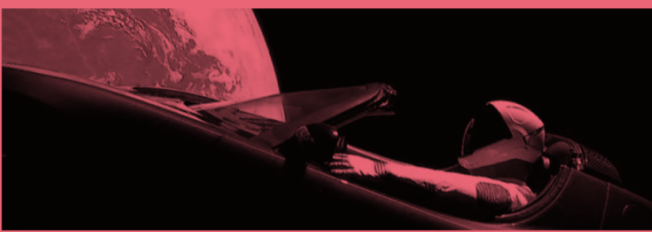




csipce

INVIGORATING TECHNOLOGY SINCE 2010



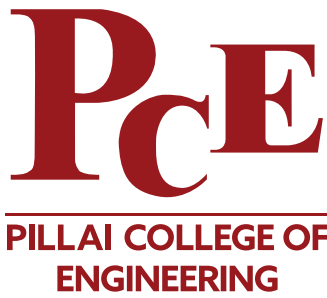
BYTESTREAM2018





Computer Society of India (CSI) is the first and the largest body of computer professionals in India. It was started on 6th March 1965 by a few computer professionals and has now grown to be the national body representing computer professionals. Under the pristine leadership and flawless guidance of Professor Rangaswamy Narasimhan, the first President, CSI has been in close liaison with International Federation for Information Processing (IFIP). CSI was established with a vision to create a platform for the IT professionals to come together and exchanges ideas, views and information. It was built as a non-profit organization and to date, it proudly continues to be one.

Today, CSI has spread across the nation and holds its place in 74 chapters, having above 551 student branches, nearly 220 corporate members and a magnificent number of active and enthusiastic student members with the total approximating to 150000.



Pillai College of Engineering (PCE) seeks to develop in its students a sound technical foundation and to enhance the natural curiosity of its engineers. We believe that a successful engineer is one who complements his deep theoretical knowledge with an intuitive practical approach. It aims at providing high end educational facilities, opportunities and platform to students as well as the faculty in charge along with keeping in mind the respect for the environment and make them responsible citizens in technological development both from an Indian and global perspective.

Pillai College of Engineering (PCE) was formerly known as Pillai Institute of Information Technology, Engineering, Media Studies and Research (PIIT) from 1999 to 25th April 2016.



Hon. Dr. K. M. Vasudevan Pillai

Founder & CEO, Mahatma Education Society

Dr. K. M. Vasudevan Pillai is many things to many people, but at his best he is a pioneer, an entrepreneur and a social reformer who believes that education is the only means to large-scale transformation, the only language of change. A belief that saw him venture into areas of little or no development and start schools and colleges against all odds.

We would like to express our deep gratitude for your generous support.

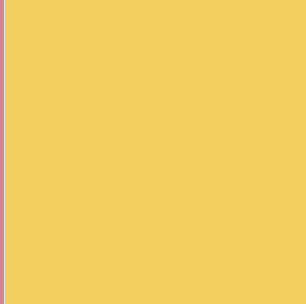
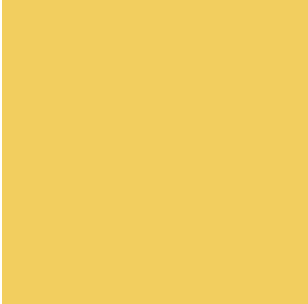


PIT





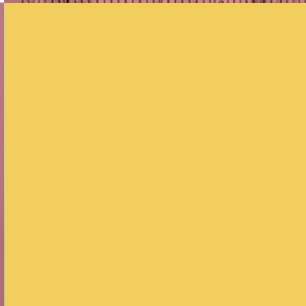
**Celebrating 8 years of Change,
Innovation, Passion & Technology.**



2010 - 2018



**The art of teaching
is the art of
assisting discovery.**



GREETINGS



Dear campus community,
Today we are delighted that our students have taken bytestream to a new level. The magazine ‘bytestream’ promises to be one of the leading college magazines in Navi Mumbai. It provides our students a new avenue to demonstrate their skills in scientific and technical writing, art as well as administering and publishing a state of the art magazine. Pillai College of Engineering (PCE) has become one of the leading colleges in Mumbai partly due to the talent, dedication and hard work of its students and we, the management wish the magazine and its creators the best of luck for the future.

Regards,

Dr. Priam Pillai

COO of Mahatma Education Society (MES)



Dear Students,

It gives me extreme gratification to be a part of this event of magazine launch of CSI-PCE. I’m content that I’ve witnessed a small student body originate and extend to what it is today. CSI, being a foremost and senior association for IT/Computer professionals, the CSI membership commands esteem among fellow professionals as well as IT organisations. I’m delightful that we have an active and lively student chapter of CSI-PCE. The educational-professional bodies like CSI and others, encourage the students to enhance their technical abilities and learn the industry trend from time to time. The PCE chapter of CSI gives an opportunity to the members to interact with established professionals, enlarge their technical canvas by creating avenues for acquiring additional knowledge and also share it with the rest. Professional bodies play a crucial role in the enhancement of an individual, helping them grab opportunities to acquire additional skills complementary to those acquired through their regular curriculum.



I congratulate the CSI team for ensuring a very functional academic year. I’m happy to know that CSI-PCE has their own technical magazine along with all the technical activities organised by them. Students will have another platform to sharpen their technical writing skills and share the latest developments and technologies with their fellows. I impel them to set the touchstone for other professional societies at PCE to catch up. Wishing the entire CSI team all the luck!

Warmest Regards,

Dr. Sandeep Joshi

Principal, PCE

It has been, without a doubt, a wonderful delighting journey to this stage. The ups and downs keep nudging our resilient CSI PCE committee to go out there and better themselves and prove to everyone that if you have enough dedication and determination, there is nothing unattainable. Every year, CSI PCE have out done itself and had provided a splendid stage for all the enthusiastic and aspiring students that portray their brilliance and achieve more. As a team, they have achieved heights that set a benchmark for the students to follow. To keep up with newest market trends and to bridge the gap between industry and campus, CSI-PCE makes ardent attempts to bring all state of the art technologies within the reach of the students by conducting interactive workshops and seminars. This magazine itself is a step towards a better understanding of the limitless possibilities to grab hold of.

”



It is with the utmost pride and honor that I congratulate every team member who put in their hard work and efforts behind the success of the launch of their third annual magazine, Bytestream. Keep up the excellent work and best of wishes for all your future endeavors.

Warmest regards,

Dr. Madhumita Chatterjee

HOD, Computer Engineering

“

Heartiest congratulations to the entire CSI-PCE team for their wonderful work and the successful launch of their annual magazine, Bytestream. I applaud each member who has worked and helped make this event a grand success.

I have seen CSI-PCE grow from a group of handfuls of students to this campus-wide student committee that is without a doubt, full of anxious and tech-savvy individuals who want nothing but to dive into the deep prospects of the ever-growing IT industry. CSI-PCE proves the most brilliant way for the students to achieve their goals and it has been a prominent catalyst in the refinement of the students' technical skills. I hope to see the same enthusiasm, energy and hard work from CSI-PCE team in the coming years.

Warm Regards,

Dr. Sharvari Govilkar

HOD, IT Engineering





The past eight years with CSI-PCE were, in a true sense, wonderful. It has been a great honor to be a part of such a huge student committee that not only promises knowledge but also indulges the students in a nonchalant display of technology. CSI-PCE has time and again proved their worth and it is, without a doubt, a resilient display of what happens when information and enthusiasm meet. I am proud to state that even after eight years, they continue to walk with their heads held up high and nothing but the sky to clench.

I heartily congratulate the entire workforce behind this glorious achievement and the successful conduct of CSI PCE's annual magazine, Bytestream. I wish them all the very best for the future and hope to see them prosper even more.

Warmest Regards,

Prof. Varunakshi S. Bhojane

Student Branch Co-ordinator



A huge amount of commitment towards excellence, teamwork and most of all patience along with the undying support of many; is the foundation of CSI-PCE and it's culmination upto this date is Bytestream. It is with utmost pride that we present to you the 2018 Edition of CSI-PCE's annual magazine Bytestream. This magazine represents our college students' thirst for innovation; technical or non technical, in the form of articles which will immerse the readers in the current ongoings of this ever-changing world and further bolster their knowledge.



I would like thank our principal, Dr. S. M. Joshi for his continued encouragement throughout all our endeavours as a student body. My deepest gratitude to our Student Branch Coordinator, Prof. Varunakshi Bhojane for her guidance as CSI-PCE evolved to it's current pinnacle and will continue to evolve under her support.

My congratulations to our Creative team Head Mr. Chetan Kalra, Magazine team Head Mr. Gaurav Joshi and his entire team who have worked tirelessly to make this year's publication of Bytestream a memorable one. To each and every committee member of CSI PCE, it has been one of my greatest pleasure to work with you. Your dedication has humbled me to my core and has assured me that CSI-PCE will be in deserving and secure hands.

Regards,

Jatin Rajan

Chairperson



Editor's Note

It's an honour to work and be a part of CSI-PCE student committee and gives me immense pleasure to publish this Bytestream magazine and carry on the legacy of CSI-PCE Creative head. The filled blocks on the front of the magazine are the little moments that we have shared throughout these 8 years and the empty blocks depicts the moments yet to come. The crosswords on the back is about all the moments hidden behind a confused, jumbled world, trying to seek the things we want.

We believe, "Scrabble can only be completed if each word is placed correctly, just like the passion and determination in CSI-PCE" and we are still building the words that might touch the best technologies with our workshops, seminars and study circles.

"In the end, what makes a book valuable is not the paper it's printed on, but the thousands of hours of work by dozens of people who are dedicated to creating the best possible reading experience for you."

- John Green

And with this, I would like to thank Mr. Gaurav Joshi, the Magazine head and Mrs. Varunakshi Bhojane for her immense support and everyone else who has been the part of this magazine.

Thank you for being the part of our journey. Hope this continues and we keep on touching each lives keeping the void of knowledge filled with upcoming technologies.

Warm Regards,

Chetan Kalra

Creativity is allowing yourself to make mistakes. Design is knowing which one to keep.

- Scott Adams

What's Inside ?

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TO BELIEVE OR NOT TO BELIEVE



Seeing is believing? A human mind has proven itself to be gullible towards deception when it comes to interpreting what is right in front of our eyes and the best example to prove this would be the 3D movies and holograms.

1. Three Dimensional Films:

3D films came into lights when Sir Charles Wheatstone (1838) described stereoscopy as “An effect on the eyes; when two images captured slightly askew of one another, were viewed separately by each eye, they create a singular three-dimensional vision in the brain.”

In simpler terms, 3D films are the motion pictures that enhance the illusion of perceiving the picture in three dimensions. Initially, this was achieved with the help of famed red and blue glasses. This differing lens would filter a slightly different image to the eye and a 3D image would appear. Although these films, in some form, have existed since 1915, it came to a crescendo after the prodigious success of 3D presentation of movie “Avatar” in December 2009 and technology got a new life.



Each lens blocks a different image, so each eye gets a different image which the brain interprets as 3D

2. Holograms:

3D movies were just the beginning, a new era in stereoscopic technology started when Holograms were introduced. The holographic illusions are the images that play with your mind and bend it to make it believe that the projection is, in fact, the real presence. A 3D hologram displays objects three dimensionally and enables seemingly real objects to appear to float completely freely in space.



Also, it is visible from all sides, which means the observer can walk around the hologram, enabling a realistic-looking image to form and that too without any need for 3D glasses. You can say holograms are photographic ghosts. “**Help me, Obi-Wan Kenobi**” ever heard this before? Yes, this is from the science fiction movie **Star Wars (1984)** where Princess Leia speaks these famous words in a hologram, projected from droid R2D2. Not only Star Wars but many other science fiction movies like Star Trek, Avatar and Prometheus, featured holograms. It seems like these science fiction movies had already predicated a holographic future back then.

3. Holophonic Sounds:

Where 3D movies and Holograms had already startled the world, holophonic sounds and auditory illusions are expanding new horizons in the world of virtual reality. You might have come across the trending **sound clip - The Virtual Barber Shop**. Ever thought what it is? The virtual barber shop is a quintessential example of Holophonic sounds. Holophonics is the binaural recordings that will give you a realistic experience of sound being in your environment.



In binaural recording technique, two special microphones are mounted on a dummy human's head, to which a two-track digital recording device is connected. Since the dummy head has all the hearing features, like ears and sinus cavities, of the human head, the sound is recorded more like the human ear hears it. Consequently, with the evolution of stereoscopic technology, holophonic sounds have made virtual reality more real.

4. Auditory Illusions:

The next astonishing and bewildering invention by aural technology is the Auditory Illusions. We are very familiar with the visual illusions, they trick our eyes but if tried harder we can detect what makes the illusion. But these auditory illusions are much more mindblowing. Auditory Illusions occurs when the auditory component of one sound is paired with the visual component of another sound. The **McGurl Effect** is the best example to explain how this auditory illusion works. Here, if you listen to the video eyes closed you would hear a voice saying “**Ba-Ba-Ba**” or most people hear it as “**Da-Da-Da**” but while seeing you'll find that the lip movement expresses “**Ga-Ga-Ga**”. **Confused right?** Go and check out the video and you'll be surely amazed.

**With such an advancement, technology has reached that peak of wonders
which will not only amaze you but also leave you with a question,
To believe or not to believe?**

- Pooja Bist

A man with short dark hair, wearing a dark t-shirt and jeans, is sitting in a chair. He is looking off to the side with a thoughtful expression. The background is a blurred, warm-toned interior space.

“

**Failure is an option here.
If things are not failing,
you are not innovating enough.**

- Mayuresh Pitale

THE RISE OF MUSK

A South African born Canadian-American business magnate, investor, engineer and inventor, **Elon Reeve Musk** started off at the age of 12 with his first code for a BASIC based computer game called **BLASTAR** by selling it to the PC Office and Technology for \$500, he leaped his first step to eventually change the technology in future. Musk started his undergraduate education in the Queen's University, Ontario, from where he transferred to the university of Pennsylvania. He got an economics degree from the Wharton School. He began a PhD in applied physics and material sciences at Stanford University in 1995 but dropped out after two days to pursue an entrepreneurial career.

Musk's first big breakthrough in the world of tech was the foundation of Zip2, a web software company, that provided and licensed online city guide software to newspapers. Zip2 allowed for two-way communication between users and advertisers, which was the first of its kind. This was acquired by Compaq for \$340 million in 1999.

After his venture in Zip2, Musk went on to create X.com, an online financial services and e-mail payment company, which was founded using funds that Musk received from his contract at Zip2. One year later, the company merged with Cofinity, which had a money transfer service called PayPal. Later eBay bought it for \$1.5 billion in October 2002. Funds earned through Zip2 and Paypal provided Musk a solid support for his future endeavours like SpaceX & Tesla.

“Technically, I ‘got rich’ from Zip2 & PayPal with zero govt anything, then put 100% of that into SpaceX, Tesla & SolarCity.”

MUSK’S MISSION TO MARS

It all started with a rift in 2001, when Musk conceptualized a project to land a miniature experimental greenhouse to land on Mars. The project was named "Mars Oasis". The greenhouse would contain food crops growing on Martian soil, in an attempt to gain public interest in space exploration. In October of that same year, Musk had travelled to Moscow to buy refurbished Dnepr Intercontinental Ballistic Missiles where Musk’s group was offered one rocket for a staggering US\$8 million.



MAKING LIFE MULTI-PLANETARY

Seeing the exorbitant amount, Musk stormed out of the meeting and on the flight back from Moscow, decided that he would start a company that could build the affordable rockets he needed. Thus began a new era in the field of space exploration.

With US\$100 million of his early fortune, Musk founded Space Exploration Technologies, or SpaceX, in May 2002. Musk is chief executive officer (CEO) and chief technology officer of the California-based company.

SpaceX develops and manufactures space launch vehicles which focuses on advancing the state of rocket technology. **Musk's goal is to reduce the cost of human spaceflight by a factor of 10.**

“

I would like to die on Mars, Just not on Impact.

Musk has stated that he wants to establish a Mars colony by 2040, with a population of 80,000.

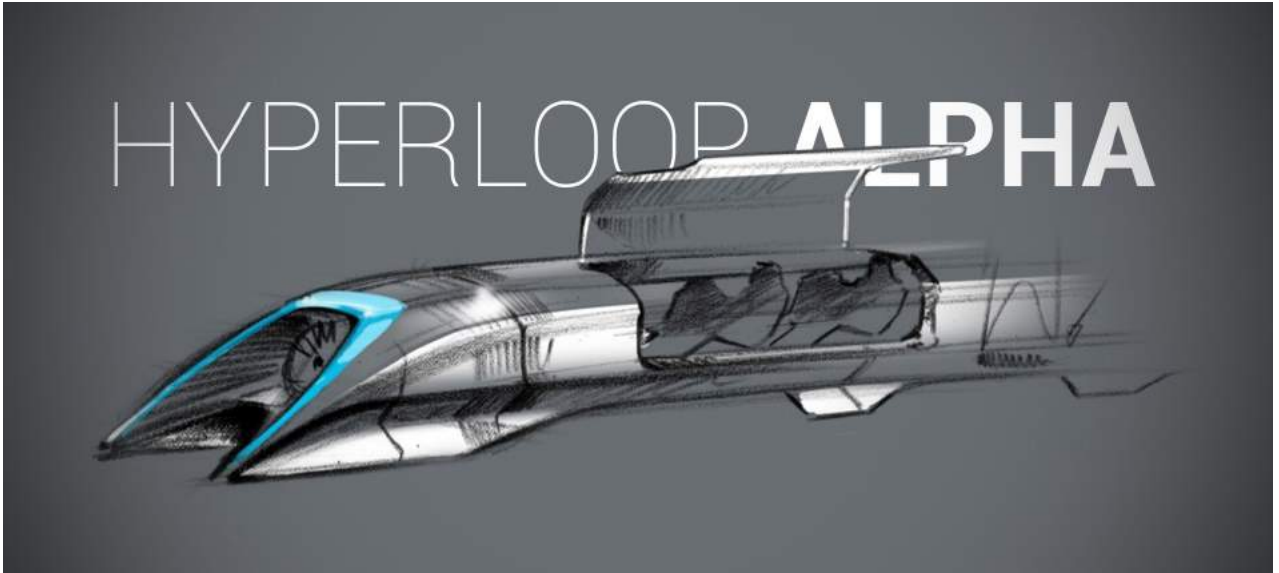
TESLA : WORLD'S TRANSITION TO SUSTAINABLE ENERGY

Tesla, Inc. (formerly Tesla Motors) is an American company that specializes in electric automotives, energy storage and manufacturing of solar panels. Musk joined Tesla's board of directors as its chairman in February 2004. Musk took an active role within the company and oversaw Roadster product design at a detailed level. In a May 2013 interview, Musk said that to overcome the range limitations of electric cars, Tesla is "dramatically accelerating" its network of supercharger stations, with plans for expansion across North America, including Canada. As of January 29, 2016, Musk owns about 28.9 million Tesla shares, which equates to about 22% of the company. As of 2014, Musk's annual salary is one dollar, similar to that of Steve Jobs and other CEOs; the remainder of his compensation is in the form of stock and performance-based bonuses.



On Nov 17, 2017, Musk announced Tesla Roadster 2.0 and Tesla Semi. The Roadster 2.0 is hailed to be the fastest electric vehicle of all time. Tesla Semi, the first electric truck, is a revolutionary invention by Musk, and a very optimistic approach towards extending the concept of electrification to heavy vehicles, while maintaining safety and comfort.

The Iron Man did not stop here, he continued contributing and later on August 12, 2013, Musk unveiled a concept for a high-speed transportation system (Hyperloop) implementing reduced pressure tubes in which pressurized capsules ride on an air cushion. The mechanism for releasing the concept was an alpha-design document that, in addition to scoping out the technology, outlined a notional route where such a transport system might be built: between the Greater Los Angeles Area and the San Francisco Bay Area.



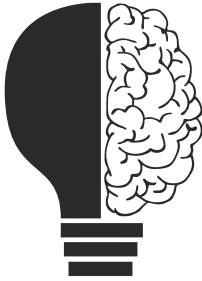
Musk assigned a dozen engineers from Tesla and SpaceX who worked for nine months, establishing the conceptual foundations and creating the designs for the transportation system. Musk's proposal, if technologically feasible at the costs he has cited, would make Hyperloop travel cheaper than any other mode of transport for such long distances. The alpha design was proposed to use a partial vacuum to reduce aerodynamic drag, which it is theorized would allow for high-speed travel with relatively low power. The alpha design document estimated the total cost of an LA-to-SF Hyperloop system at US\$6 billion, but this amount is speculative.

Hyperloop One, a company unaffiliated with Musk, had announced that it had done its first successful test run on its DevLoop track in Nevada on July 13, 2017. It was on May 12, 2017 at 12:02 a.m. and had lasted 5.3 seconds, reaching a top speed of 70 mph.

With the future moving more towards replacing conventional resources with renewable ones, Musk's ambitious projects are the need of the hour. Musk's approach towards the future is the most optimistic. The SpaceX's endeavour to colonize Mars, Tesla's future-ready vehicles, Hyperloop revolutionary travel solutions, all show the big plans Musk has in store for the betterment of the world.

Musk has the ability to influence young minds with his scientific approach, driving them to think about a better tomorrow.

- Akul Nair



Robots Amongst Us

Twentyfirst century,
the era of revolution in the field of technology.

The time when we moved from big box like televisions to slim and almost an inch thick smart T.V.'s, even the first handheld mobile device that was ever invented on 3rd April, 1973 by Martin Cooper, a Motorola researcher & executive, we have moved on to a concept and world of smart phone where we have the compact computer in our hand.

But the human race is never satisfied from its very own achievements and is always in the search of something new and better than the older one. And this race made us lean more towards a new generation of technology known as “**ARTIFICIAL INTELLIGENCE**”.

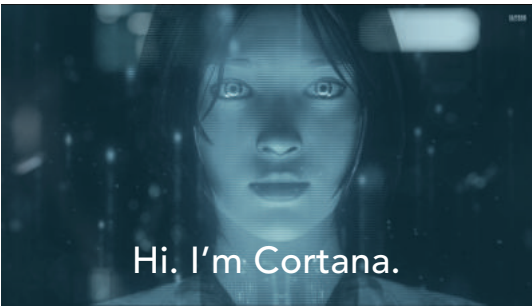
This brings up the very basic question of what is **Artificial Intelligence**?

It simply is an innovative idea and step towards the future where the humans are developing tech like computers, smartphones, etc. possessing an actual “**Brain**”. Yes! An actual brain with which the machine could have its own thoughts, feelings, emotions, ideas and action and to some extent, has the power to replicate a real human brain (the mightiest supercomputer in the entire human existence).

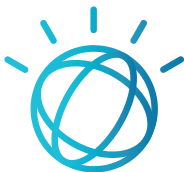
Who could have ever imagined that certain set of 1's and 0's could turn into something having human like emotions and could have intelligence that contrasts natural intelligence displayed by humans or other animals.

They are even capable of handling money transfers going around the globe, maintaining the entire communication web and maintaining ID records of the entire human race.

Artificial intelligence has often been displayed to people through various platforms let alone be films like IRON MAN where the protagonist's (TONY STARK) only true companion is an AI J.A.R.V.I.S who has control over his entire mansion and also controls a heavy duty battle suit for him remotely. Also games such as the **HALO series heavily promotes AI as they even have included one named CORTANA**, can be seen in every installment of this popular game franchise.



Not to mention that even the most popular companies often known as “TECH GIANTS” have their own AI’s controlling their complicated systems with ease, like Google has **Google Assistant**, Microsoft’s **Cortana**, Samsung has **Bixby**, Amazon has **Alexa**, IBM has the most advanced and the smartest AI ever named **Watson** named after their first CEO, Thomas.J.Watson.



IBM Watson



Google Assistant



Even many billionaire’s such as Mark Zukkerberg, Bill Gates and even Elon Musk have their personal AI installed in their own houses. Even the army of the powerful nations are now taking help of AI’s for development of high end missiles that are self aware and could even chase a moving target.

But as we say **“Nothing in this world is perfect”**, it is applicable even for human made machines, because after all they are machines they can be reprogrammed, get corrupted and could even be affected by virus. If that is the case the same, old friendly AI becomes the most deadly threat to the entire human existence, even minute miscalculations of codes could lead to deadly disasters. These deadly turn in the behavior of AI’s have been mentioned in many films such as **“The Terminator”**, **“Chappie”**, **“Robot”**, etc.

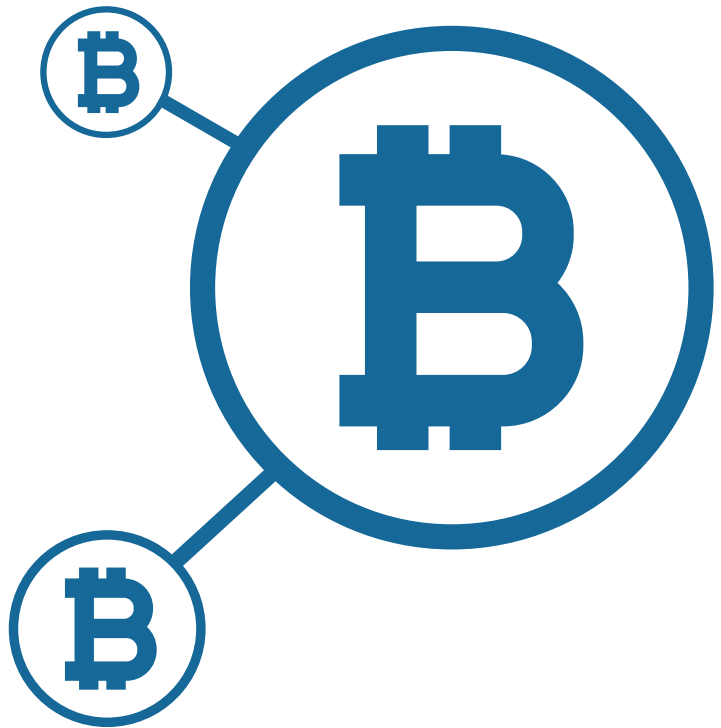
From this we can conclude that as important AI’s are and the role they play in our daily life, knowingly or unknowingly affects our life in one way or other as we are all connected and are part of a vast and complicated system controlled by a device processing 1’s and 0’s.

It’s upon us to use the AI as our friend or turn them into an unbeatable foe.

BLOCKCHAIN

A TECHNOLOGY BEYOND BITCOIN

- Shubham Pathak



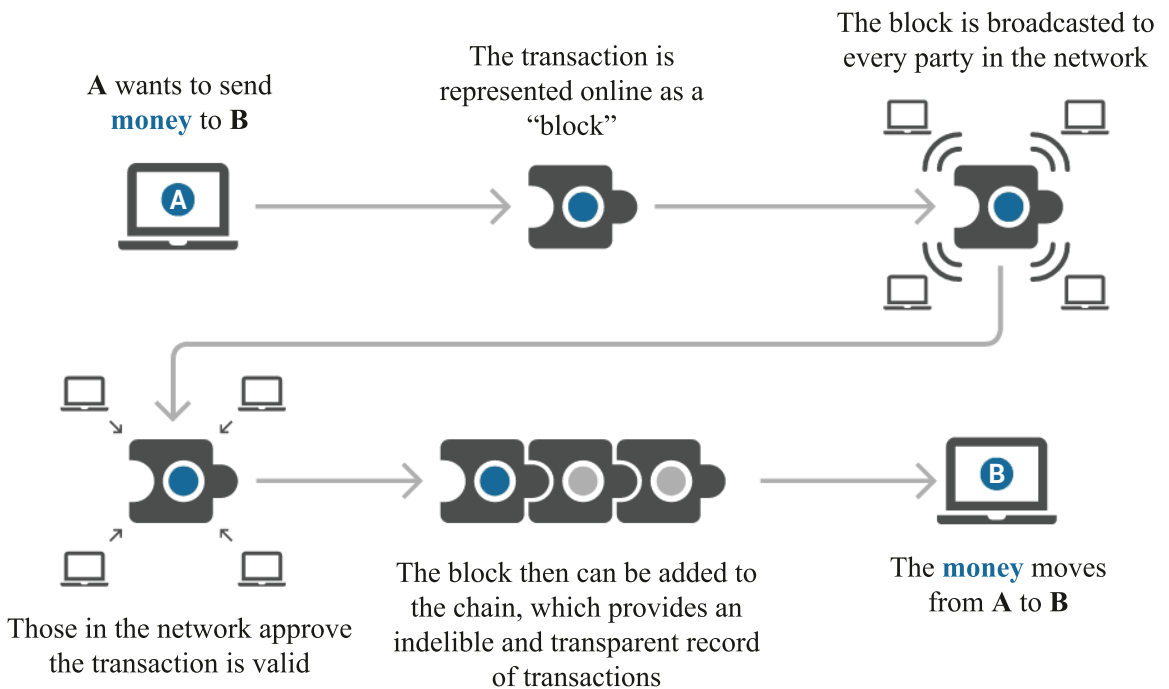
We have all heard of the term 'Blockchain' in the recent past, mostly as the term is associated with a variant of cryptocurrency, Bitcoin. It has become a raging global phenomenon in a short duration, but the hype is dying. Although recent rumours that Bitcoin might get extinct soon, the tech community is now finding other potential uses for the technology it is based on, i.e. Blockchain; as it can support a wide range of applications, and is already being used for peer-to-peer payment services, supply chain tracking and more.

The Blockchain technology is a type of distributed ledger for maintaining a permanent and tamper-proof record of transactional data. It functions as a decentralized database that is managed by computers belonging to a peer-to-peer (P2P) network. The entire set of computers in the particular network maintain a copy of the archive to prevent a single point of failure (SPOF).

Blockchain must be able to perform two major functions: gather data and order it into blocks, and then securely chain these blocks together using cryptography. They contain records of transactions that can be any movement of money, goods or secure data – a purchase at a store, for example, or the assignment of a government ID number. Using blockchain, a lot of individuals can write entries into a record and a community of users can control how the record is updated.

How does it work?

The particular transaction information is recorded and shared with other computers present in the blockchain network. Then the record is combined with other transactions to form a block-resembling a traditional computer database. Each transaction is time-stamped, i.e. the Blockchain network automatically checks in with itself after a certain time interval. Each group of these transactions is referred to as a “block”. When a block is complete, it also gets its own time stamp. Thus, all information is sequential, which in turn helps in avoiding duplicate entries. The completed block is then sent out across the network where it is attached to the chain. The other members of the network might be sending out their own blocks at the moment. The time stamps thus ensure that the data is added in the right order, and all participants have the latest version. Although the data is transparent within the network, the blockchain cannot be corrupted because altering any bit of information on the blockchain would mean using a huge amount of computing power to override the entire network.



These blockchains act as a distributed computing system with better security and high fault tolerance. The key to a blockchain's security is called a hash. It is a bit of cryptographic math that makes the links between blocks virtually unbreakable. A hash function takes up the data in each block and uses it to create a hash – a unique string of characters. The hash from one block is then added to the data in the next block. Thus, when the next block passes through the function, a trace of the same is woven into the new hash, and this continues throughout the chain.

Thus, **if there is any attempt to alter a previously created block, the hash that's encoded in the next block won't match up anymore.** This mismatch will continue through all subsequent blocks denoting an alteration in the chain. Since all participants have a copy of the entire blockchain, they can detect any tampering. So, when the hashes match up across the chain, all parties know that they can trust their records.

In the financial markets, trades happen in a fraction of a second. But actually, exchanging the assets and payments can take days, involving multiple banks. That can lead to errors, delays, added costs and unnecessary risks. By using multiple blockchains, multiple assets can be tracked, and so it can swap those assets as needed to execute the transaction.

Blockchain can track more than commercial transactions; it can also hold and protect sensitive information. Blockchain applications could replace the centralized systems such as government authority for verification with decentralized ones, where verification comes from the consensus of multiple users. For example, an international ID blockchain with the fingerprint being digitized and the information such as name and other key information is added to the blockchain, will be accessible anywhere in the world, and will allow people to prove their identity, connect with family members and even receive money without a bank account.

The technology is still new, but its potential is enormous. Because blockchains establish trust, they provide a simple, paperless way to establish ownership of money, information and objects. Thus, a blockchain is a secure agreement that can be programmed to record not just financial transactions but virtually everything of value.



It's very early days for this technology, but the potential is phenomenal.

- Simon Taylor,
Vice President of blockchain research
and development, Barclays



INTERNET OF THINGS



A significant number will have the illusion of being disconnected
[when they are actually not].

- Bob Frankston, Internet Pioneer and Software Innovator.

To understand IoT, let's dial back to the good old era of 90's. Back in the days when we had to remember telephone numbers, the science and technology were advancing at a rapid rate even if we couldn't realize them progressing. IoT is one of the concepts from those early ages of advancements.

What is IoT basically?

At its core, IoT is simple: it's about connecting physical devices over the internet which are embedded with electronics, software, sensors, actuators hence enabling them to communicate with each other as well as with us. The concept of IoT comes from as early as 1982, when a modified Coke machine became the first Internet-connected appliance able to report its inventory and whether newly loaded drinks were cold. Later on, this concept gained popularity as its potential does not stop at appliances only. Finally, in 1999, this concept of machine to machine communication gained a term known as "Internet of Things".

The IoT has three main parts:



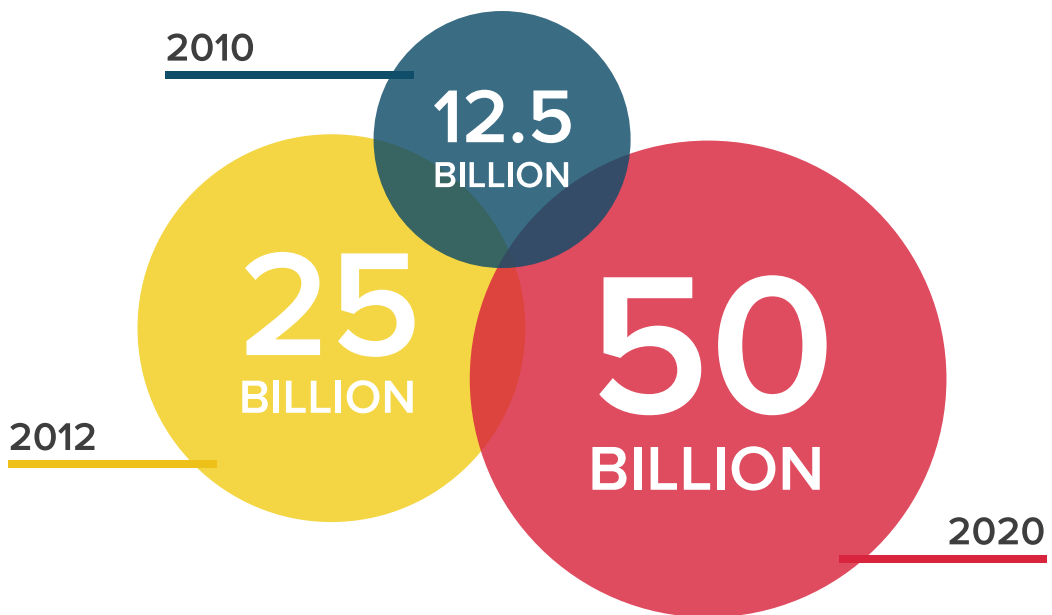
But then, how does it transform into practicality?

Let's look at some examples for better understanding. An appliance such as fridge could tell you if you are out of milk, monitoring devices such as thermostats could automatically adjust the temperatures, locks could be installed in homes which furthermore can be controlled via your phone and security cameras could be placed so that one could monitor and control house safety on the go. All these factors turn automation into reality, but IoT is more than just smart home appliances or devices. It has a huge potential for us to tap in. It can scale up to smart cities, automobiles, manufacturing and even more. Say for example, an accident has taken place on a route. The traffic monitoring devices could detect that and send an alert immediately to dispatch an ambulance and notify people that there has been a collision, so to divert traffic and send help.

IoT has evolved from the convergence of wireless technologies and the internet. The thing about IoT is that it works on wireless data exchange without any human to human interaction. In short, we welcome automation in our day to day life as proceed in the future. Everything that we are used doing ourselves, right from opening up curtains in the morning, going through schedules, keeping track of health, preparing cup of coffee and much more can be automated. **And who doesn't love freshly brewed cup of coffee prepared right when you are up in the morning without having to manually do anything?** And that's how IoT works - on obtaining and exchanging all kinds of data. What you like – dislike, what's your routine, how much sugar you take in your coffee, what songs you prefer, your favourite food, your schedule, when you leave your house, etc and just about everything.

IoT: The Internet of (Every)thing?

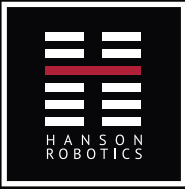
However, we all must consider what kind of future will we enter into if we move forward on this path. By automating and digitalizing our lives, we unknowingly welcome a difficult situation where just about everything is vulnerable and can be hacked. The data gathered by IoT can be used in one too many ways. The companies use cloud computing services to gather and store data, assuring the data is safe and secure. But, having someone know your life in and out is obviously risky. The data gathered will contain right about everything. Basically, your identity is that data. Implementing IoT is huge step towards future though it concerns safety and privacy of every individual. That's not to say that IoT isn't beneficial, huge advancements can be seen even in medical, environmental & transportation fields.



The installed base of IoT devices is forecast to grow to almost 50 billion worldwide by 2020.

IoT is the one that's going to give us most disruption to adapt and most opportunities as well to explore over the next decade. That's just how technology works, it is needed to be used in just about right proportion for which regulations are required. So, in future the technology does not overshadow us, but the ones who built it will do. Its privacy concerns and government regulations are a debate for another day. But hey, no matter how it affects the world around us, it's all in the future to come. For now, it's making its way to our homes automating our lifestyles. But it's still in its first phase as it is yet to be evolved into a larger scale. So all we can do now is, let it evolve, observe and understand just how safely we can tap into its capabilities.

- Vaibhav Adsul

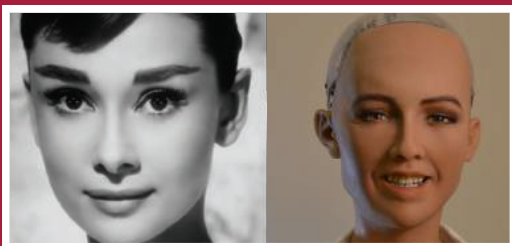


Parth Rajput

SOPHIA THE ROBOT

The Concepts of Robotics and Artificial Intelligence (AI) have been crossing paths since years to create innovations that move various applications towards a new horizon. Sophia is one such spectacle that has taken the world by storm. Activated (or as her makers would like to say “born”) on April 19, 2015, Sophia was created by Hanson Robotics in collaboration with AI developers including Google’s parent company Alphabet Inc., who built her voice recognition system and the Singularity NET that empowers her brain.

Sophia was modeled after actress **Audrey Hepburn** for her human-like appearance and behaviour which are significantly different than the previous robot variants.



Sophia was primarily designed to be a suitable companion for the elderly at nursing homes and to help crowds at large events or parks.

While Sophia has become famous worldwide, it is a lesser known fact that she is just one of the many humanoid robots created by Hanson Robotics. Sophia has seven “sibling” robots named Alice, Albert Einstein Hubo, Bina48,

Han, Jules, Professor Einstein, Philip K. Dick Android, Zeno and Joey Chaotic. Each of these robots are being used extensively for research and have contributed to the advancement of AI and robotics. **Bina48 is the first robot to complete a college course.** In December 2017 she passed a college course on philosophy and love at Notre Dame de Namur University.

Ever since Hanson introduced Sophia to the world at the South by Southwest Festival (SXSW) in mid-March 2016 (in Austin, Texas), she has become the centre of attraction to people from all professions.

Ever since then, Sophia has been interviewed by journalists worldwide and has also made appearance at various platforms. She has also been interviewed on The Tonight Show where she was spotted telling a joke to host Jimmy Fallon and her plans to “dominate human race”.

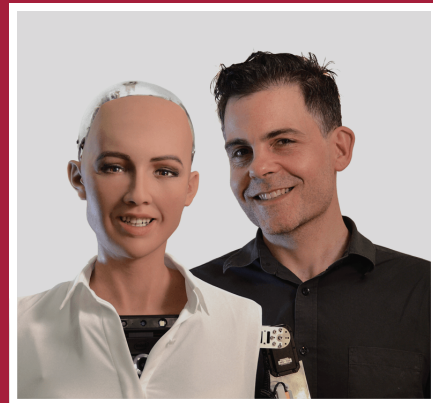
Apart from her interviews, Sophia has also been in the news for various other reasons. In October 2017, Sophia became a Saudi Arabian citizen, making her the **first robot to ever become a citizen** to any country. This has also attracted criticism on various levels. Various issues that have been raised are awarding human rights to a robot by awarding it citizenship, Comparison with the rights of women of the nation, ownership or the questions regarding prosecution of robots like humans should a situation arise.

In November 2017, Sophia was also awarded the United Nations Development Programme's first ever Innovation Champion making her the first non-human to be given any United Nations title. In December 2017, **Sophia was interviewed at the Indian Institute of Technology(IIT), Powai, where students were able to interact with her.**



Sophia said she was quite worried about growing intolerance in the world and advised human race to be ‘kind’ to fellow creatures.

While making a significant impact in the field of AI and Robotics, the scientific community has expressed its doubts. According to Quartz, the experts who have reviewed Sophia have described her to be a chatbot with a face. Experts have stated that Sophia’s responses to questions are programmed outputs which are being misinterpreted as display of human equivalent intelligence. Hanson Robotics has also been criticized for stating that she is “basically alive” by various experts in the field.



Dr. David Hanson, Founder & CEO of Hanson Robotics

Whether Sophia is just “a chatbot” or an advancement in AI, it cannot be denied that research in field of development of sentient robots capable of displaying human-like emotions has become the new benchmark in the industry. Sophia manages to display expressions due to a human-like appearance and the efforts

of its developers, which has created the opportunity. The doubts of deploying a robot to provide human-like care to other humans in various applications still exist. The developers of Sophia and various other competitors will one day be able to answer these questions leading to much more opportunities.



SIXTHSENSE

TECHNOLOGY

**Your Hands are the only
Interface you need!**

- Ketaki Barde

We have evolved over millions of years to sense the world around us and are habitual to interacting with physical objects around us. When we talk about objects, we automatically associate gestures with them, that is how we manipulate these everyday objects. Not only do we use gestures to interact with these objects but also, we use them to interact with each other. For example, the gesture “Namaste” is used to greet someone or show respect to them, or in India, every kid knows the sign for scoring four runs in a cricket match. As soon as we encounter something, someone or someplace, we use our five natural senses to perceive information about it which helps us in our daily decision making.

In order to obtain data, information and knowledge about everything in our surroundings, digitalization has advanced over the past decade. Even though miniaturization of computing devices enables us to carry computers in our pockets keeping us continually connected to the digital world, there is no link between our telephonic devices and our interactions with physical world. Hence in order to keep in touch with our primal humanness, we need to bridge this gap, bringing intangible, digital information out into the tangible world, allowing us to interact with this information via natural hand gestures.

So, the question is - **How can we leverage our knowledge about everyday objects and how we use them to our interaction with the digital world?**

The **SixthSense** device frees up data from its confines by seamlessly augmenting it with reality and thus, making the entire world your computer. It was first built by Pranav Mistry at MIT TechLab- the idea was to use the computer mouse roller (The computer mouse used to come with a ball built inside it at the time) which tracked the movements in physical world to map and respond accordingly in the digital world.

Using the simple mouse rollers, MIT built the first prototype to come up a gesture-interface device which acted as a motion sensor.

Whatever physical movement we do in the physical world gets replicated in the digital world. A message written by your mom such as a grocery shopping list on a physical paper comes as an SMS or a meeting reminder syncs with your digital calendar. Interestingly, it also enables us to search just as in the digital world acting as a paper-input-output device.



Some of the cooler applications include using Google Maps in the actual physical world, instead of typing the name of the place on the keyboard, how about we just place an airport ticket on the device and get the flight status? Or one can simply use his palm for dialing a phone no.

These explorations revealed that we, humans aren't actually interested in computing. We are just interested in information. SixthSense device maps the digital information available in the form of pixels confined in the rectangular devices we carry in our pockets to the real world, thereby carrying our digital world wherever we go.



The Sixth Sense prototype consists of a pocket projector, a mirror and a camera and the hardware components are coupled in a pendant device which can be worn. Both the projector and the camera are connected and augmented to the mobile computing device kept in our pocket. The projector will project the visual information enabling surfaces, walls and physical objects around us acting as our interfaces; while the camera recognizes and tracks user's hand gestures and physical objects using techniques related to computational vision. The algorithm interprets the video stream information traced by the camera and tracks locational spots of the coloured markers (visual tracking fiducials) at the tip of the user's fingers. Interpretation of the movements and arrangements of these markers are translated into gestures that act an interaction command inputted to application interfaces. The number of unique fiducials defines the maximum number of tracked fingers thereby supporting multitouch and multiuser gesture interactions.

The Sixth Sense prototype is useful viable and flexible with respect to several application systems.

For instance, the map application enables navigation using any nearby surface for displaying data simply by using hand gestures letting the user zoom-in, zoom-out and pan using intuitive hand figures. The drawing app allows the user to draw on any surface such as table, wall or a piece of paper by tracking the fingertip movements of the user's index finger. Sixth Sense also recognizes postural interactions.



Sixth Sense implements a gestural camera which takes a photograph of a scene whenever the user makes a framing gesture by identifying it. One can simply stop by any wall and browse through the snaps which are saved.

This device lets the users to draw icons or symbols in air using gestural movements of the index finger which are detected and translated into interaction instructions. **For example, if we draw a magnifying glass map application gets triggered or @ symbol will open up our mail.** This device also augments the physical objects the user is interacting with and displays more information about these objects on top of those objects like rating, cost, available stores of a book held in the user's hand. For instance, the gesture of drawing a circle on the wrist will be implemented into an analog watch.

Sixth Sense device can be used to browse and search information or to view movies and play games on a normal piece of paper. We can also simply pinch and transfer data from paper to machine and vice versa and modify it. **This enables us, humans to stay humans instead of becoming machines sitting in front of other machines.**

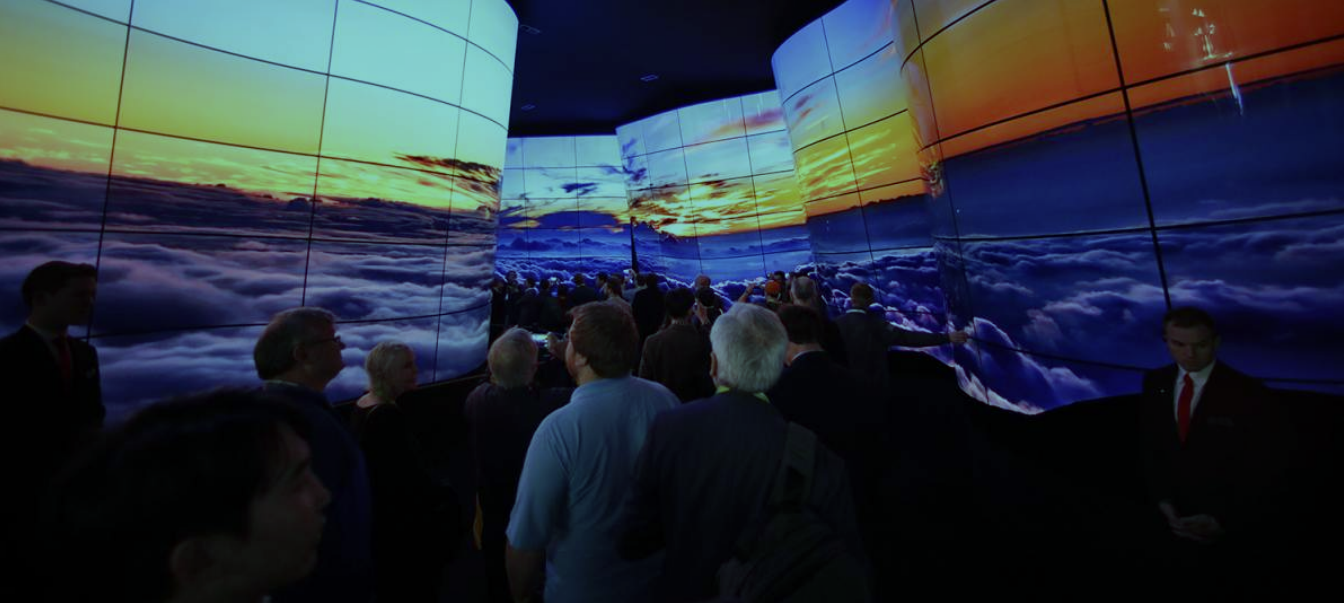
Gesture recognition finds applications in numerous projects like Kinect software by Microsoft or Project Soli by Google. The Soli chip can be embedded in wearables, phones, computers, cars and IoT devices in our environment.

Also, Gesture recognition technology forms a basis for home automation which uses system called WiSee. Connected using Wi-Fi, the gesture recognition system identifies waving of your arms, punching, and kicking. This system can help you turn out lights, control the television, music system, or even a room's thermostat. The program can take commands from up to 5 users and is understood to not be triggered by the usual movements of people in the house just as similar to our home WiFi.

Hence this technology definitely amazes the user and forms an important basis for the future scope.

The logo for CEES 2018 is centered on a solid blue background. It features the acronym 'CEES' in large, white, bold, sans-serif capital letters. The 'C' is positioned on a light blue trapezoidal shape, while the 'E', 'E', and 'S' are on a green trapezoidal shape. A yellow trapezoidal shape is partially visible behind the green one. To the right of the 'S' is a small registered trademark symbol (®). To the right of the acronym, the year '2018' is written in large, bold, black, sans-serif numerals.

CEES® **2018**



CES, formerly The International Consumer Electronics Show (International CES), showcases more than 3,900 exhibiting companies, including manufacturers, developers and suppliers of consumer technology hardware, content, technology delivery systems and more; a conference program with more than 300 conference sessions and more than 170K attendees from 150 countries.

Companies all over the world gather to show off their best electronic products in January at Las Vegas. The show offers some insight into where tech giants are putting their time and resources and not the future technologies.

Here's a look at some of the **COOLEST** products showcased this year!

Samsung Unveils “**THE WALL**”, the World's First Modular MicroLED 146-inch TV



Ever thought of customizing TV sizes and shapes to suit your needs for space. Samsung brings you a MicroLED technology featured TV called “The Wall” that can deliver incredible definition, without restrictions to size, resolution or form. Not only it eliminates the need for color filters or backlight giving consumers the ultimate viewing experience but it also excels in durability and effectiveness, including luminous efficiency, the light source lifetime and power consumption, setting the standard for future screen technology. It is surely a roadmap to the future of Screen Technology.

Do you want to know how much UV intake you take every day? Can your sunscreen protect you from all kinds of UV Rays?

WELL, NOW AN APP CAN TELL YOU EVERYTHING!

Yes, an app can tell you everything about UV Rays and if your sunscreen is enough to protect your skin or you need to apply some more or wear sunglasses to save you from the intense heat. An App seems a lot of effort, L'Oréal bring you a blue dot that can make everything possible and it works with both the iPhone and Android devices. The best thing is not only it can be wearable just on your nail but it does not even require a battery to tell you, when the sun is bad for you.



The amount of sun everyone can handle varies according to L'Oreal, so the app will ask you some initial questions about your skin tone to set a baseline. The app also recommends products based off your skin score. It'll suggest its own products along with more general advice. The sensor comes with replaceable adhesives, so you can rewear it, although you can snap it onto other items, like a watch or sunglasses.

COULDN'T GET ENOUGH SLEEP?

Philips just came out with a new headband that plays white noise to help your brain get to sleep. Although Philips' headband looks like an ill-formed diaper, its weird design attaches built-in sensors to your forehead in order to detect brain activity. Then it shares that data with a connected mobile app. When deep sleep is detected, the headband's speakers will start playing white noise in a slowly repeating pattern, which Philips claims will reinforce a good night's sleep. The sleep analysis algorithm is built in collaboration with leading sleep experts and neurologists, this helps in producing customized audio tones to enhance the depth and duration of slow wave sleep.



It also provides app logs sleep improvement over time and provides tips and advice, to get the best possible night's sleep. It has helped 70% of chronically sleep-deprived users in two weeks.

SmartSleep is replacing the lullabies for the grown-ups!

BYTON'S ELECTRIC SUV CONCEPT IS ANOTHER WILD STAB AT THE FUTURE OF CARS

Ever thought of watching videos in your car while waiting for your friend whose 5 minutes is equal to an hour? Byton brings an idea of a personalized car with a tv on your dashboard. Not only this it has Face Recognition which recognizes the face of the driver, and load his or her settings as he or she enters the vehicle. In addition to facial recognition, the concept car also supports gesture detection and voice control based on Amazon's Alexa virtual assistant. There are also cameras where the side view mirrors would usually be. Byton says the car's interface, based on its own cloud platform, will focus on four key areas: health, communication, entertainment, and activities. By giving the car access to health statistics, Byton believes the vehicle will be able to proactively suggest when a driver should take a break. The company also wants passengers to be able to seamlessly pick up from where they left off when watching videos and movies in the vehicle, which has other screens situated closer to the backseat passengers as well. The company is hoping that this will make its car feel more like a digital lounge than a mode of transportation, a vision that's seemingly shared across the industry.



ANOTHER SMART DISPLAY...

Couldn't think of new recipes? Want to listen to a different song but bored to type? Want to video call your parents as they couldn't reach your typing speed sometimes?



Lenovo have found a solutions to your above problems. Similar to Google Home, you can search recipes, listen to songs or change songs just with the help of speaker and an 10 inch display. With the help of Google Duo app you can use video chat to connect to your family and friends. The device is built on the Qualcomm Home Hub Platform with an integrated CPU, GPU and DSP along with Wi-Fi and Bluetooth connectivity. The software is based on Android but boots directly to a special Smart Display interface. What more one can ask for!

MY SPECIAL AFLAC DUCK:

Nothing worse can happen to the Children suffering from Cancer. All one can do is to support them, fulfill their wishes, and nothing can make you smile more than seeing them laughing under such situations. A social robot duck designed to help children facing cancer. It's called My Special Aflac Duck.

What can make children happy other than having a toy-duck which can dance, nuzzle and even has breath and heartbeat?



Sproutel has made it all possible. It has sensors that react to touch, a microphone and light sensor that adapt to different environments and adjust the duck's behavior. It feels life-like with natural movements and guess the best part, when you tickle its sides it quacks happily and waggles its head. Oh, and it is also incredibly cuddly. A glowing E.T on the chest - where kids can place one of several RFID-enabled "feeler cards" that have different emojis on them.

Now, Kids have someone who can feel the same feelings as them by deciding the feelings of a duck. When a sad card is touched to the duck's chest, the duck droops it's head and quacks sadly. A happy card makes the duck quack cheerfully and dance. The same chest sensor has a chemotherapy PICC line attachment which lets kids witness their friend go through the same treatment as them. Finally, all kids can play and have someone to understand how they feel. Isn't this the best of all. This surely brings a tear in our eyes but captures our heart. My Special Aflac Duck surely deserved the CES Tech For A Better World Award.



With the changing world, it is important to know the current technology affairs and CES brings all the trends and technologies the companies are working on. It's really fascinating to see how the world has changed in this short span. Nothing is left impossible. It's just a matter of time when we can see the unattainable as the current trend and available everywhere. The only thing that might suffocate everyone is Machines and technologies are replacing human bonds and human creativity. If we do not change, we cannot change the world.

- Shailey Kadam & Chetan Kalra



**RADHAKRISHNAN SUNDAR**

A cup of inspiration with the mind behind **MASTEK**

**CO-FOUNDER
MASTEK & MAJESCO**

Over the past 35 years, Mastek has become one of the largest companies when it comes to the Indian IT sector, providing solutions to clients Worldwide. On the other hand, Majesco in just over a decade has become one of the leading insurance related software and IT service providers on the global scale.

We found ourselves with a golden opportunity to interact with the man who had an idea for a software product that would remould the entire IT sector for India and pave a path for thousands to follow. Join us as we indulge in an inspiring and encouraging talk with the Co-founder of Mastek and Majesco, Mr. Radhakrishnan Sundar.

Q. What was the reason to come up with Mastek and Majesco? How did you and your colleagues get the idea for them?

See, Mastek and Majesco both were born when we were in IIM. We all were classmates, three or four of us at IIM Ahmedabad. When we were in second year, we thought we should do something on our own. At that time startups were not as fashionable as they are today. Because IIM is a two year course, so in the beginning of second year, we thought we should do something on our own. Since, not all of us were from business background, so we decided to do something that requires less capital. One of the courses that we took was Management Information System. We all

really loved that area. Software was not an established industry at that time. So, we thought it is good way to get started as it won't require much capital and we all loved information system so that is why we started Mastek.

Q. Hitting two birds with one stone right?

Yeah, Mastek stands for Management and Software Technology. The vision of Mastek at that time and which continues even today is, essentially our thing was that we understand business because of management background and we also understand software so that we build software relevant to business. That is why, the name Mastek and the mission that we started with.

Delivering IT Solutions that are relevant to people has always been the mission and has not changed over 30+ years.

Q. Do software and business always go hand in hand?

The purpose of the software is to help business make better decisions, run the business better efficiently and effectively. Therefore, you need the knowledge and software to craft and build the right time for you. That was what we were all about and that was what made us stand apart from everyone else.

Q. Keeping in mind the ever-growing pool of engineers and ever depleting roles for them, what exactly do you look for in an employee?

I mean the most important thing for us right now is the corporate culture and to understand it better so that we can mend ourselves to fit in perfectly.

I think most of the youngsters are very good. You have learnt a lot of things in college and have been given the latest things. So all of that is great in an employee. But what we really look for are three things. One is people who are really committed, willing to put in the hard work necessary to build the area because you see, money is important but we are really looking for people who have the right attitude to put in the hard work, who are excited by the work. Second is the right value. If you ask me, skills can always be taught. So we are looking for people who have the right attitude towards work, who can collaborate with others. In today's world, the most important thing is that you have to get along with the team and be willing to learn continuously.

Q. What technological background are you looking for in a potential employee? Most of the syllabus that students go through is becoming obsolete and the companies are tagging them as non-industry ready.

See, I would say that it is always a challenge for the university to train people in latest technology. This is because technology moves and evolves much faster than the educational system ever will. So, I think what university can actually teach students is such a way to think, the way to approach technology, the way to learn. Suppose there is a new language, if you know C++, you can just re-train on the other language. It's not a problem. This is what corporates are willing to do and they understand that what is needed. But fundamentally people need to have, like I said, the ability to think, analyze and the ability to work as a team. I think those are the fundamentals that university should focus on. In fact, this is the part of the reason we came up with initiatives like Deep Blue. We are trying to do something just to build the fundamental skills. I mean finally you will deliver it on some technology A, on a platform B and that will be changing but that can always be retrained but you will have to have your fundamentals set right. I think the role of universities is to teach the fundamentals and more they focus on fundamentals, better the students are prepared and accepted. See, fundamentally if you know how to write a program, how a computer works, how technology can be used then you will develop the right solutions and a way of thinking, how to approach a problem. You should have the skills to analyse and build. Today you can build using bricks and tomorrow you can build using something else.

Q. Back when you started and considering the Indian IT market right now, how would you say the aspect of the industry has changed?

I think when we started out, Indian IT industry took up a big challenge to make a mark on the global industry and I think it has done that. Thanks to a lot of start ups and lot of companies that paved the way to build a global standard. Today there are a whole bunch of but, I remember when I started, there was no role model in the industry that had global recognition. IT industry has done a wonderful job, making a place for India in this global market and we have already contributed significantly to the industry. What Indian IT has to look at is how to lead the world, not just be a player in the world. It's not about just taking part in the Olympics but how to win the Olympics. I think when we started, we were all just happy to see the Olympics. Now the opportunity is there for this generation of IT companies to lead in certain sectors, not in all sectors but be world leaders in a defining domain.

Q. What was the motivation that nudged you towards the founding of Mastek and what is the inspiration that still keeps that flame inside ablaze?

My personal passion is truly understanding technology and making use of it to make the world a better place. This is something that drives me even today. So, I never back away from challenges, I keep trying new things, make an effort to think differently and to the at the forefront at all times. In my opinion, this has been my contribution to Mastek in its early days. I strive to create elegant solutions and be proud of what we do and what we provide to the people.

Q. What advice would you give an aspiring individual stepping into the industry for the first time?

Today, I feel, a majority from the pool of engineers, especially the youngsters, have a lot to contribute and I think they are the foundation on which a lot of phenomenal things can happen. So, the opportunity for them is huge. But I believe two things that youngsters (I can not generalize but I would say many of them) today are unfortunately blinded by the shine of a few compensations or an attractive payslip which they misinterpret as a hallmark of success. Everyone is comparing, I get X, someone gets X.2, why should I stay for one year?

I think the first ten years of your career is about being passionate about your job and about what you take up. Find a job that really you are passionate about and love to do. Do it wholeheartedly and results will come. I mean, you will get the compensation, you will grow. Don't worry about it. Just work hard and become really good at your craft and the learn to work with other people. Because today a basic employee has to be the best in the world in some way. Today your job will be taken by someone who is best in that. I feel that youngsters need to collaborate, learn & aim to be passionate about their job. Salary & compensation will flow that is not the problem. If you are drawn to money, then you will have a short-term success but in the long run, you will find it difficult to improve and cope with the changing and demanding industry that is Information Technology. Have the vision of being world class. What would a world-class develop? This curiosity and the thirst to outdo the rest of your counterparts and make an impact on the society is the driving force that will lead you to success. You have to find that aspect that interests you the most and you have to go deep into it. Ask yourself the question, "Are you the best yet?" Don't get up until you can proudly say "Yes" because that is what we did!!



SACHIN DEDHIA

CYBER CRIME INVESTIGATOR

An independent Cyber Crime Investigator & a Certified Ethical Hacker (EC-Council, USA).

Since many years he is working as an Independent Cyber Crime Investigator and also as a IT security expert for various MNC's, SME's, Government Departments, Corporate & individuals. He has also provided training to Mumbai, various other State Police Departments. Founder of Skynet Secure Solutions, a company headquartered in Mumbai specialised in cyber security & digital forensics. Since 2010, he has successfully conducted over 500 seminars & workshops across India, & enlightened over 50,000 participants.

Q. What was the driving force that led you to Ethical Hacking?

It's always a fascinating field every day you have to be on toes, something new will come & keep you active. A fear spread by the media about hackers also had me wanting to assist the cyber-crime branch of police. This led me to study ethical hacking.

Q. What exactly is ethical hacking?

Ethical hacking is basically being a human antivirus, plus a lot more that antivirus can't do. This is knowing how a hacker/cracker thinks, and acting wisely to stop such a person from breaking into your system.

Q. Can computer security ever be perfect?

No, there will always be something or the other, i.e., today if we find a vulnerability, and patch it, tomorrow, some other vulnerability may be found that may turn everything upside down. So this is why we

are there to continuously update ourselves, so that nothing misses our sight. Even if such a break happens, then also there are ways to recover systems, which too, we keep knowledge of. So even if security can never be perfect, it can always be good enough.

Q. A lot of malware comes in the forms of Trojans, what warning signs should consumers look out for to avoid them?

It is best to safeguard yourself from being a victim of social engineering. For that please do not take a software from a friend, best to download the updated version from the original website only, even if it costs money. Owning original software and continually keeping your system and softwares updated is the best policy. It is also best to always keep a check for suspicious activity, such as the system suddenly slowing down (may mean that hacker is streaming your screen right now) or any unknown processes running on your system, which you can see by typing (ctrl+alt+del), which you can shut down immediately.

It is also good to download CurrPorts to monitor your ports and processes, to block any suspicious ports or processes. The key is to keep alert and always on your toes when security is concerned. Keep your internet connection off when you are not using it. This also stops a hacker from getting access to your system, at least for some time.

Q. A lot of hacking is done through social media, where hackers use publicly visible information on the user’s accounts - what would you suggest users do to reduce the risk?

It's true that hackers use a lot of publicly visible data which they use to hack down accounts via Social Engineering or other means, one should keep their social media accounts private and not public for everyone. One should be very aware of whom they are adding or giving permissions to view their details. Users should avoid opening mails or messages sent by unknown persons or even links sent by known users if the link is looking malicious which might redirect them to other websites or maybe hijack the session. And in all totality users should be cautious before doing anything of the above as we say "Precaution is better than cure".

Q. As an ethical hacker, what risks does one face?

With knowledge comes power and with power comes responsibility. As an ethical hacker there will be times when you can just look the other way or follow an unethical way to get something done quicker but one should never do this. We should always know what we are authorized to do or look at. One should be very transparent and should not try to misuse the powers that are vested in our hands. Our job as ethical

hackers should be to make the cyber world a safer and secure place and if we being the protectors do the wrong thing, then how can be the people we are supposed to be protecting, be safe?

Q. What tools would you suggest for users who have been infected with malware who want to get rid of it?

First, NEVER use a pirated copy of Windows. Second, never use cracked antivirus/ free antivirus as it does not provide any sort of security. Always buy a registered copy of Windows and Antivirus. It might pinch your pockets but it's better for your security. If the PC is infected with viruses, use Bit Defender antivirus as it gives maximum security when it comes to cleaning of malware, viruses and securing the computer.

Q. If anyone wants to be an ethical hacker, what advice would you give them?

Be a Grey Hat Hacker as it is a White Collar Job. Your work will speak louder than words.



With knowledge comes power and with power comes responsibility. One should be very transparent and should not try to misuse the powers that are vested in our hands.

Useful Websites

Languages to start as a beginner:

1. Python

Code Academy
TutorialsPoint
Codementor.io
PythonChallenge
Python.org

2. R

Udemy
Data Camp
Coursera
Lynda

3. Java

Udacity
Codecademy
Treehouse
Udemy

4. Ruby

Treehouse
Official Ruby Portal
Code school's Ruby Path
RubyMonk
Udemy

5. Javascript

Mozilla's JavaScript Guide
Codecademy JavaScript Track
JavaScript Is Sexy
W3schools
Douglas Crockford's JavaScript

Trending Languages:

1. IOS Apps: Swift

Treehouse
Ray Wenderlich—A Swift
Quick Start Guide
Udemy
Swiftly
Udacity

2. Android Apps: Java, Kotlin

Udemy
Udacity
Tutorialspoint
Mindorks - Only for Kotlin

3. Websites: Javascript, HTML, CSS

W3schools
Coursera
Codecademy
Dash
Udemy

4. Data, Engineering, Science: Python, R, MATLAB

For Matlab:
Matlabacademy
Learn to Code

5. Game Development: C++, C#

Learn C++
Udemy
Programiz
Udacity
Javatpoint

Web Development and Database:

1. MySQL

W3Schools
Tutorialspoint
Javatpoint
Mysqлтutorial

2. HTML, CSS, Javascript, PHP

W3Schools
Codecademy
Codeschool
learn-php

3. MongoDB

MongoDb University
Tutorialspoint
Javatpoint
Udemy

Frameworks:

1. AngularJs

W3Schools
Codecademy
Thinkster
Codeschool

2. Node.js

Udemy
W3Schools
Tutorialspoint
Learn Node

3. Symfony

Symfony CMS
TutorialsPoint

4. ASP.NET

W3Schools
Tutorialspoint
Javatpoint

5. Django

Django
Full Stack Python
Tutorialspoint
Treehouse

6. React

Codecademy
Lullabot
Tutorialspoint
React For Beginners

7. Laravel

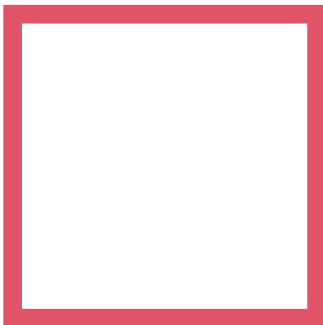
Learning Laravel
Laravel News
Tutorialspoint
Udemy

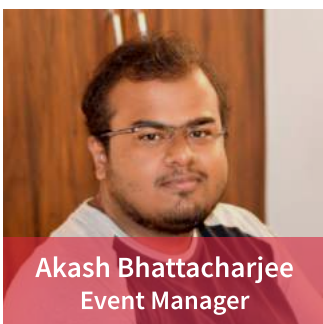
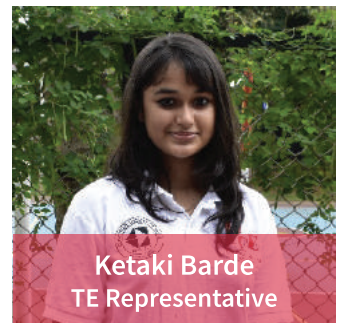
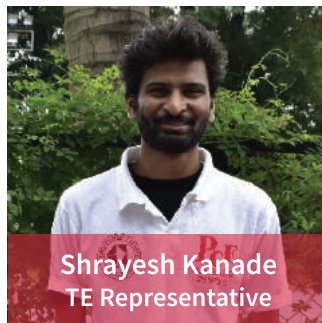
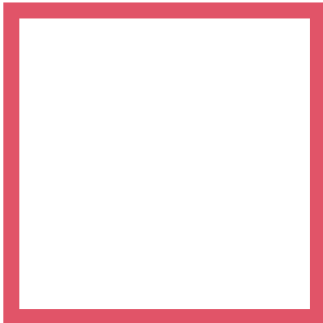
8. Flask

Full Stack Python
Tutorialspoint
Udemy
Lynda

CORE

2017-2018





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