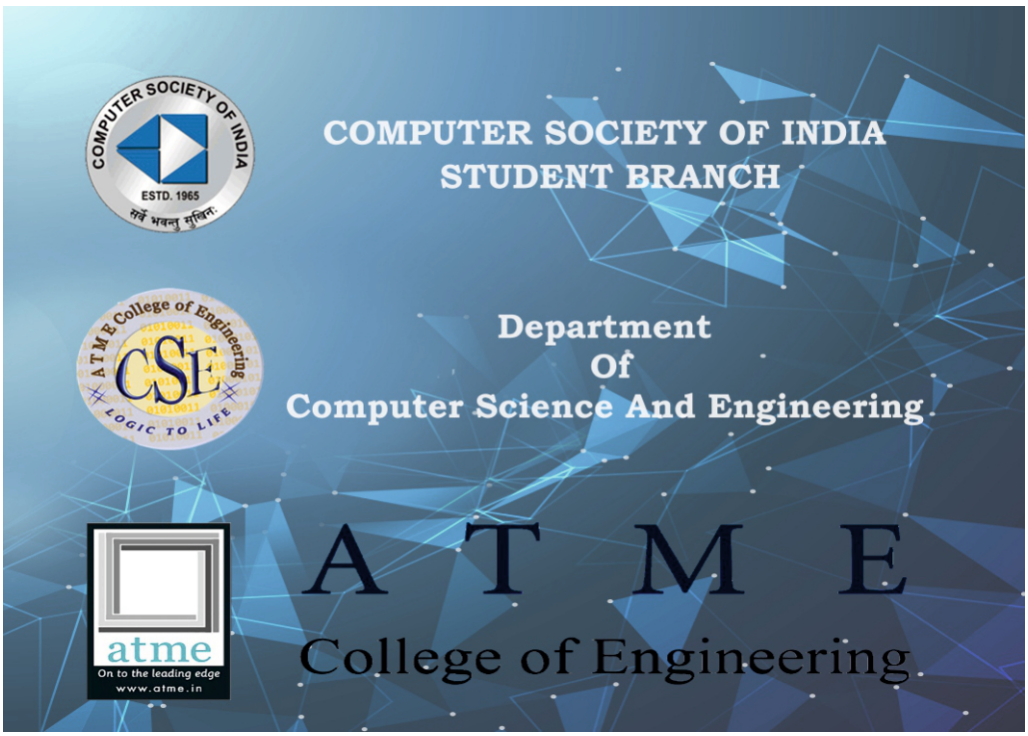
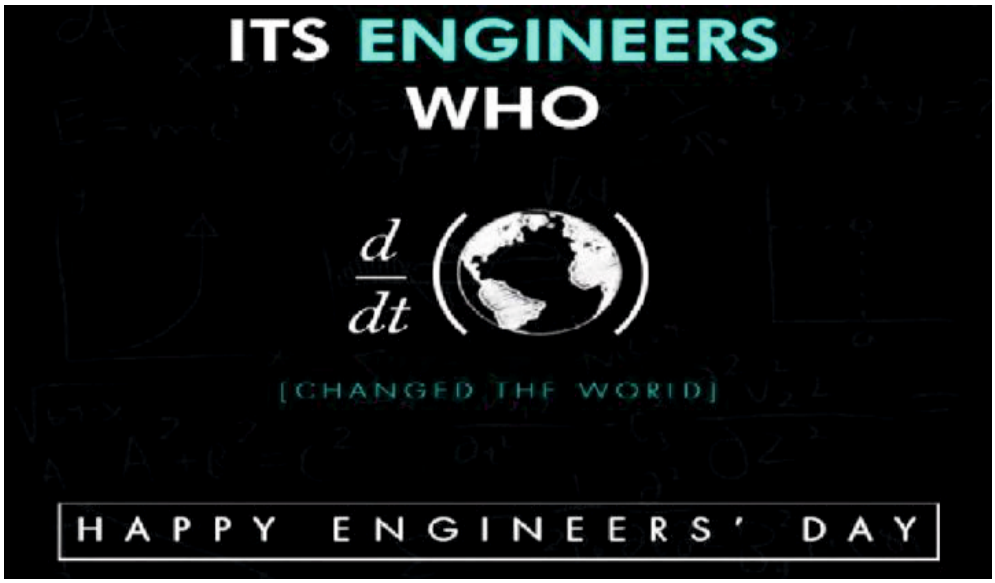



# Tech Bits

## CSI Newsletter

Volume 3
Issue 1
November 17th 2018

In This Issue




*Dedicated to every Engineer*

**Bill Gates**
who is the co-founder of Microsoft

**Jeff Bezos**
entrepreneur and founder of Amazon. com

**Sundar Pichai**
Computer Eng & The current CEO of Google Inc

**Shiva Ayyadurai**
Computer Engg and Inventor of E- MAIL

**Linus Torvalds**
creative genius behind the Linux kernel OS

*Here's to strong Engineers,*

*"We cannot solve our problems with the same thinking we used when we created them." – Albert Einstein*

### CSI Timeline -2018

The Computer Society of India student branch of ATME College of Engineering under the CSI Division-1 had organized technical talk on "Latest trends and technologies, New Age Talents" on Saturday, 6th October 2018. The event was inaugurated in the college Seminar hall by Prof. M S Veerendrakumar Chairman, CSI mysore Chapter, Dr. L Basavaraj Principal ATME, Prof. Puttegowda D

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### Student Articles on trends in current technologies


Find articles on Data Science, Latest trends in AI & Robotics, and Breakthrough in construction of computers submitted by our beloved CSI - SB members.

# Sir M. Vishweshwaraya

## The father of modern Mysore

*"To give real service, you must add something which cannot be bought or measured with money"*

**-Sir M. Vishweshwaraya**

**Sir Mokshagondam Vishweshwarayya, popularly known as Sir MV (15th September 1860 – 12th April 1962)** was an Indian Chief civil engineer, scholar, statesman, politician, and the 19th Diwan (Governor) of Mysore, who served from 1912 to 1919.

Mokshagundam Vishweshvaraya was born on 15 September 1861. His father, Mokshagundam Srinivasa Sastry, was a school teacher and a noted Sanskrit scholar, while his mother, Venkatalakshamma, was a homemaker. Vishweshvaraya was born in Muddenahalli village (now located in Chikkaballapura District, but part of Kolar district at the time of his birth) in the princely state of Mysore (now Karnataka), India.M. Vishweshvaraya, was a man of high principles and discipline. His father was a prominent Sanskrit scholar of his times. His parents were very simple but principled people. Even though the family was not rich, his parents wanted their son to get good education. He completed his primary education from his village school and went to high school in Bangalore.His father died when he was just 15 and the family was plunged into poverty. In order to continue his education Vishweshvaraya started giving tuitions to small children and earned his livelihood this way. He joined the Central College in Bangalore and studied hard. He was a good student in spite of all the hardships in his life and completed his Bachelor of Arts in 1881.He went to the prestigious College of Engineering at Pune after he managed to get some help from the Government.

After his graduation in 1884, he found a job with the Public Works Department (PWD) of Mumbai and joined as an Assistant Engineer. Over the course of this job he served in Nasik, Khandesh and Pune.He then joined the Indian Irrigation Commission and helped to implement a complex system of irrigation in the Deccan area. During this time he was told to devise a method of supplying water from the river Sindhu to a small town called Sukkur.He designed and carried out the waterworks for the Municipality of Sukkur in 1895. He is credited with the development of the Block System which would prevent the wasteful flow of water in dams.His work was becoming so popular that the Government of India sent him to Aden to study water supply and drainage system in 1906-07. He did so and designed a project based on his study which was implemented in Aden.The Visakhapatnam port was in danger of being eroded from the sea. Vishweshvaraya with his high intelligence and capabilities came up with a good solution to solve this issue.

During the decade of the 1900s Hyderabad city was reeling under the threats of flood. Once again the brilliant engineer supervised the engineering work at Hyderabad by lending his services as a Special Consulting Engineer in 1909.

He was appointed as the Chief Engineer of Mysore State in 1909 and as the Diwan of the princely state of Mysore in 1912, a position he held for seven years. As the Diwan, he made immense contribution towards the overall development of the state

He helped in founding of the Government Engineering College at Bangalore in 1917 which was later renamed as the Vishveshwarya College of Engineering in his honour. He served as the chief engineer for the construction of the Krishna Raja Sagara Lake and dam in 1924 across river Kaveri in Mandya district near Mysore in Karnataka.

He is best remembered for the instrumental role he played in the construction of the Krishna Raja Sagara Lake and dam in 1924. This dam not only became the main source of water for irrigation for the nearby areas, but was also the main source of drinking water for several cities

Vishweshvaraya was knighted as the Commander of the Order of the Indian Empire (KCIE) by the British for his contributions to the society in 1915. He was awarded with independent India's greatest honour, The Bharat Ratna in 1955 for his relentless work in the fields of engineering and education. He is the recipient of several honorary doctoral degrees from eight universities in India.

Vishweshvaraya was a man of principles and values. He was a very honest person who gave his best towards his profession and country. He valued cleanliness and was impeccably dressed even when he was well into his 90s. This great Indian engineer lived a long and productive life and died on 14 April 1962 at the ripe old age of 102 years.His alma mater, the College of Engineering, Pune, erected a statue in his honour. The Vishweshvaraya Industrial and Technological Museum, Bangalore is named in his honour.

# CSI Timeline - 2018

### CSI Student Branch Elections 2018

The Election for the posts of vice chairman, secretary and treasurer was held on September 4th 2018. There were about 3 candidates who participated in election for the post of vice chairman, 4 for the post of secretary and 5 for the post of treasurer out of which Mr. Vishnutej K of 5th sem 'B' section was elected as the vice chairman, Ms. Nabeela Akram of 7th sem 'A' section for the post of Secretary and Mr. Paul Crispin of 5th sem 'A' section for the post of Treasurer.

The Election process was conducted successfully and about five student coordinators and one faculty coordinator were involved in polling process . The elected chairpersons were congratulated by Head, Department of CSE, CSI- SB Counsellors and other committee members.

A committee was formed including coordinators who showed interest in election process and were divided into Event organizing committee, Newsletter committee, and Stage organizing committee.

# Technical Talk

## "Latest trends & Technologies, New Age Talents"

The Computer Society of India student branch of ATME College of Engineering under the CSI Division-1 had organized technical talk on "Latest trends and technologies, New Age Talents" on Saturday, 6th October 2018. The event was inaugurated in the college Seminar hall by Principal ,Dr L Basavaraj, Prof. M S Veerendrakumar Chairman of CSI mysore chapter, Prof . Puttegowda D.

Students belonging to III and V semester were invited to attend the technical talk on this day. Mr. Raghavendra Udupa, Delivery Manager, Infosys was the speaker who spoke on "Latest trends & Technologies, New Age Talents".

The Key Points that were discussed by the resource person are:

1. Artificial Intelligence
2. The National Association of Software and Services Companies
3. Big Data in Sports.
4. Internet of Things.
5. Service Virtualization
6. System Components
7. Selenium tool

## Gallery

Principal Addressing the gathering

The HOD Addressing the gathering

Session by Mr. Raghavendra Udupa

Honoring the guest

Coordinators team

# Seven Future Technology Computers

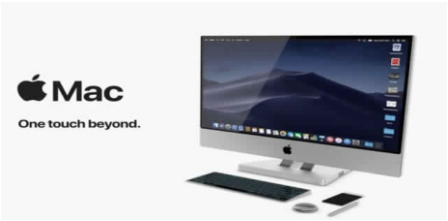
## 1. Gigantic Monitor Philips 499P9H

If you lack the size of your monitor, then Philips especially for you has prepared a novelty called 499P9H. This is also a monitor, which, however, will require you to buy a new large table especially for him. The Philips 499P9H monitor has a 32: 9 aspect ratio, so it's not only elongated, but very elongated, and its diagonal is just 49 inches. In doing so, it holds a high resolution Quad HD + or 5120×1440 pixels, so it can easily replace two conventional Quad HD monitors with 16: 9 aspect ratios. The Philips 499P9H has an infrared camera for personal identification via Windows Hello, and here it does not have to be taped.

## 2. The lightest and thinnest in the world laptop Acer


The company Acer introduced a new generation of the worlds of ultra and the world's thinnest portable computer – Swift 7. Acer Swift 7 is surprisingly light (less than 1 kg), slim (less than 1 cm) and has extremely small frames around the screen, which gives it an incredible 92% ratio between the screen and the hinged lid. In addition, the newcomer is 15% smaller For comparison , the Huawei Mate Book X Pro has a 91 percent screen-to-body ratio that it achieves by hiding a webcam inside its keyboard

## 3. Concept Apple Mac Touch

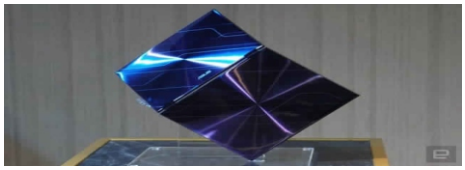



This beautiful of Antonio De Rosa's creation, the Apple mac Touch, which is a productivity-focused All in One Mac computer. The concept Mac supports amazing new I/O devices, including a new generation of Apple's wireless keyboard with a unique touch screen. Called the 'Apple Touch board', it is a new generation, wireless board with a unique touch screen that can act as a touch keyboard or a secondary screen. Touch ID is available on both sides of the keyboard for quick authentication.

## 4. HP Chrome book x2: Tablet with a connectable keyboard

HP has announced a new mobile computer, Chrome book x2, which, as it turned out, does not have any analogues. Unique to him is the fact that he belongs to the family of Chrome books and at the same time has a removable hardware.In other words, HP Chrome book x2 is a transformer based on the Google Chrome OS platform, which itself is built on the same browser and has a number of limitations.

## 5. Concept a laptops near future



Intel, ASUS and Lenovo have presented conceptual computers that demonstrate what laptops can become in the future. Intel showed a two-screen alternative to laptops. Intel worked on a computer with two screens for two years.

## 6. The first laptops on the 6-core Intel Core

The largest manufacturers are proud to demonstrate their gaming laptops equipped with new chips. Among the first were Acer, Gigabyte, Samsung and ASUS. The updated 15.6-inch notebook Acer Nitro 5 has received new processors Core i7 and Core i7 + the eighth generation with architecture Coffee Lake-H. Among other characteristics of the model can be noted: Full HD display, NVIDIA Ge Force GTX 1050 / NVIDIA Ge Force GTX 1050 Ti graphics card, up to 32 GB of RAM, 1 TB hard drive or NVMe PCIe drive up to 512 GB.

## 7. 6-core mobile processor Core i9 8-th generation with Turbo frequency of 4.8 GHz Intel


Intel company announced the release of the mobile processor Core i9, which belongs to the eighth generation of Core chips. It is focused on the use of high-performance gaming laptops and workstations. This is the first Core i9 processor in the line of Intel mobile chips. It is manufactured according to the norms of the improved 14-nanometer technological process (14 nm ++) based on the Coffee Lake architecture.

# CONSTRUCTION OF COMPUTERS MIMICKING HUMAN BRAIN

By

Zoya Akram , 5th sem

A computer built to mimic the brain's neural networks produces similar results to that of the best brain-simulation supercomputer software currently used for neural-signaling research, finds a new study published in the open-access journal Frontiers in Neuroscience. Tested for accuracy, speed and energy efficiency, this custom-built computer named SpiNNaker, has the potential to overcome the speed and power consumption problems of conventional supercomputers. The aim is to advance our knowledge of neural processing in the brain, to include learning and disorders such as epilepsy and Alzheimer's disease.

“SpiNNaker can support detailed biological models of the cortex -- the outer layer of the brain that receives and processes information from the senses -- delivering results very similar to those from an equivalent supercomputer software simulation," says Dr. Sacha van Albada, lead author of this study and leader of the Theoretical Neuroanatomy group at the Julich Research Centre, Germany. "The ability to run large-scale detailed neural networks quickly and at low power consumption will advance robotics research and facilitate studies on learning and brain disorders.”

The human brain is extremely complex, comprising 100 billion interconnected brain cells. However, we know less about the translation of neural activity into behaviour, such as turning thought into


Supercomputer software has helped by simulating the exchange of signals between neurons, but even the best software run on the fastest supercomputers to date can only simulate 1% of the human brain.

"It is presently unclear which computer architecture is best suited to study whole-brain networks efficiently. The European Human Brain Project and Julich Research Centre have performed extensive research to identify the best strategy for this highly complex problem. Today's supercomputers require several minutes to simulate one second of real time, so studies on processes like learning, which take hours and days in real time are currently out of reach." explains Professor Markus Diesmann, co-author, head of the Computational and Systems Neuroscience department at the Julich Research Centre.

He continues, "There is a huge gap between the energy consumption of the brain and today's supercomputers. Neuromorphic (brain-inspired) computing allows us to investigate how close we can get to the energy efficiency of the brain using electronics.”

Developed over the past 15 years and based on the structure and function of the human brain, SpiNNaker -- part of the Neuromorphic Computing Platform of the Human Brain Project -- is a custom-built computer composed of half a million of simple computing elements controlled by its own software. The researchers compared the accuracy, speed and energy efficiency of SpiNNaker with that of NEST -- specialist supercomputer software currently in use for brain neuron-signaling research.

"The simulations run on NEST and SpiNNaker showed very similar results," reports Steve Furber, co-author and Professor of Computer Engineering at the University of Manchester, UK. "This is the first time such a detailed simulation of the cortex has been run on SpiNNaker, or on any neuromorphic platform. SpiNNaker comprises 600 circuit boards incorporating over 500,000 small processors in total. The simulation described in this study used just six boards -- 1% of the total capability of the machine. The findings from our research will improve the software to reduce this to a single board.”

Van Albada shares her future aspirations for SpiNNaker, "We hope for increasingly large real-time simulations with these neuromorphic computing systems. In the Human Brain Project, we already work with neuroroboticists who hope to use them for robotic control."

# LATEST TRENDS IN AI & ROBOTICS

By

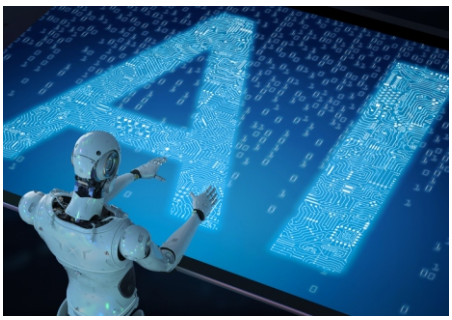
Hameeda Banu, 5th sem

The combination of artificial intelligence (AI) and industrial or collaborative robotics has the potential to change the world. AI unlocks entirely new capabilities for robots, which, without AI, are rigid and unresponsive to the world around them

The potential for disruption in the industrial sector is high. Despite the fact that industrial processes are already highly automated, there are still plenty of ways in which industrial robots can be improved with the addition of AI.

**Types of Industrial and Collaborative Robotic Learning**

A robot's ability to learn is directly related to its overall capabilities. The three main types of robotic learning involve supervised learning, unsupervised learning and reinforcement learning. Each varies in complexity, but the purpose is the same in all three learning methods



Supervised learning is simply pattern recognition – feeding a robot data that it is then supposed to learn whatever pattern is intended by the instructors. Unsupervised learning doesn't involve any specific task , it simply involves feeding a robot massive amounts of data, hoping it will start to understand the world around it. Reinforcement learning involves giving a robot or system a goal and allowing it to learn how to reach that goal.

**3 Trends to Watch in AI & Robotics**

While there are many futuristic scenarios in which you can imagine AI and robotics technology, there are a few present-day applications to keep an eye on. These 3 trends will be major factors in the development of AI and robotics technology.

**Robot Training**: AI is making robots easier to train, which in turn makes them a more viable investment for smaller companies as it reduces the cost of installation, training and ongoing programming. Robots like Baxter and Sawyer from Rethink Robotics can be trained by simply guiding their arms a few times – it learns through demonstration and programs the correct motion itself. The easier it is to teach a robot new things, the more it can learn.

**3D Vision**: Even the simplest tasks a robot performs will depend on 3D machine vision to feed data into AI technology. Grasping an object, for example, without pre-determined locations and motions would be impossible without machine vision capable of reconstructing a 3D image, and AI to translate this visual information into a successful action on the part of the robot.

**Cloud Robotics**: Robotic deep learning using image classification and speech recognition often relies on huge datasets with millions of examples. AI requires more data than can realistically reside on most local systems. In this way, advances in cloud robotics are necessary for the advancement of AI and robotics technologies. Cloud robotics allows intelligence to be shared across all robots in a connected environment

.Robot training, 3D vision and cloud robotics are 3 key trends in the development of AI and robotics technologies, regardless of whether they're used for industrial or collaborative applications.

There are signs all around us indicating that the field of robotics is going through a major transformation. Robots are getting significant coverage in the media. A number of big companies that had little to do with robotics are suddenly on a buying spree to acquire robot companies. Countries that were not on anyone's radar screen just few years ago are now emerging as major players in the robotics arena. Many design and operational constraints associated with robots are being obliterated by, among other things, the use of cloud computing and social media. Costs are falling rapidly, enabling new applications. Even the notion of what was considered a robot is changing fast. All these signs seem to point that robotics is on the verge of something big that can hopefully impact our lives in a positive way.

Researchers are trying to address these issues, in part, by proposing human-robot collaboration in the workplace, or even a tax on robots that replace humans. Some researchers are even mooting the idea of a universal basic income for humans who lose their jobs to robots.

Moreover, there are people who are convinced that countries should advance international deliberations over "lethal autonomous weapons systems", aka fully autonomous weapons or killer robots. The reason is that if autonomous robots keep humans out of the loop, it could lead to indiscriminate killings, on battlefields, since robots cannot take moral decisions.

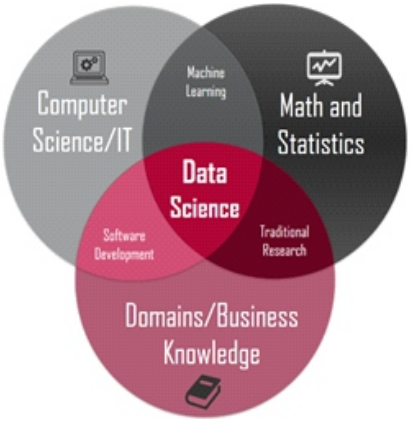
# DATA SCIENCE

By

Akshata Rudragoudar , 5th sem

Data science is an Indisciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from data in various forms, both structured and unstructured, similar to data mining.

Data science combines the power of computer science and applications, modelling, statistics, engineering, economy and analytics. Data Science has grown importance with Big Data and will be used to extract value from the Cloud to business across domains.

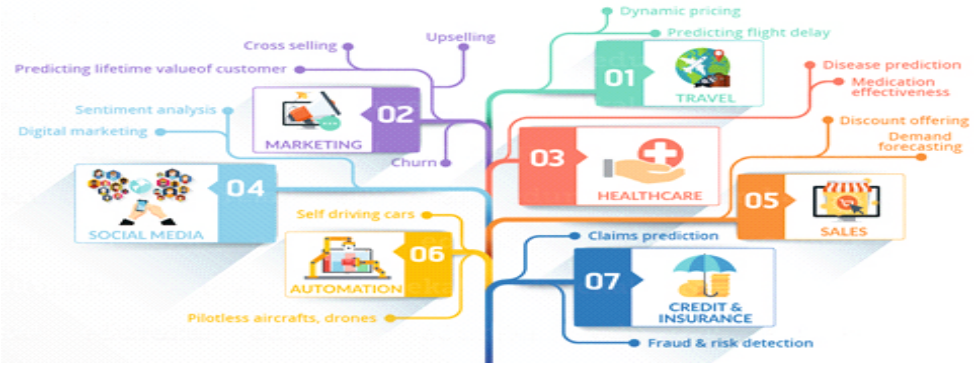



**WHY DO WE NEED DATA SCIENCE?**

Traditionally, the data that we had was mostly structured and small in size, which could be Analyzed by using the simple Business Intelligence (BI) tools. Unlike data in the traditional systems which was mostly structured, today most of the data is unstructured or semi-structured. Let's have a look at the data trends in the image given below which shows that by 2020, more than 80 % of the data will be unstructured.

Simple BI tools are not capable of processing this huge volume and variety of data. This is why we need more complex and advanced analytical tools and algorithms for processing and analysing. This is not the only reason why Data Science has become so popular. Let's dig deeper and see how Data Science is being used in various domains.

The below info graphic shows all the domains where Data Science is creating its impression




Data Science is primarily used to make decisions and predictions making use of predictive causal analytics, prescriptive analytics (predictive plus decision science) and machine learning.

**Predictive causal analytics**- If you want a model which can predict the possibilities of a particular event in the future, you need to apply predictive causal analytics. Say, if you are providing money on credit, then the probability of customers making future credit payments on time is a matter of concern for you. Here, you can build a model which can perform predictive analytics on the payment history .

**Prescriptive analytics-** If you want a model which has the intelligence of taking its own decisions and the ability to modify it with dynamic parameters, you certainly need prescriptive analytics for it. This relatively new field is all about providing advice. In other terms, it not only predicts but suggests a range of prescribed actions The best example for this is Google's self-driving car which I had discussed earlier too. The data gathered by vehicles can be used to train self-driving cars. You can run algorithms on this data to bring intelligence to it. This will enable your car to take decisions like when to turn, which path to take, when to slow down or speed up.

**Machine learning for making predictions** — If you have transactional data of a finance company and need to build a model to determine the future trend, then machine learning algorithms are the best bet. It is called supervised because you already have the data based on which you can train your machines. For example, a fraud detection model can be trained using a historical record of fraudulent purchases.

**Machine learning for pattern discovery** — If you don't have the parameters based on which you can make predictions, then you need to find out the hidden patterns within the dataset to be able to make meaningful predictions. The most common algorithm used for pattern discovery is Clustering. Let's say you are working in a telephone company and you need to establish a network by putting towers in a region. Then, you can use the clustering technique to find those tower locations which will ensure that all the users receive optimum signal strength

**Understanding Predictive and Descriptive Analytics**

A lioness hired a data scientist (fox) to help find her prey. The fox had access to a rich Data Warehouse, which consisted of data about the jungle, its creatures and events happening in the jungle.

On its first day, the fox represented lioness with a report with a report summarizing where all she found her prey in the last six months, which helped lioness decide where to go hunting next. This is an example of Descriptive Analytics.

Next, the fox estimated the probability of finding a given prey at a certain place and time, using advanced Machine Learning (ML) techniques. This is Predictive Analytics. Also, it identified routes in the jungle for the lioness to take to minimize her efforts in finding prey. This is an example of Optimization.

Finally, based on above models, the fox got trenches dug at various points in the jungle so that the prey got caught automatically. This is Automation.

# Gallery