumble, a radical change of direction. If you succumb to your previous defeats you will not enjoy the game as much in the future. Thus, be aware that none is a superhero and you will be able to see the power of mistakes to make you take another step towards success.  
All the best for your bright future.

Ms.S. Akhila Preethi  
IV-CSE

J N T U KAKINADA  
VIZIANAGARAM DISTT

TRIB

# LE POET ME!

ood byes  
tears in our eyes  
th dice.  
americano with ice.  
icie mixed french fries.

lives in their highs.  
nice.  
smiling is always nice?  
by cutie pies.  
d routine it include rice.

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ce.

i'm enough wise.

Mr.M.Tulasi Prasad  
I- CSE

DA  
PUS

UTES

"I feel this four years of college life has introduced me a lot of different kinds of people, different experiences and most importantly learnt many things from those.I experienced both failures and success. The experience of these taught me the meaning of life "

Ms. A. Preethi  
IV-CSE

"Learnt valuable lessons for life. I've had many memories to laugh at. Shared lots of emotions and at the same time earned friends for life. These four years have exposed me to all kinds of people with various talents. Thank you all for providing the BEST moments of my life"

Mr. G. Srinu  
IV-CSE

#jntukucev#hill#ragging#first\_c\_exam#professors#semexams  
#one\_ni8\_preparations#mid#seniors#star#ground#love#friends#coresub#fest#farewell#bunks#trips#IVyear#roommates  
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Mr. T. Harsha Bharath  
IV-CSE

" Imagining that we all will head different directions is giving a chill in my spine. But we all are going to start our journeys of our purposes is making me proud."

Ms. A. Tejaswini  
IV- CSE

# CYBER CRIMES IN INDIA

*Cyber crimes have emanated from development of computer network. Cyber Crimes can be defined as the unlawful activities in the cyberspace which may cause damage to a person , property or committed by offenders all over the world using computer technology.Cyber crimes may threaten a person , a nation's security and financial health. There are also problems of privacy when confidential information is intercepted or disclosed.These crimes mainly uses the computer and computer and computer networks as a tool.Cyber crimes also includes dark web.Dark web is the part of the internet where a large part of illegal activities like online drug dealing,online trafficking,kidnapping,hacking the mails of higher officials, and some other activities like murders etc.But all the nations in the world had banned the dark web because even entering into the dark web is illegal.So we will be imprisoned if we even enter dark web. India is also a victim of these crimes. To prevent the Information Technology Act ,2000 which also got amended twice to keep pace with dynamic nature of the crime.*

## INTERNET IN INDIA

*Internet was initially available in India through ERNET. The role of fiber optics communication from Integrated Service DigitalNetwork has accelerated the growth of internet in India. Later ,rediff.com was launched by Ajit Balkrishnan and thus India's first cyber café was started in 1996. Thereafter first internet banking service was launched by ICICI in 1997.*

## ORIGIN OF CYBERCRIMES

*Hacking is the unauthorized access to a computer system. It is believed that the first recorded cybercrime took place in the year 1820.Common types of cybercrimes include hacking ,online scamming and fraud,identity theft ,attacks on computer systems and illegal or prohibited online content.Banks and other financial institutions were amongst the first large scale computers users in private sector, for automate payroll and accounting functions. Therefore, fraud in a computer scheme emerged. From then as the technology advances the number of cybercrimes increased. The words cybercrimes and computer crimes are used interchangeably. A computer crime is a crime in which the perpetrator uses special knowledge about computer technology. Whereas a cybercrime is a crime in which the perpetrator uses special knowledge of cyberspace.In the early stage of the information technology cyber crimes were committed by highly educated technology experts like programmers . But later on the people who are layman about computers also learnt how to fraud others as the technology advances.*

*Some characteristics of cyber crimes are it is silent in nature, global in character, non existence of physical evidence, creates high impact ,high potential and easy to perpetrate*

*Cyber law is the law governing cyber space. Cyber space is a very complex term and includes computers, networks, software, data storage devices, the Internet ,websites, emails, and even electronic devices such as cell phones, ATM machines etc.*

These crimes include cyber pornography. A student in India of the Air Force Bal Bharti school , Delhi, was teased by all his classmates for having a pockmarked face. Tired of the cruel jokes, he decided to take revenge on them. He scanned all the photos of his classmates and teachers, morphed them into nude photos and uploaded them on a pornographic website. However the IT act 2000 lays down the cybercrimes under the certain categories of computer related offences , such crimes were only added after amendment in 2008 in IT act.Due to easily exploitable laws, cybercriminals use developing countries inorder to evade detection and and prosecution from law enforcement.In developing countries such as philippines ,laws against cyber criminals are so weak or sometimes non exist.These laws allows cybercriminals to stike from international border and remain undetected.Recently we saw the case that in many companies, like sony , facebook etc their information was stolen by hackers,later they demanded huge amount of money.These cyber criminals find a way to enter our systems.One example is if we enter any unsecure website and download some content there ,or even if we stay in that website for sometime,the hackers will enter some malware into our devices.By opening which,the hackers can get full permissions on our device.From there ,they can unknowingly steal our data,or may even enter any virus or malware into our device ,which can damage or sometimes crash our device.Now a days ,public WiFi's also beame the play grounds for hackers. In public WiFi's most of the data is not encrypted,so they can easily pick up our credentials when we log on to our mails,social media and banking sites.Some of the cybercrimes include stealing the information of our aadhar cards.By stealing the information of aadhar cards ,one can get access to all our bank accounts, and other government rlated documents.One can get a sim card by having the information of aadhar cards. Recently we saw a news that in telangana ,thousands of sim cards were purchased on duplicate aadhar cards.They can utilize those sim cards for an illegal urpose like kidnapping,drug dealing, and some national threats like terrorism.One can make a bomb with two mobile phones.

## SOME TIPS TO PREVENT CYBERCRIMES

1. Do not install the softwares which are downloaded from unknown sources
2. Do not enter the websites which are not authorized
3. Do not install apps on your mobile phone from unknown sources
4. Do not share the information of your credit,debit cards and passwords of your internet banking with anyone
5. Do not enter the details of your credit and debit cards on unknown and suspicioius websites
6. Use strong passwords,which cannot be guessed by anyone
7. Install any anti-virus softwares on your device
8. Do not tell any banking details on phone to unknown persons. They can access your accounts.
9. Keep all the softwares in your device updated
10. Always look for https on the address bar your browser before visiting any websites where you want to enter the details of your credit or debit cards
11. Do not respond to any unknown messages and mails
12. Limit online sharing
13. Never provide more details than necessary
14. Be careful about downloading as any malware enters your device
15. Download Virtual Private Network.VPN's encrypt our data trafficking and essentially makes our data invisible to anyone else in the network.

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12



# WHY WE NEED AI IN BUSINESS

## WHY WE NEED ARTIFICIAL INTELLIGENCE IN BUSINESS?

Artificial intelligence can be defined as “The capability of a machine to imitate intelligent human behavior.”

Today, when asked about artificial intelligence (AI), many people start painting science fiction inspired images of machine-ruled futures and robots completing manual tasks for human beings. To them, AI is only a concept, something that’s going to happen tomorrow.

In reality, artificial intelligence is already part of our lives. We use AI every day. It's not only on your smartphones, laptops and cars, it's everywhere. In these days AI helps people in two main ways. The first way liberates people from manual labour. The second enriches human intellect and creativity. Businesses use the first way to improve efficiencies to enhance value for customers (essentially automating existing and enhanced business processes). Examples would be activities such as quality management or securing cities.

The second way employs AI to cooperate with people by offering advanced suggestions on how to handle complex issues, such as caring for people, making ambiguous management decisions, or developing a new product.

These two methods employ a wide variety of technologies and have many practical business uses, such as data visualisations, analytics, and control and guidance.

### AI is Transformational

Artificial Intelligence is undeniably transforming technology as we know it. Leading tech companies are investing heavily, with Google CEO Sundar Pichai going so far as to claim that AI is more important to humanity than electricity or fire. So far, however, AI's promise has not translated into concrete strategies and applications that most businesses can use to actually generate value.

### The Economic Impact of AI

Companies poised to harness AI will generate significant financial returns. Business people predicts that AI will generate \$3.5-\$5.8 trillion in annual economic value in the near future. And while the top line numbers are large, the industry breakdown is especially illustrative. And also believes the biggest gains will come in retail and travel. But even in aerospace and defense, they still forecasts \$45 billion in economic impact. For context, this is equivalent to the GDP of Lithuania (The World Bank).

That's not to say these gains will be evenly distributed internationally.

In a 2018 PWC (PricewaterhouseCoopers) report, researchers forecast that the greatest gains in AI will come from China. US companies have an advantage today, but there is no guarantee that it will last.

Furthermore, while AI represents a huge opportunity for your business, keep in mind that it also represents a huge opportunity for your competitors—including companies that might not be your competitors today but soon will be due to advances in AI. According to a 2017 BCG and MIT Sloan report, 75% of companies surveyed believe that AI will enable new competitors to enter their existing market.

## Opportunities For AI Across Industries

Artificial intelligence can be used to solve problems across the board. AI can help businesses increase sales, detect fraud, improve customer experience, automate work processes and provide predictive analysis.

Industries like health care, automotive, financial services and logistics have a lot to gain from AI implementations. Artificial intelligence can help health care service providers with better tools for early diagnostics. The autonomous cars are a direct result of improvements in AI.

Financial services can benefit from AI-based process automation and fraud detection. Logistics companies can use AI for better inventory and delivery management. The retail business can map consumer behavior using AI. Utilities can use smart meters and smart grids to decrease power consumption.

The rise of chatbots and virtual assistants are also a result of artificial intelligence. Amazon's Alexa, Google's Home, Apple's Siri and Microsoft's Cortana are all using AI-based algorithms to make life better. These technologies will take more prominent roles in dictating future consumer behavior. Most of your future transactions will be completed with the help of an AI-based chatbot or virtual assistant.

## Is in Future The AI Revolution Goes Mainstream?

The answer is yes. For the last few years, AI has entered the consciousness of every industry. It has become part of mainstream conversations. Businesses of all shapes and sizes are considering artificial intelligence to solve real business problems.

In the past, only the largest corporations could afford to invest in AI technology, but things are changing fast. In fact, the high-speed growth of AI makes it more likely that startups and younger businesses will be able to embrace the technology earlier than their corporate colleagues.

According to a PricewaterhouseCoopers (PwC) report, the global economy can see a potential contribution of \$15.7 trillion from AI by the year 2030. China and North America will receive almost 70% of this potential global GDP growth.

### Organizations Are Realizing The Potential Of AI

Implementing machine learning and AI is going to have a major impact on your organization's efficiency. Intelligent systems can automate a great amount of your work and help reduce the risk of human errors. As time goes by, your systems will learn and get smarter. It will result in better outcomes.

**Mr. B.SATHISH KUMAR REDDY**  
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Many businesses are starting to recognize the significant benefits and the potential competitive edge they can gain from using AI. There's a growing interest from every industry about exploring the possibilities.

Organizations are already using artificial intelligence to make practical decisions. For example, Coca-Cola released Cherry Sprite based on their AI product analysis. Furthermore, the soft drink company is planning to create its own virtual assistant to incorporate into its vending machines.

With so much conversation about AI, there is a real fear of losing out. Remember that it's only the beginning of the AI revolution. According to Gartner 2018 CIO survey (registration required), only 4% of surveyed companies have invested and deployed an AI-based solution. The rest of the companies are at various planning stages. So if you don't have an AI-based solution yet, don't panic. It's important to start looking at possible tools for your business.

Here are a few strategies:

- Figure Out Your Business Needs
- Understand The Risks
- Find Valuable AI Services
- Build The Right Background

AI WILL BE OF KEY  
IMPORTANCE TO 72%  
OF BUSINESSES IN THE  
NEAR FUTURE

MACHINE LEARNING IS  
CURRENTLY THE  
BIGGEST AREA OF  
INVESTMENT

62% OF BUSINESSES  
ARE CONSIDERING  
INVESTING IN AI

1 IN 5 BUSINESSES  
USED AI TO REPLACE OR  
AVOID HIRING WORKERS  
IN THE PAST YEAR

ONLY 8% OF PEOPLE ARE  
PARTICULARLY WORRIED  
ABOUT LOSING THEIR  
JOB TO AUTOMATION



## నేటి సమాజం

గతుకులు లేని ప్రయాణం కాదు ఎవ్వరిది  
పడిలేచే బ్రతుకులే అందరిని  
కన్న కలలు వేరేమో  
చేసే కష్టం ఒక్కటే  
సాగే దారులు వేరేమో  
చేరే తీరం ఒక్కటే

విధివేటలో నీ పయనం ఆగేనా  
విధిఆటలో నీ గమనం సాగేనా  
డబ్బే ఊపిరిగా దాసోహం అవుతున్నాం  
జబ్బే రాదని వ్యామోహం పడుతున్నాం  
మనిషిగా మనుగడ మరిచిపోతున్నాం  
విలువలు విడిచి జీవితం గడిపేస్తున్నాం  
అకలితో అడిగిన సాయం గుర్తించేలోపు  
అభిరిలో బాధపడి ఓడిపోతున్నాం

జీవితం అనేది గమ్యం కాదు  
గమనం మాత్రమే.....  
ఎన్నిసార్లు ఓడినా.....  
గెలవడానికి అవకాశం ఉంటుంది  
గమ్యం అనంతం.....గమనం అనేకం.  
ఆ అనంత గమ్యం వైపు అనేక దిశలుగా  
కదిలిపోయేదే జీవితం.

**ప్రవంతి**

|/-సి.యస్.ఇ

## భళారే కంప్యూటర్

విలువైనదటంచు తమదు  
పలువిధ డేటా ముదముగ పదిలము సేయన్  
చలువగ కంప్యూటర్లే  
ఎలుకలు తమ కలుగు లోని కేసుగు నీధ్వన్...

ఇదిగో చిరు లెక్కలకును  
అదియే కావాలటంచు అందరు చెప్పా  
మెదడిక మాకేలంచును  
వదలక యంత్రముల వారు వాడిగ వాడన్...

కిలకిల మను సెల్ఫ్స్‌న్లో  
గల గల మాట్లాడంగను గాలికి కబురుల్  
సల సల వేడెక్కినదా  
పలుకలు గుబలకు మిగుల పండుగ చేసేన్...

ఐ. జోస్ఫ్ కిషోర  
||-సి.యస్.ఇ

# QUANTUM COMPUTERS

We humans have started computations with a mere abacus and now we have the most advanced supercomputers. In this process we have gone through several stages starting like using vacuum tubes, electrolyte based capacitors and the silicon microchips of diodes and transistors. Moore's law states that the number of transistors in a microchip have been increased in an exponential rate since invention of semiconductor diodes. If we shrink the still smaller to the atomic scale then classical physics fails and the transistors cannot hold the electron.

On the other hand the programmers are writing advanced algorithms to the machines that even do not exist. In this situation to make the machines run such advanced algorithms we need Quantum computers.

Generally classical computers transforms information into bits i.e 1s&0s by doing operations on strings of bits by using logic gates we do several large computations even the most advanced super computers would work basing on these bits but a quantum computer is entirely different one it operates on qubits when we go to the atomic scale quantum mechanics comes into play using the basic principles of quantum mechanics like entanglement and superposition.

Like bits the qubits are not binary and exhibit a spectrum of values, like when a coin rotated we can not say whether it heads or tails, in the same way the both spins of a qubits are superposed on each other and thus giving us ability to perform plenty of parallel computations. For a computer of 64 bit processor can perform  $2^n$  ( $64 * 2$ ) operations i.e 128 parallel operations whereas a quantum computer with 64 bits can perform as many as  $2^{64}$  parallel operations i.e approximately 20000000000 billion calculations.

The quantum computers have many applications like in field of medicine to stimulate nature and to know the complex structure of protein molecules. By using these we can solve prime factors of huge numbers so that we could create very secure passwords and to apply the machine learning algorithms.

At present the IBM Q has a quantum computer of 50 qubits and in future this would revolutionise the world.

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Millions of everyday consumers, professionals, and business owners now rely on cloud storage to share, back up, and store information long-term. And for good reason—cloud storage allows you to access your files from anywhere, and it's often cheaper than mainstream data storage solutions. It also claims to be highly secure—but how secure is it really? How Cloud Storage Works First, let's start with a brief explanation on how cloud storage works. When you upload a file to the cloud, you aren't sending it to some extradimensional, ethereal plane. Instead, you're sending your data over the internet to an external server, usually a data center owned by the cloud storage company. That data is also likely backed up at multiple data centers, in case one happens to go down. Then, when you wish to retrieve those files, you'll use the internet to access the data center and retrieve them. In many cases, your data will be encrypted, and in most cases, you'll have a username and password to protect your specific account. However, consumers may also have the option of layering additional encryption onto their accounts, such as encrypting Google Drive for stronger security.

**Points of Vulnerability** One of the best ways to determine the security of a system is to look for inherent points of vulnerability. These are some of the most common points that exist: Data center integrity. The data center itself may be physically vulnerable. If the data center isn't properly maintained, or if it's vulnerable to a natural disaster like an earthquake or flood, it could result in massive data loss. Most cloud storage companies compensate for this by having one or more redundant backups, in geographically separated locations (often across the country). Data center encryption. Next, you can look at the security of the data centers being used. Hypothetically, if a cybercriminal is able to gain access to the data center, they could gain access to thousands, if not millions of consumer files. Generally, data centers are well-protected; tours aren't allowed, vehicles must have special passes, and the hard drives are physically unreadable to outside prying eyes. This isn't the case for all data centers, but it's quickly becoming the standard. Internet connection vulnerability. Don't forget, the vulnerability could be on your side too. You'll be sending and receiving files with the distant data center over an internet connection, which could easily be compromised.

if you aren't careful. If you don't use a strong password for an encrypted Wi-Fi connection, or if you use a public network, your account could be compromised. Consumer password vulnerability. Of course, it's also possible for your account to be compromised the old-fashioned way. If you choose a weak password, or one that's easy to guess, or if you give your password away to someone untrustworthy, someone could log in and gain access to all your files. **How to Determine Cloud Storage Security** As you can see, some of these factors are up to the consumer. You'll need to follow best practices for cyber security if you want to make sure your data isn't compromised by a shoddy internet connection or from an easily guessed password. Apart from that, much of the burden of security lies with your cloud storage provider. It's on them to protect their data centers, provide redundancy for those data centers, and protect their clients' information. There

are a few things you can do to determine the strength of a provider: Look at the brand history. How many data breaches has this company suffered? If they have a near-perfect history, it's not a guarantee of a perfect future, but it's a good indication they take data security seriously. Investigate encryption standards.

How is this company encrypting their data?

What standards do they apply to their data centers?

Determine where and how data is backed up. Finally, determine how much redundancy is in place to protect your data. A simple search or talk with an account representative should tell you where their data centers are located, how your data is backed up, and whether emergency protections like fire suppression systems are in place. Most cloud storage solutions offer some degree of security, and most consumers with a major brand won't have to worry about their data being lost or stolen. However, it's important to understand how cloud storage works, and understand that it's not perfect; otherwise, your files could be compromised.



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## Researchers Take Step Closer to Creating Tech That Can Read Minds

Columbia University researchers have developed a system that can produce clear, intelligible synthetic speech through computer processing of human brain activity. The researchers first analyzed the brain activity of volunteers as they listened to other people's voices, which generated electrical patterns in the brain's acoustic cortex that mirror those from speaking, but are easier to decode. They then used an artificial intelligence program, called a vocoder, to process brain signals from patients listening to a series of numbers and use them to synthesize speech. These sounds were analyzed further and cleaned up with a neural network, resulting in a series of words. Said Columbia's Nima Mesgarani, "If the wearer thinks 'I need a glass of water,' our system could take the brain signals generated by that thought, and turn them into synthesized, verbal speech."

## A Simple Bug Makes It Easy to Spoof Google Search Results into Spreading Misinformation

A bug discovered in Google by security researcher Wietze Beukema can be exploited to generate misinformation by distributing rigged search results. Beukema said values from a Google search result's "knowledge graph" can be spliced together to spread false information, because the shareable URL entered into a search result can be segmented and added to the Web address of any other search query. A malefactor can easily put the contents of a knowledge card within a search result; the rigged query does not break HTTPS, so anyone can craft a link, send it in an email or tweet, or share it on Facebook without arousing the recipient's suspicions. Beukema said anyone can "generate normal-looking Google URLs that make controversial assertions," which can "either look bad on Google, or worse, people will accept them as being true." He also said his report of the bug to Google in December was closed with the company taking no corrective action.

## Software That Can Automatically Detect Fake News

Researchers at the Fraunhofer-Gesellschaft research organization in Germany have developed a system that automatically analyzes social media posts and filters out fake news and disinformation. The tool uses machine learning to analyze content and metadata, and draws on user interaction to optimize the results in real time. The researchers built libraries comprised of serious news pieces as well as texts that users identified as fake news; this forms the dataset used to train the system. Metadata helps differentiate between authentic sources of information and fake news, allowing the researchers to build heat maps and graphs of send data, send frequency, and follower networks. Said Fraunhofer's Ulrich Schade, "Our software can be personalized and trained to suit the needs of any customer. For public bodies, it can be a useful early warning system."

## Machine Learning Leads Mathematicians to Unsolvable Problem

In exploring a machine learning problem, a team of researchers at the Technion-Israel Institute of Technology in Haifa discovered a mathematically unanswerable question associated with logical paradoxes defined by mathematician Kurt Gödel. The team determined "learnability"—whether an algorithm can extract a pattern from limited data—is connected to Gödel's continuum hypothesis, in which a statement can be neither validated nor invalidated via standard mathematical language. This determination stemmed from an investigation into the link between learnability and "compression," which entails finding a way of abstracting the salient features of a large dataset in a smaller dataset. The team described learnability as the ability to make predictions about a large dataset by sampling a small number of data points. Although the validation of the continuum hypothesis means a small sample is sufficient to make the extrapolation, its invalidation means no finite sample can ever be sufficient.

## Study Confirms: Global Quantum Internet Really Is Possible

Researchers at the University of Padova in Italy successfully exchanged several carefully managed photons in infrared light pulses across 12,427 miles between Russian satellites and the Italian Space Agency's ground-based Space Geodesy Center. Padova's Giuseppe Vallone said, "Space quantum communications represent a promising way to guarantee unconditional security for satellite-to-ground and inter-satellite optical links, by using quantum information protocols as quantum key distribution." The researchers employed passive retro-reflectors on the satellites to maintain the light signals' integrity, topping the previous record distance for such quantum communications by 9,321 miles. Satellites orbiting at higher altitudes pass within sight of ground stations more regularly, potentially facilitating a hack-proof, global quantum network. One notion is that such an arrangement could function as a specialized, secure extension to the normal Internet, used by a small number of apps and devices.

## Researchers Demonstrate New Building Block in Quantum Computing

Researchers at the U.S. Department of Energy's Oak Ridge National Laboratory (ORNL) have demonstrated a new level of control over photons encoded with quantum data. The team conducted distinct, independent operations concurrently on two quantum bits (qubits) encoded on light particles of differing frequencies, a key capability in linear optical quantum computing. Said ORNL's Pavel Lougovski, "To realize universal quantum computing, you need to be able to do different operations on different qubits at the same time, and that's what we've done here." He said the system, consisting of two entangled photons within a single strand of fiber-optic cable, is the "smallest quantum computer you can imagine." Using a quantum frequency processor, the researchers manipulated the photons' frequency to induce superposition, facilitating quantum operations and computing. The team achieved 97% interference visibility versus the 70% visibility rate from similar studies, indicating near-identical photonic quantum states.

## New Attack Could Make Website Security Captchas Obsolete

Researchers at Lancaster University in the U.K., Northwest University, and Peking University in China have demonstrated a deep learning algorithm that could render captcha security and authentication redundant. The algorithm solves captchas with substantially greater accuracy than earlier captcha attack systems, and successfully cracks captcha versions that defeated previous hacks. The system uses a generative adversarial network (GAN), educating a captcha generator to produce large numbers of training captchas that are indistinguishable from actual captchas. These are employed to quickly train a solver, which is tested against real captchas; the algorithm only needs 500 genuine captchas, rather than the millions required to train a conventional attack program. Lancaster's Zheng Wang said, "Our work shows that the security features employed by the current text-based captcha schemes are particularly vulnerable under deep learning methods."

## Academics Design Cryptocurrency to Better Bitcoin

Researchers from seven U.S. colleges are collaborating on the design of a new cryptocurrency that aims to reach unheard-of speeds while still supporting a decentralized framework. The Unit-e virtual currency is the first project from the Distributed Technology Research (DTR) nonprofit, which hopes to process as many as 10,000 transactions a second with Unit-e, after the currency is launched in the second half of this year. To realize this, DTR deconstructed blockchain technology to understand its performance limits and design solutions that operate as close to these limits as possible. The researchers have created new mechanisms for reaching consensus, boosting speed via new ways of sharding (in which each node maintains only one blockchain segment) and new payment channel networks. Said Pramod Viswanath of the University of Illinois at Urbana-Champaign, bitcoin "was a breakthrough that has the capacity to change human lives, but that won't happen unless the technology can be scaled up."

## AI Technology Can Identify Genetic Diseases by Looking at Your Face

A new artificial intelligence (AI) technology accurately identifies rare genetic disorders using a photo of a patient's face, which could be of value in personalized medicine. Yaron Gurovich of AI and precision-medicine firm FDNA said the DeepGestalt tool "demonstrates how one can successfully apply state-of-the-art algorithms, such as deep learning, to a challenging field where the available data is small, unbalanced in terms of available patients per condition, and where the need to support a large amount of conditions is great." DeepGestalt was trained on 17,000 facial images of patients from a database of subjects diagnosed with more than 200 distinct genetic maladies. The algorithm outperformed clinicians in two separate sets of tests to identify a target syndrome among 502 selected images, proposing a list of potential diseases and identifying the right one in its top 10 suggestions 91% of the time.

## Microsoft Open Sources Homomorphic Encryption Library 'SEAL'

Microsoft has open sourced a homomorphic encryption library developed by its Cryptography Research group, making the source code available on GitHub. The company believes homomorphic encryption, which offers the ability to compute on data while it is encrypted, is ripe for use in real-world applications. For instance, users could process encrypted data in the cloud without downloading it for decryption on-premises or providing a decryption key to a third-party service provider. Microsoft is leading the push to develop a standard for the emerging cryptographic technique, which resulted in the creation of an industry consortium with members including IBM, Intel, SAP, the National Institutes of Health, and the Massachusetts Institute of Technology. Intel already has adopted Microsoft's Simple Encrypted Arithmetic Library (SEAL) to implement the underlying cryptography functions in its neural network compiler nGraph. Microsoft SEAL has no external dependencies and is written in standard C++, making it easy to compile in many different environments.

## One Giant Step for a Chess-Playing Machine

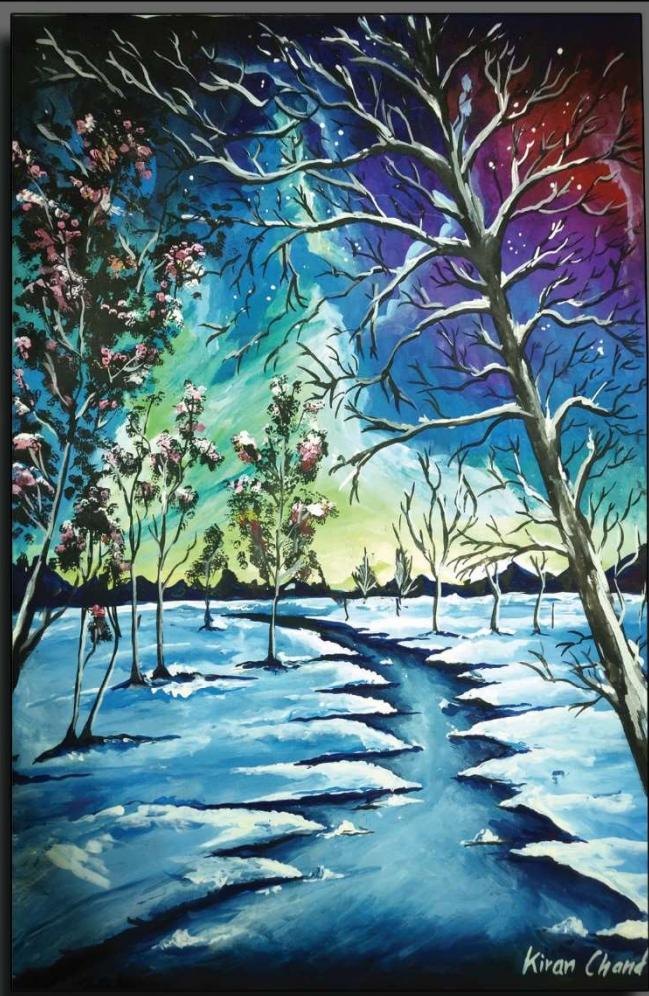
The success of DeepMind's chess-playing AlphaZero algorithm mirrors the evolution of machine learning and its ability to deduce rules via experiential learning. AlphaZero's ability to express insight also is unsettling, as it played gambits and took risks in matches against both human grandmasters and other champion game-playing programs. For example, in tournaments against the Stockfish algorithm, AlphaZero won consistently by thinking smarter instead of faster, analyzing only 60,000 positions a second versus Stockfish's 60 million. World chess champion Garry Kasparov said AlphaZero's superiority was rooted in a style of gameplay that "reflects the truth" about the game, rather than "the priorities and prejudices of programmers." Innate in this milestone is the potential for insightful algorithms to tackle more challenging problems that could benefit human knowledge and society; however, with this possibility comes the risk of such algorithms ultimately overtaking human insight.

collected by  
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## USC Scientists Find a Way to Enhance Quantum Computer Performance

University of Southern California (USC) researchers have demonstrated a theoretical technique for augmenting quantum computer performance, a key milestone for scaling the technology. The "dynamical decoupling" (DD) method, which suppresses erroneous calculations while boosting outcome fidelity, worked on two quantum systems, is easier and more reliable than other solutions, and is cloud-accessible. DD emits short bursts of energy pulses to offset ambient disruptions; the team could sustain a quantum state up to three times longer than would otherwise occur in an uncontrolled state. The researchers facilitated DD by bathing superconducting quantum bits (qubits) with timed pulses of minute electromagnetic energy, decoupling them from surrounding ambient noise. Wrote the researchers, "This amounts to the first unequivocal demonstration of successful decoherence mitigation in cloud-based superconducting qubit platforms. We expect that the lessons drawn will have wide applicability."

# Art Gallery



Art by Mr. Y. KIRAN CHAND I-CSE

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# *This Time That Year*



*Department of CSE organised a Two day National Level Technical Symposium 'CreSensE2k18' on 26<sup>th</sup> & 27<sup>th</sup>, February 2018.*

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This magazine gives a chance to express yourself and is open to contributions from students of CSE Department.

Please send your articles(technical & non-tehcnical), art works, achievements and opinions to

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