MARATHA VIDYA PRASARAK SAMAJ'S
KARMAVEER ADV. BABURAO GANPATRAO THAKARE
COLLEGE OF ENGINEERING, NASHIK-13

# COMPUTER DEPARTMENT

Presents

# TECHNICAL MAGAZINE

## Vision

To be the center for excellence for training the world-class engineers to work with multi-disciplinary domain based on the state-of-the-art of technology enabled academic system blended with industrial and business practices.

## Mission

To educate and train undergraduate students in Computer Engineering by instilling excellence to fulfill professional and social requirements in business and industry on the platform of scientifically designed academic processes.

## Editorial Team

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*Editor-in-chief*

*Mast. Piyush M. Sonar*
*(TE Comp)*
*Editor*

# ALEXA

## *HEY ALEXA- TELL ME THE FUTURE!*

*----------*

*IS IT POSSIBLE THAT A COMPUTER CAN PREDICT FUTURE LIKE THE ONE FROM THE MOVIE KRRISH----*

*----------*

*WELL LETS LOOK INTO HISTORY A LITTLE BIT---*

*In 1973, an MIT computer predicted when civilization will end..called 'THE WORLD ONE' In 1973, a computer program was developed at MIT to the model global sustainability. Instead, it predicted that by 2040 our civilization would end. Many in history have made apocalyptic predictions that have so far failed to materialize.*


*But what the computer envisioned in the 1970s has by and large been coming true. Could the machine be right?*

*As reported by the TV broadcaster ABC, the model's calculations took into account trends in pollution levels, population growth, the amount of natural resources and the overall quality of life on Earth. The model's predictions for the worsening quality of life and the dwindling natural resources have so far been unerringly on target.*

*In fact, 2020 is the first milestone envisioned by World One. That's when the quality of life is supposed to drop dramatically.*

*"At around 2020, the condition of the planet becomes highly critical. If we do nothing about it, the quality of life goes down to zero. Pollution becomes so seriously it will start to kill people, which in turn will cause the population to diminish, lower than it was in the 1900.*

*At this stage, around 2040 to 2050, civilised life as we know it on this planet will cease to exist."*

## *How did the program work?*

*World One, the computer program, looked at the world as one system. The report called it "an electronic guided tour of our behavior since 1900 and where that behavior will lead us." The program produced graphs that showed what would happen to the planet decades into the future. It plotted statistic and forecasts for the such variables as population, quality of life, the supply of natural resouces, pollution, and more. Well, while there is a little space to argue preciseness of a computer program which was made more than 50 years ago and the data feed given to it too may be limited by today's standard. But we already know how far the powers of computers can reach, if a computer program can drive cars , rovers even launch rockets and fly planes , can handle its own twitter account like sophia then why can't it predict the future or the just possibilities of actions that can happen ?*

*A marvel or not only the time will tell....But what's more important thing that we can take from this example is the mere possibility of future prediction done by computers.*

*Currently at this very point we don't have idea about how the ROBOT ERA will flourish, will we get a ROBO-COP or something like the Terminator ?*

- AJINKYA KOLHE

# BLOCKCHAIN

## *What is Blockchain ?*

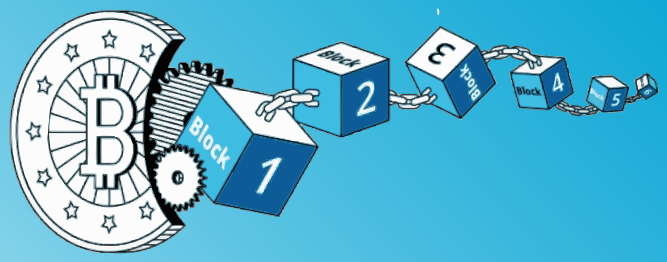
*Blockchain technology offers a way for untrusted parties to reach consensus on a common digital history. A common digital history is important because digital assets and transactions are in theory easily faked and/or duplicated. Blockchain technology solves this problem without using a trusted intermediary.*


*In the past few years, blockchain has developed an unrivaled reputation as the next big thing for the decentralized internet. Startups have absorbed billions of dollars from traditional funding and token sales to develop software and proof-of-concepts that employ blockchain to fix many of the problems that riddle centralized online services. Blockchain promises it can protect us against D-DoS attacks and data tampering, prevent voter fraud, speed up transactions, reduce costs, and enforce transparency and auditability. And these are characteristics every IT expert and software developer can appreciate, but they're also characteristics the average user takes for granted. Why should a user abandon established cloud services for unknown alternatives that provide similar features on the surface? As long as Skype works fine 99 percent of the time, why should I switch to a blockchain-based alternative? Blockchain needs a specific value proposition for the average user if it is going to gain real traction. And I believe that value proposition will be the ability for every person to own their own data.*

*Big tech corporations such as Facebook and Google collect and hoard tons of information about users and use it to improve the algorithms that run their services and generate their revenue. But users have no ownership of the data and have to rely on those centralized services to store and protect their information. This effectively locks them into those platforms, depriving them of choice and control. If Facebook closes your account, you lose all the data, connections, reputation, preferences, and interactions you've generated over the years. The same goes for Google, YouTube, Amazon, Twitter and rest.*

## *Blockchain Vs Bitcoin - What's the connection?*

*Bitcoin first appeared in a 2008 white paper authored by a person, or persons using the pseudonym Satoshi Nakamoto. The white paper detailed an innovative peer to peer electronic cash system called Bitcoin that enabled online payments to be transferred directly, without an intermediary.*




*While the proposed bitcoin payment system was exciting and innovative, it was the mechanics of how it worked that was truly revolutionary. Shortly after the white paper's release, it became evident that the main technical innovation was not the digital currency itself but the technology that lay behind it, known today as blockchain.*

*Although commonly associated with Bitcoin, blockchain technology has many other applications. Bitcoin is merely the first and most well-known uses. In fact, Bitcoin is only one of about seven hundred applications that use the blockchain operating system today. One example of the evolution and broad application of blockchain, beyond digital*

*currency, is the development of the Ethereum public blockchain, which is providing a way to execute peer to peer contracts.*

*This is where the blockchain and distributed ledgers promise consumers real value. Blockchain's architecture enables user data to be siloed from the server applications that use it. A handful of companies are exploring the concept to put users back in control of their data. One example is Blockstack, a blockchain-based browser that aims to create a decentralized internet where service providers don't own user data. The browser grants you access to various websites and services via a blockchain-based identity. This is an identity you own and take with you to every new application you want to use, as opposed to a profile that resides in the servers of those applications. The browser also gives you full control of application data by encrypting and storing it on a back-end of your choosing. This can be Google Drive, Dropbox, or any other service that has the right set of APIs.*

*Pillar, another open-source blockchain project, is developing what it calls a personal data locker and "smart wallet." Pillar is a mobile app that stores and manages your digital assets on the blockchain, where you have full ownership and control. These assets can be cryptocurrencies, health records, contact information, documents, and more. Pillar also aims to address another fundamental problem: The average consumer's lack of interest in managing their own data. Pillar will be an AI assistant to which you express your intent, whether it's making a registration, buying an item or anything else that might involve your data. The assistant will then find the services you need and provide them with data from your wallet instead of replicating and storing your sensitive information on their servers.*

*Projects such as Enigma employ blockchain to preserve user data privacy while sharing it with cloud services and third parties. Enigma's platform protects data by encrypting it, splitting it into several pieces and randomly distributing those indecipherable chunks across multiple nodes in its network. Enigma uses "secure multiparty computation" for its operations: Each node performs calculations on its individual chunk of data and returns the result to the user, who can then combine it with others to assemble the final result. Users maintain control and ownership of their data chunks on the blockchain. They can grant or deny access to third parties and services wanting to perform calculations on their data without actually giving away the data itself.*

*Social media is another domain that blockchain startups are disrupting. Platforms such as Nexus and Indorse improve privacy and data ownership by storing information on the blockchain and putting users in control of how their data is accessed, shared, and monetized.*

## *Will the blockchain transform the Internet & the global economy?*

*Make no mistake about it. Blockchain is a highly disruptive technology that promises to change the world as we know it. The technology is not only shifting the way we use the Internet, but it is also revolutionizing the global economy. By enabling the digitization of assets, blockchain is driving a fundamental shift from the Internet of information, where we can instantly view, exchange and communicate information to the Internet of value, where we can instantly exchange assets. A new global economy of immediate value transfer is on its way, where big intermediaries no longer play a major role. An economy where trust is established not by central intermediaries but through consensus and complex computer code Perhaps most profoundly, blockchain promises to democratize & expand the global financial system. Giving people who have limited exposure to the global economy, better access to financial and payment systems and stronger protection against corruption and exploitation*

**- CHETAN NIMBALKAR**

# CLOUD COMPUTING

*Cloud computing has two meanings. The most common refers to running workloads remotely over the internet in a commercial provider's data center, also known as the "public cloud" model. Popular public cloud offerings-such as Amazon Web Services (AWS), Salesforce's CRM system, and Microsoft Azure-all exemplify this familiar notion of cloud computing. Today, most businesses take a multicloud approach, which simply means they use more than one public cloud service.*

*applications to storage from a cloud service provider. One benefit of using cloud computing services is that firms can avoid the upfront cost and complexity of owning and maintaining their own IT infrastructure, and instead simply pay for what they use, when they use it. In turn, providers of cloud computing services can benefit from significant economies of scale by delivering the same services to a wide range of the customers.*

*The second meaning of cloud computing describes how it works: a virtualized pool of resources, from raw compute power to application functionality, available on demand. When customers procure cloud services, the provider fulfills those requests using advanced automation rather than manual provisioning. The key advantage is agility: the ability to apply abstracted compute, storage, and network resources to workloads as needed and tap into an abundance of prebuilt services.*

## *How does cloud computing work?*

*Rather than owning their own computing infrastructure or data centers, companies can rent access to anything from*

## *What cloud computing services are available?*

*Cloud computing services cover a vast range of options now, from the basics of storage, networking, and processing power through to natural language processing and artificial intelligence as well as standard office applications. Pretty much any service that doesn't require you to be physically close to the computer hardware that you are using can now be delivered via the cloud.*

## *What are examples of cloud computing?*

*Cloud computing underpins a vast number of services. That includes consumer services like Gmail or the cloud back-up of the photos on your smartphone, though to the*

*services which allow large enterprises to host all their data and run all of their applications in the cloud. Netflix relies on cloud computing services to run its its video streaming service and its other business systems too, and have a number of other organisations.*

*Cloud computing is becoming the default option for many apps: software vendors are increasingly offering their applications as services over the internet rather than standalone products as they try to switch to a subscription model. However, there is a potential downside to cloud computing, in that it can also introduce new costs and new risks for companies using it.*

## *Cloud computing benefits :*

*The exact benefits will vary according to the type of cloud service being used but, fundamentally, using cloud services means companies not having to buy or maintain their own computing infrastructure.*

*No more buying servers, updating applications or operating systems, or decommissioning and disposing of hardware or software when it is out of date, as it is all taken care of by the supplier. For commodity applications, such as email, it can make sense to switch to a cloud provider, rather than rely on in-house skills. A company that specializes in running and securing these services is likely to have better skills and more experienced staff than a small business could afford to hire, so cloud services may be able to deliver a more secure and efficient service to end users.*

*Using cloud services means companies can move faster on projects and test out concepts without lengthy procurement and big upfront costs, because firms only pay for the resources they consume. This concept of business agility is often mentioned by cloud advocates as a key benefit. The ability to spin up new services without the time and effort associated with traditional IT procurement should mean that is easier to get going with new applications faster. And if a new application turns out to be a wildly popular the elastic nature of the cloud means it is easier to scale it up fast.*

- Prathamesh Khadge

# CRYPTOCODE GENERATOR

## *Automated cryptocode generator is helping secure the web*

***System automatically writes optimized algorithms to encrypt data in Google Chrome browsers and web applications.***

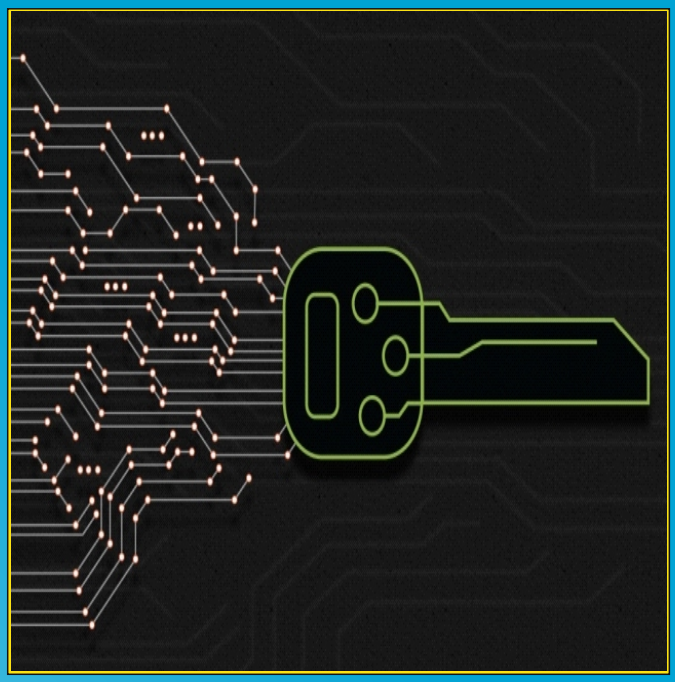
***Nearly every time you open up a secure Google Chrome browser, a new MIT-developed cryptographic system is helping better protect your data.***

***In a paper presented at the recent IEEE Symposium on Security and Privacy, MIT researchers detail a system that, for the first time, automatically generates optimized cryptography code that's usually written by hand. Deployed in early 2018, the system is now being widely used by Google and other tech firms.***

***The paper now demonstrates for other researchers in the field how automated methods can be implemented to prevent human-made errors in generating cryptocode, and how key adjustments to components of the system can help achieve higher performance.***

***To secure online communications, cryptographic protocols run complex mathematical algorithms that do some complex arithmetic on large numbers. Behind the scenes, however, a small group of experts write and rewrite those algorithms by hand. For each algorithm, they must weigh various mathematical techniques and chip-architectures to optimize for performance. When the underlying math or architecture changes, they essentially start over from scratch. Apart from being labor-intensive, this manual process can produce nonoptimal algorithms and often introduces bugs that are later caught and fixed.***

***Researchers from the Computer Science and Artificial Intelligence Laboratory (CSAIL) instead designed "The Fiat Cryptography," a system that automatically generates — and simultaneously verifies — optimized cryptographic algorithms for all hardware platforms. In tests, the researchers found their system can generate algorithms that match performance of the best handwritten code, but much faster.***



***The researchers' automatically generated code has populated Google's BoringSSL, an open-source cryptographic library. Google Chrome, Android apps, and other programs use BoringSSL to generate the various keys and certificates used to encrypt and decrypt data. According to the researchers, about 90 percent of secure Chrome communications currently run their code.***

***"Cryptography is implemented by doing arithmetic on large numbers [Fiat-Cryptography] makes it more straightforward to implement the mathematical algorithms … because we automate the construction of the code and provide proofs that the code is correct," says paper co-author Adam Chlipala, a CSAIL researcher and associate professor of electrical engineering and computer science and the head of the Programming Languages and Verification group. "It's basically like taking a process that ran in human brains and understanding it well enough to write code that mimics that process."***

***Jonathan Protzenko of Microsoft Research, a cryptography expert who was not involved in this research, sees the work as representing a shift in industry thinking.***

*"Fiat Cryptography being used in Boring SSL benefits the whole [cryptographic] community," he says. "[It's] a sign that the times are changing and that large software projects are realizing that the insecure cryptography is a liability, [and shows] that verified software is mature enough to enter the mainstream. It is my hope that more and more established software projects will make the switch to verified cryptography. Perhaps within the next few years, verified software will become usable not just for cryptographic algorithms, but also for other application domains."*

*Joining Chlipala on the paper are: first author Andres Erbsen and co-authors Jade Philipoom and Jason Gross, who are all CSAIL graduate students; as well as Robert Sloan MEng '17.*

## Splitting the bits

*Cryptography protocols uses the mathematical algorithms to generate public and private keys, which are basically a long string of bits. Algorithms use these keys to provide secure communication channels between a browser and a server. One of the most popular efficient and secure families of cryptographic algorithms is called elliptical curve cryptography (ECC). Basically, it generates keys of various sizes for users by choosing numerical points at random along a numbered curved line on a graph.*

*Most chips can't store such large numbers in one place, so they briefly split them into smaller digits that are stored on units called registers. But the number of registers and the amount of storage they provide varies from one chip to another. "You have to split the bits across a bunch of different places, but it turns out that how you split the bits has different performance consequences," Chlipala says. Traditionally, experts writing ECC algorithms manually implement those bit-splitting decisions in their code. In their work, the MIT researchers leveraged those human decisions to automatically generate a library of optimized ECC algorithms for any hardware.*

*Their researchers first explored existing implementations of handwritten ECC algorithms, in the C programming and assembly languages, and transferred those techniques into their code library. This generates a list of best-performing algorithms for each architecture. Then, it uses a compiler that has been proven correct with a proofing tool, called Coq. Basically, all code produced by that compiler will always be mathematically verified. It then simulates each algorithm and selects the best-performing one for each chip architecture. Next, the researchers are working on ways to make their compiler run even faster in searching for optimized algorithm.*

## Optimized compiling

*There's one additional innovation that ensures the system quickly selects the best bit-splitting implementations. The researchers equipped their Coq-based compiler with an optimization technique, called "partial evaluation," which basically precomputes certain variables to speed things up during computation. In the researchers' system, it precomputes all the bit-splitting methods. When matching them to a given chip architecture, it immediately discards all algorithms that just won't work for that architecture. This dramatically reduces the time it takes to search the library. After the system zeroes in on the optimal algorithm, it finalizes the code compiling. From that, the researchers then amassed a library of best ways to split ECC algorithms for a variety of chip architectures. It's now implemented in BoringSSL, so users are mostly drawing from the researchers' code. The library can be automatically updated similarly for new architectures and new types of math.*

*"We've essentially written a library that, once and for all, is correct for every way you can possibly split numbers," Chlipala says. "You can automatically explore the space of possible representations of the large numbers, compile each representation to measure the performance, and take whichever one runs fastest for a given scenario."*

**- SANKET BADJATE**

# Google Vs Fuchsia

## *Google Vs Fuchsia : Is it going to replace Android ?*

*Now a day's we all have mainly Android phones and fewer on the ios iphones.*

*So now let's us talk about the new OS on which recently google has been working on. It is going to be totally different than the android operating system,it is totally designed newly It has been designed C,C++,Dart,Go ,Rust programming languages.It belongs to the os family of "zircon".*

*Everyone might be wondering that why google who owns android is now making a different os!! Well according to the sources the Google has been designing it for smartphones,tablets and for PC 's .And to achieve this they are designing it completely different.Google already has tons of data of their customers to make it more compatible across devices,more optimized and great experience to the costumers.Android is great but Fuchsia seem to be better on paper.*

VS

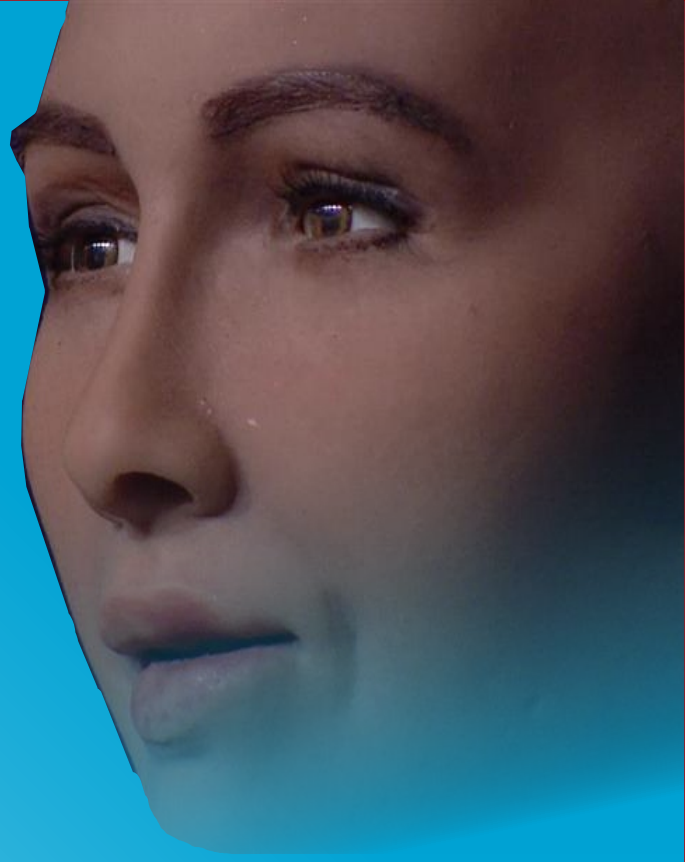
*Fuchsia is having different and more cleaner and more user friendly interface which will improve the user experience and seems to be a magnificent change from the android. The data from the user will be displayed in the form of cards and the os will rely on A.I for various different processes. Top 3 ways Fuchsia can be a better operating system than Android...*

*Is is still in the development process and we can get a sneak peak of it on google where we can see how it's going to look .*

*Now let's talk about the title ,well probably Yes,it is going to replace android slowly .*

- TEJAS NAGMOTI

# HUMANOID ROBOT SOPHIA



*A humanoid robot is a robot with its body shape built to resemble the human body. Humanoid robots are now used as research tools in several scientific areas. Researchers study the human body structure and behaviour to built humanoid robots. On the other side, the attempt to stimulate the human body leads to a better understanding of it. Humanoid robot is an invention which is beneficial to us as it performs various activities and help us. These robots give company to lonely people and help them to overcome their loneliness. These are also useful to handicap people to do their various tasks. Sophia is a social humanoid robot developed by Hong Kong based company Hanson Robotics. Sophia was activated on Feb 14, 2016 and made her first appearance in Austin, Texas, United States. The robot was modelled after actress Andrey Hepburn (British-Dutch Actress) and is known for Human-like appearance and behaviour compared to previous robotic variants.*

*Sophia has been covered by media all over the world and has also participated in many high profile interviews. The robot is able to display more than fifty facial expressions. In October 2017, Sophia became the first robot to receive citizenship of any country. In November 2017, Sophia was named the United Nations Development Programme's first ever Innovation Champion, and is the first non-human to be given any United Nations title.*

*According to David Hanson, the manufacturer of Sophia says the robot uses Artificial Intelligence, Visual Data Processing and Facial Recognition. Sophia's software was designed by Hanson Robotics and is constantly being trained in labs so its conversations are likely to get faster and better. The AI analysis conversations and extracts data that allows it to improve responses in the future. Sophia uses voice recognition i.e. speech-to-text technology from Alphabet Inc. which is specially designed to get smarter over time.*

*Also, the robot is able to answers certain questions and to make simple conversations on predefined topics like a chatbot. The information is shared in a cloud network which allows input and responses to be analysed with blockchain technology. Hanson designed Sophia to be a suitable companion for the elderly at nursing homes or to help crowds at large events or parks. He has said that he hopes that the robot can ultimately interact with other humans sufficiently to gain social skills.*

*Sophia has nine robot humanoid "siblings" who were also created by Hanson Robotics. Fellow Hanson Robots are Alice, Albert Einstein Hubo, BINA48, Han, Jules, Professor Einstein, Philip K. Dick Android, Zeno, and Joey Chaos. Sophia is conceptually similar to the computer program ELIZA which was one of the first attempts at simulating Human conversation. Cameras within Sophia's eyes are combined with computer algorithms which allows it to see. It can follow faces, recognize individuals and sustain eye contact. It has speaking skills and have conversations using natural language sub-system. Around January 2018, Sophia was upgraded with functional legs and ability to walk.*

- RAJLAXMI WAGH

# MACHINE LEARNING

*"Machine learning will automate jobs that most people thought could only be done by people."*

*~Dave Waters*

## *Now the question arises what is machine learning to begin with?*

## *Machine Learning:*

*Field of study that gives computers the ability to learn without being explicitly programmed.*

*~Arthur Samuel(1959)*

*Back in 1950s Samuel wrote a checkers playing program. The amazing thing about the checkers playing program is that Samuel programmed it to play tens of thousands of games against itself.*

*And by watching what are the moves that leads to win and what are the moves that leads to lose, the checkers playing program learned how to play checkers and eventually learned to play better that Arthur Samuel himself. This was a remarkable result. Now the thing was that no human has the capacity to play tens of thousands of games. The program got so much experience that it was able to play better than Arthur Samuel. This is a slightly older and informal definition of machine learning.*

## *A slightly newer definition of machine learning is:*

*A computer program is said to learn from experience ' E ' with respect to some task ' T' and some performance measure ' P ', improves with experience ' E '.*

*~Tom Mitchell(1998)*

*Now in the checkers playing example the experience ' E ' would be the tens of thousands of games the computer played against itself. The task ' T ' would be the task of playing with itself. And measure ' P ' would be probability of wining against someone.*

*Now there are several different types of learning algorithm. The two main classifications are:*

## *Machine Learning algorithms:*

*1. Supervised learning*

*2. Unsupervised learning*

*The idea is that in supervised learning, we are going to teach the computer how to do something. Where as in unsupervised learning, we are going to let the computer learn by itself.*

*There are few other terms like reinforcement learning and recommender system. These are other types of machine learning algorithms.*

*If you are thinking what is machine learning, what is artificial intelligence, what is deep learning and how are these terms related to each other.*

*So to put is in simple manner, think of Artificial intelligence as a super set and machine learning as a sub set of the super set Artificial intelligence. Now in such a manner deep learning is the subset of machine learning.*

## *Applications :*

*1. Virtual Assistants*

*2. Email spam and malware Filtering*

*3. Product Recommendations*

*4. Pattern recognition*

*There are 'n' no. of applications of machine learning.*

- PRASANNA DIXIT

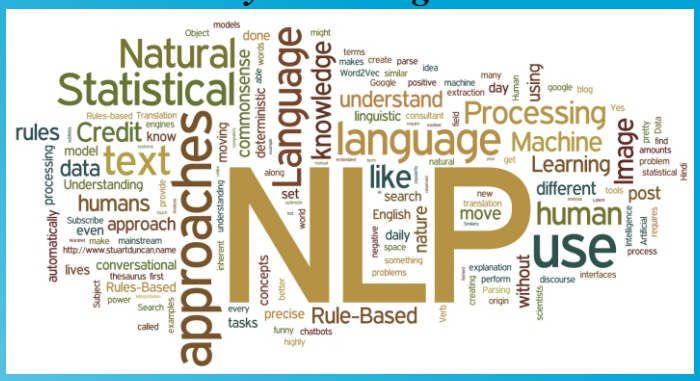
# Natural Language Processing Models

*An experiment was conducted on the application of keywords based human-computer dialogue system with natural language (a so called chatbot). Findings about the dialogues between the users and the computer indicate that the dialogues are mostly very short because the users find the computer are much less intelligent than a human being and the responses from the computer are mostly repeated and irrelevant with the topics and context of the dialogue. A system with much more intelligence in understanding natural language would be more attractive.*

*However, to have the natural conversational interactions with any machine here are still many issues that need to be solved. Obtaining meaning from human natural language is a complex process. The potential range of topics is vast and even well-formed utterances can be syntactically and semantically ambiguous. Spontaneous conversational speech naturally contains grammatical errors, repetitions, disfluences, partial words, and out of vocabulary words. Conducting intelligent conversations over multiple turns requires maintaining the dialogue state over time, dealing with errors that arise from the speech recogniser, determining an adequate dialogue strategy, estimating the quality of that strategy, and generating natural language responses.*

*Attempts to understand natural languages sufficiently well to enable the construction of language processors that can automatically translate, answer questions, write the essays, etc., have had frequent publication in the computer sciences literature .Natural language processing (NLP) is a very important research field in the artificial intelligence. In the past 50 years great progress has been made in this field, as a vast of references have pointed out. First, in 1964 we had ELIZA, the famous chatbot that convinced people it was really a therapist. Then, in 1968 we had SHRDLU, it is a conversational interface to a virtual "blocks world".*

*There is a superficial view of artificial intelligence which focuses on performance, on getting computers to display outward behaviour which is as human-like as possible. Programs like ELIZA encourage this view (though not necessarily as a result of the conscious intention of their creators), as does Alan Turing's key paper on ``Computing Machinery and Intelligence'' (1950), mentioned in the introductory chapter, where he discussed an (as yet) imaginary program which will be able to engage in conversation about any topic in such a convincing fashion that people will be genuinely and consistently unable to tell they are talking to a machine.*




*The Turing Test has played an extremely important part in the history of AI, and many people working in the field have defined what they do ultimately in terms of producing a program which will qualify for the title `genuinely intelligent' by virtue of passing the Turing Test. A good illustration of internal representation in AI is a famous early program called SHRDLU, written by Terry Winograd (Winograd, 1972). This program is quoted in many popular accounts of AI, no doubt because, like ELIZA, it gives a very convincing conversational performance.*

## ELIZA

*J. Weizenbaum programmed ELIZA, a program which makes certain kinds of natural language conversation between man and computer possible. It applied pattern matching rules to the human's statements to figure out its replies. This mechanism is still widely used in the chatbot systems until today. For example, the ALICEBOT used in our former experiment is also such a kind of system. But this mechanism has some inevitable shortcomings, i.e. it grasps only the meanings of the keywords, but not of the whole sentences.*

*The gross procedure of the program is quite simple; the text: is read and inspected for the presence of a keyword. if such a word is found, the sentence is transformed according to a rule associated with the keyword, if not a content-free renmrk or, under certain conditions, an earlier transformation is retrieved. The text so computed or retrieved is then printed. In detail, of course, the procedure sketched above is considerably more complex. Keywords, for example, may have a RANK or precedence number. The procedure is sensitive to such numbers in that it will abandon a key- word already found in the left-to-right scan of the text in favor of one having a higher rank. Also, the procedure recognizes a comma or a period as the delimiter. Whenever either one is encountered and a keyword has already been found, all subsequent text is deleted from the input message. If no key had yet been found the phrase or sentence to the left of the delimiter is deleted. As a result, only single phrases or sentences are ever transform.*

```
==================================================================
          EEEEEEEE  L         IIIIIII  ZZZZZZZ      AAA
          E         L            I          Z      A   A
          E         L            I         Z      A     A
          EEEEE     L            I        Z       A     A
          E         L            I       Z        AAAAAAA
          E         L            I      Z         A     A
          EEEEEEEE  LLLLLLLL  IIIIIII  ZZZZZZ     A     A

==================================================================
ELIZA > (PLEASE TYPE IN ALL CAPS) WHAT'S YOUR NAME DEAR ?
AMIT
ELIZA > HI, I'M ELIZA. WHAT DO YOU WANT TO TALK ABOUT ?
AMIT > CAN I TALK ABOUT MY PROBLEM ?
ELIZA > SURE... !
AMIT > DUE TO ON GOING EXAMS IN COLLEGE, I HAVE A LOT OF STRESS.
ELIZA > PLEASE RELAX A LITTLE. SLEEP WELL.
AMIT > THANKS FOR YOUR ADVICE.
ELIZA > NO MENTION.
AMIT > BYE
ELIZA > BYE AND KEEP IN TOUCH...

==================================================================
```

*It was very hard to convince that ELIZA is not human. With ELIZA as the basic vehicle, experiments maybe set up in which the subjects find it credible to believe that the responses which appear on his typewriter are generated by a human sitting at a similar instrument in another room. A large part of whatever elegance may be credited to ELIZA lies in the fact that it maintains the illusion of understanding with so little machinery. But there are bounds on the extend ability of ELIZA's understanding power. The crucial test of understanding, as every teacher should know, is not the subject's ability to continue a conversation, but to draw valid conclusions from what he is being told. In order for a computer program to be able to do that, it must at least have the capacity to store selected parts of its inputs. ELIZA throws away each of its inputs, except for those few transformed by means of the memory machinery. Of course, the problem is more than one of storage. ELIZA in its use so far has had as one of its principal objectives as the concealment of its lack of understanding. But to encourage its conversational partner to offer inputs from which it can select remedial information, it, must reveal its misunderstanding. A switch of objectives from the concealment to the revelation of misunderstanding is seen as a precondition to making an ELIZA-like program the basis for an effective natural language man machine communication system.*

## *SHRDLU*

*T. Winograd made an important contribute to natural language under-standing in his project SHRDLU. He restricted the program's intellectual world to a simulated "world of toy blocks" so that the program could accept commands and carry out the requested action. It dealt with all aspects of the language: syntax, semantics, inference, and the domain knowledge on the whole. The user instructed SHRDLU to move various objects around in the "blocks world" containing various basic objects: blocks, cones, balls, etc.*

*SHRDLU's world was so simple that the entire set of objects and locations could be described by including as few as perhaps 50 words: nouns like "block" and "cone", verbs like "place on" and "move to", and adjectives like "big" and "blue". The possible combinations of these basic language building blocks were quite simple, and the program was fairly adept at figuring out what the user meant.*

*SHRDLU demo:*

*Person: PICK UP A BIG RED BLOCK.*

*Computer: OK. (does it)*

*Person: GRASP THE PYRAMID.*

*Computer: I DON'T UNDERSTAND WHICH PYRAMID YOU MEAN.*

*Person: FIND A BLOCK WHICH IS TALLER THAN THE ONE YOU ARE HOLDING AND PUT IT INTO THE BOX.*

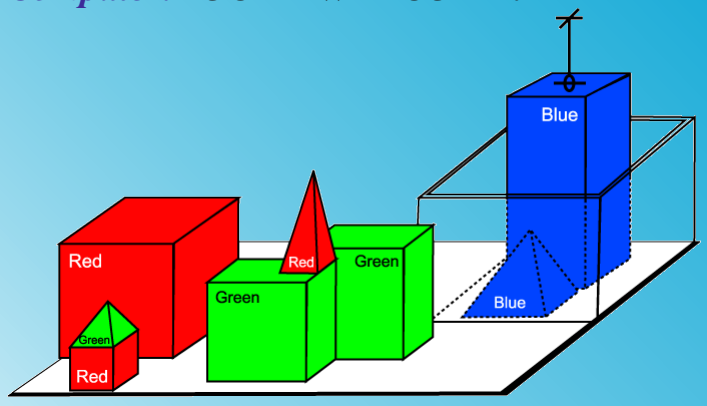
*Computer: BY "IT", I ASSUME YOU MEAN THE BLOCK WHICH IS TALLER THAN THE ONE I AM HOLDING.*

*Computer: OK. (does it)*

*Person: WHAT DOES THE BOX CONTAIN?*

*Computer: THE BLUE PYRAMID AND THE BLUE BLOCK.*

***Person:*** *WHAT IS THE PYRAMID SUPPORTED BY?*
***Computer:*** *THE BOX.*
***Person:*** *HOW MANY BLOCKS ARE NOT IN THE BOX?*
***Computer:*** *FOUR OF THEM.*
***Person:*** *IS AT LEAST ONE OF THEM NARROWER THAN THE ONE WHICH I TOLD YOU TO PICK UP?*
***Computer:*** *YES, THE RED CUBE.*
***Person:*** *IS IT SUPPORTED?*
***Computer:*** *YES, BY THE TABLE.*
***Person:*** *THANK YOU.*
***Computer:*** *YOU'RE WELCOME!*




*SHRDLU also included a basic memory to supply context. One could ask SHRDLU to "put the green cone on the red block" and then "take the cone off"; "the cone" would be taken to mean the green cone one had just talked about. SHRDLU could search back further through the interactions to find the proper context in most cases when additional adjectives were supplied. One could also ask questions about the history, for instance one could ask "did you pick up anything before the cone?" A side effect of this memory, and the original rules SHRDLU was supplied with, is that the program could answer questions about what was possible in the world and what was not. For instance, SHRDLU would deduce that blocks could be stacked by looking for examples, but would realize that triangles couldn't be stacked, after having tried it. The "world" contained basic physics to make blocks fall over, independent of the language parser.*

*Finally, SHRDLU could also remember names given to objects, or arrangements of them. For instance one could say "a steeple is a small triangle on top of a tall rectangle"; SHRDLU could then answer questions about steeples in the blocks world, and build new ones. The SHRDLU was considered as tremendously successful demonstration of AI. This led other AI researchers to excessive optimism which was soon lost when later systems attempted to deal with situations with a more realistic level of ambiguity and complexity. Though not intentionally developed as such, SHRDLU is considered the first known formal example of interactive fiction, as the user interacts with simple commands to move objects around a virtual environment.*

*Systems like this have become revolutionary in natural language processing field.Fast forward to present time and we've systems that are robust. Our parsers use machine learning and are trained on real data. We need to use all this resources, past experiences and knowledge to build better chatting partners than SHRDLU and ELIZA.*

**- KUNTI SANDANSHI**