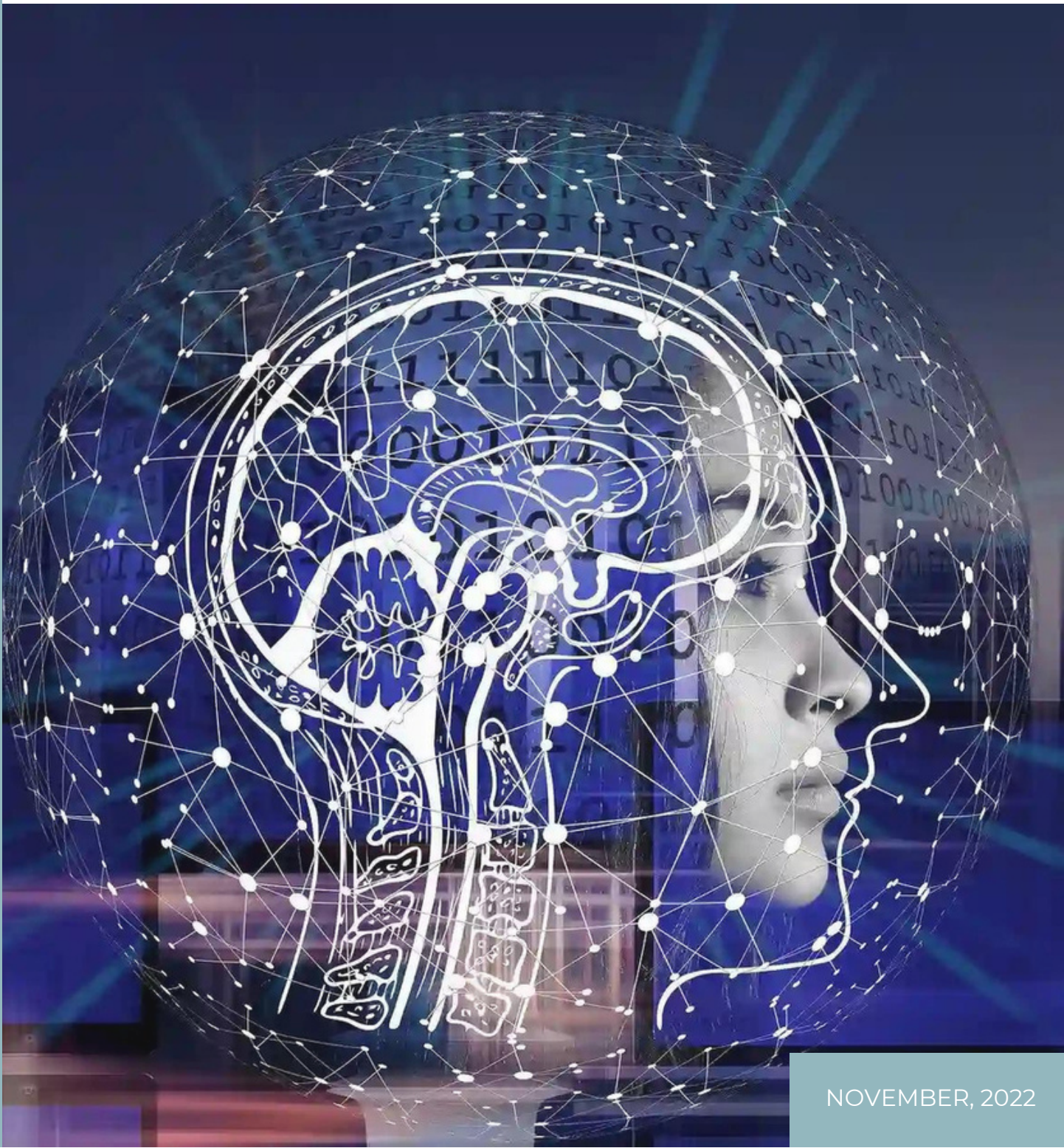DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DIGIFLASH PROUDLY PRESENTS

DIGITIMES

2022 - 23 ISSUE 1

NOVEMBER, 2022

VISION OF THE DEPARTMENT

To develop engineers with global employability, entrepreneurship capability, research focus and social responsibility

MISSION OF THE DEPARTMENT

- To develop internationally competent engineers in dynamic IT field by providing state-of-art academic environment and industry driven curriculum.
- To motivate and guide students to take up higher studies and establish entrepreneurial ventures.
- To enrich the department through committed and technically sound faculty team with research focus in thrust areas.
- To undertake societal problems and provide solutions through technical innovations and projects in association with the industry, society and professional bodies.

Programme Educational Objectives (PEOs)

PEO 1: Domain Expertise - Possess expertise and emerge as key players in IT integrated domains.

PEO 2: Computing Skills and Ethics - Employ computing skills to solve societal and environmental issues in an ethical manner.

PEO 3: Lifelong Learning and Research - Involve in lifelong learning and research to meet the demands of global technology.

Programme Outcomes (POs)

PO1. Engineering Knowledge : Apply the knowledge of mathematics, science, engineering fundamentals and concepts of Computer Science to solve complex engineering problems.

PO2. Problem Analysis : Identify, review literature, formulate and analyse complex engineering problems using first principles of mathematics and engineering sciences.

PO3.Design and Development of Solutions : Design and develop computing solutions for complex engineering problems with societal and environmental awareness.

PO4. Complex problem Investigation : Investigate complex problems by employing research methods to arrive at valid conclusions.

PO5. Modern Tool Usage : Evaluate and use appropriate tools and techniques in engineering activities .

PO6. Societal contribution : Follow professional engineering practice by applying contextual knowledge to assess societal and legal issues.

PO7. Environment and Sustainability : Understand and provide professional engineering solutions taking into consideration environmental and economic sustainability.

PO8. Ethics : Follow ethical principles and norms in engineering practice.

PO9. Individual and Team work : Function effectively as an individual, team member or leader in diversified environments.

PO10. Communication : Communicate effectively through various modes for all engineering activities.

PO11. Project Management and Finance : Apply Engineering knowledge and management principles for effective project management in multi-disciplinary environments.

PO12. Life-long Learning : Engage in independent life-long learning and skill development for professional and social well being.

Programme Specific Outcomes (PSOs)

PSO1. Systems Engineering: Employ software engineering principles in the design and development of efficient systems.

PSO2. Knowledge Engineering: Apply data analytics techniques for solving real world problems.

TABLE OF
CONTENTS

AI-Powered Drone Learns Extreme Acrobatics

Tharun Adhithya S S 20BCS001

Quadrotors are among the most agile and dynamic machines ever created. In the hands of a skilled human pilot, they can do some astonishing series of maneuvers and while autonomous flying robots have been getting better at flying dynamically in real-world environments, they still haven't demonstrated the same level of agility of manually piloted ones.

Now researchers from the Robotics and Perception Group at the University of Zurich and ETH Zurich, in collaboration with Intel, have developed a neural network training method that "enables an autonomous quadrotor to fly extreme acrobatic maneuvers with only onboard sensing and computation.

There are two notable things here: First, the quadrotor can do these extreme acrobatics outdoors without any kind of external camera or motion-tracking system to help it out (all sensing and computing is onboard). Second, all of the AI training is done in simulation, without the need for an additional simulation to-real- world (what researchers call "sim-to real") transfer step. Usually, a sim-to real transfer step means putting the quadrotor into one of the external tracking systems so that it doesn't

completely work itself while trying to reconcile the differences between the simulated world and the real world, To enable "zero-shot" sim- to-real transfer, the neural net training in simulation uses an expert controller that knows exactly what's going on to teach a "student controller" that has much less perfect knowledge. That is, the simulated sensory input that the student ends up using as it learns to follow the expert has been abstracted to present the kind of imperfect, imprecise data it's going to encounter in the real world. This can involve things like abstracting away the image part of the simulation until there is no way of telling the difference between abstracted simulation and abstracted reality, which is what allows the system to make that sim-to-real leap.

The simulation environment that the researchers used was Gazebo, slightly modified to better simulate quadrotor physics. Meanwhile, over in reality, a custom 1.5-kilogram quadrotor with a 4:1 thrust to weight ratio performed the physical experiments, using only a Nvidia Jetson TX2 computing board and an Intel RealSense T265, a dual fisheye camera module optimized for V-SLAM. To challenge the learning system, it was trained to perform three acrobatic maneuvers plus a combo of all of them: All of these maneuvers require high accelerations of upto 3 G's and careful control, and the Matty Flip is particularly challenging, at least for humans, because the whole thing is done while the drone is flying backwards. Still, after just a few hours of training in simulation, the drone was totally real-world competent at these tricks, and could even extrapolate a little bit to perform maneuvers that it was not explicitly trained on, like doing multiple loops in a row. Humans still have the advantage over drones is quickly reacting to novel or unexpected situations.

Narinder Singh Kapany - The creator Fiber optics

The process to transfer information of freely and almost instantaneously was made possible by the pioneering work of Narinder Kapany. Fiber optics have revolutionised the way we communicate, offering high speed data transfers as well as helping in medical procedures such as endoscopy and laser surgeries.

Data Science

Bharathi Vasan M 20BCS057

Data science is an essential part of many industries today, given the massive amounts of data that are produced, and is one of the most debated topics in IT circles. Its popularity has grown over the years, and companies have started implementing data science techniques to grow their business and increase customer satisfaction.

Data science is the domain of study that deals with vast volumes of data using modern tools and techniques to find unseen patterns, derive meaningful information, and make business decisions. Data science uses complex machine learning algorithms to build predictive models. The data used for analysis can come from many different sources and presented in various formats.

The Data Science Lifecycle

Data science's lifecycle consists of five distinct stages, each with its own tasks:

Capture: Data Acquisition, Data Entry, Signal Reception, Data Extraction. This stage involves gathering raw structured and unstructured data.

Maintain: Data Warehousing, Data Cleansing, Data Staging, Data Processing, Data Architecture. This stage covers taking the raw data and putting it in a form that can be used.

Process: Data Mining, Clustering/Classification, Data Modeling, Data Summarization. Data scientists take the prepared data and examine its patterns, ranges, and biases to determine how useful it will be in predictive analysis.

Analyze: Exploratory/Confirmatory, Predictive Analysis, Regression, Text Mining, Qualitative Analysis. Here is the real meat of the lifecycle. This stage involves performing the various analyses on the data.

Communicate: Data Reporting, Data Visualization, Business Intelligence, Decision Making. In this final step, analysts prepare the analyses in easily readable forms such as charts, graphs, and reports.

Data Scientist

Data scientists are among the most recent analytical data professionals who have the technical ability to handle complicated issues as well as the desire to investigate what questions need to be answered. They're a mix of mathematicians, computer scientists, and trend forecasters. They're also in high demand and well-paid because they work in both the business and IT sectors.

On a daily basis, a data scientist may do the following tasks:

- Discover patterns and trends in datasets to get insights.
- Create forecasting algorithms and data models.
- Improve the quality of data or product offerings by utilising machine learning techniques.
- Distribute suggestions to other teams and top management.
- In data analysis, use data tools such as R, SAS, Python, or SQL.
- Top the field of data science innovations.

Uses of Data Science

- Data science may detect patterns in seemingly unstructured or unconnected data, allowing conclusions and predictions to be made.
- Tech businesses that acquire user data can utilise strategies to transform that data into valuable or profitable information.
- Data Science has also made inroads into the transportation industry, such as with driverless cars. It is simple to lower the number of accidents with the use of driverless cars. For example, with driverless cars, training data is supplied to the algorithm, and the data is examined using data Science approaches, such as the speed limit on the highway, busy streets, etc.
- Data Science applications provide a better level of therapeutic customisation through genetics and genomics research.

Building a Smart Door using Alexa

Jeevasudharsan R 20BCS010

Home automation using voice control is one of the leading trends in the Internet of Things era. With more computing power easily available, the feasibility of devices getting connected to the internet is increasing at a rapid pace. With Amazon Alexa, home automation doesn't require multiple applications to control different devices.

As many home devices can be integrated with Amazon Alexa, it can be used to operate most of the devices we use in our daily life which makes home automation more convenient. Traditionally, when a doorbell rings, the user needs to manually check who is at the front door. If the house has multiple entrances, the user has to keep a check on all of them. Especially if there are frequent visitors, this becomes tedious. Depending on the circumstances the user might need to remotely figure out who is at the door and decide whether to provide access or not. While there are smart door applications available in the market today, they are expensive and require additional setup. This article describes the architecture and use-cases of a small project in which a simple and useful Alexa skill can be developed taking advantage of the Alexa Developer console.

The motive of this project is to automate the process of checking the visitor at the door of a house and opening the door only if the visitor can be allowed inside the house using Amazon Alexa instead of manually going to the door and checking who the visitor is.

The house owner will be able to remotely figure out the person who is at the door when a visitor presses the calling bell or by asking "Alexa, who is at the door?". A solution that achieves smart door management using Amazon Alexa and a Raspberry Pi connected to the door can be used. This approach involves training Amazon Alexa by adding custom skills to its capabilities. Amazon allows users to build custom Alexa skills using Alexa Skills Kit packages and these skills can be developed and deployed through Alexa Developer Console. The computational power of Raspberry Pi in conjunction with facial recognition algorithm would be used to efficiently recognize faces and provide updates to the house owner.

If the system does not recognize a face, the house owner can ask Alexa to remember the visitor with a given name and Alexa can train the facial recognition model with the given inputs. House owners can also open or close the door remotely by giving instructions to Alexa.

The project architecture involves both hardware and software components and there is a continuous interaction between hardware and software modules. The hardware components include a Raspberry Pi connected with a small camera, a push-button acting as a doorbell, a piezo sensor to detect any vibrations or movements at the door, and a smart lock to close the door. The computational logic of these hardware components lies in the Raspberry Pi which performs all the actions and interacts with the Alexa skill through a middle tier. Due to the real-time synchronization feature available in the Firebase Realtime Database, it is used as the middle tier between the Raspberry Pi and the Alexa Skill by holding some flag values in the form of key-value pairs. Every Alexa skill requires a backend service endpoint which can be deployed using Amazon's serverless computing service AWS Lambda.

This backend service is built using Alexa's ASK SDKs and contains functions that accept JSON requests based on the intent given by the user and returns the corresponding JSON responses to the Alexa skill which in turn gives out voice responses to the user. When the house owner requests Alexa to check who is at the door, Alexa takes the voice input from the user and maps it to the corresponding skill's intent. The user's request is processed and sent to the corresponding backend function in the form of JSON. The function deployed on AWS Lambda receives the request and updates the flag values in the Firebase Realtime Database and waits for any other updates in the database. A daemon process running in Raspberry Pi continuously listens to the changes in Firebase. When it sees the flag values set in Firebase, it captures an image of the visitor at the door through the camera kit connected to it and uploads the image to the Amazon S3 bucket.

This image is then run through a facial recognition model using any AWS Rekognition which recognizes the face and gives the name of the person. This name is updated in the Firebase database. The Lambda function, which is still waiting for any update, notices this change, reads the value, and processes the output response. Alexa gives out the output as a voice response. This is the flow of control when the request is initiated by the user through Alexa.

When a visitor comes and presses the doorbell or if there is any vibration or movement sensed by the piezo sensor, the Raspberry Pi captures the image at the door and uploads it to the S3 bucket. The image is run through a facial recognition model and the result is notified to the user by calling Alexa's notification APIs by using the Proactive Events feature. This allows the house owners to get notifications on their Alexa devices. The intention of this project is to develop a solution that can take advantage of the higher computing power available today to build a custom product that can work both as a surveillance and personal assistant easing the job of door keeping. The entire solution being voice-controlled, it is easy for the users to operate and also allows them to operate remotely using Alexa mobile app. Further research is being held to deploy this project on a large scale. This project is an implementation of a simple idea utilizing the Alexa developer console.

DID YOU KNOW?
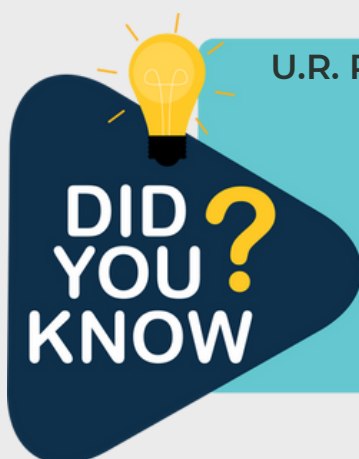
U.R. Rao - The man behind India's space reasearch

The first satellite launched by India Aryabhatta, the name given to the satellite, was an indigenously designed space-worthy satellite that set up tracking and transmitting systems in the orbital sphere. U.R. Rao, the chairman of ISRO at the time was the man behind the launch in 1975 that put India on the world map in terms of space research.

R programming

Sanjay Shankar A J 20BCS016

R programming language is an implementation of the S programming language. R is an open-source software that is free to download and is available under the GNU General Public License. Ross Ihaka and Robert Gentleman initially designed R at the University of Auckland. It has an active community and is compatible across all platforms, such as Linux, Windows, and Mac.

Features of R

R offers various statistical and graphical techniques. It has an extensive library of packages that makes it easy to implement machine learning algorithms. It can be easily integrated with popular software, like Tableau, and Microsoft SQL Server.

R is not just a programming language; it has a worldwide repository system called CRAN (Comprehensive R Archive Network). Users can access it at https://cran.r-project.org/.

It also has a collection of all critical updates, R sources, R binaries, R packages, and other documentation. CRAN hosts around 10,000 packages of R.

The different data structures available in the R programming language include:

Vectors: It is the most basic R object, which has atomic values.

Matrices: These are R objects in which the elements are arranged in a two-dimensional layout. They also contain elements of the same types.

Arrays: They can store data in more than two dimensions. Suppose we create an array of dimensions (two, three, four) then it creates four rectangular matrices, each with two rows and three columns.

Data Frames: A data frame is a table in which each column contains values of one variable, and each row contains one set of values from each column.

Lists: A list contains elements of different types (numbers, strings, vectors, etc.) It can also include a matrix or a function as its elements. The list is created using the list() function.

R Programming

Data Visualization in R

R has powerful graphics packages that help in data visualization. These graphics can be viewed on the screen, and saved in various formats, including .pdf, .png, .jpg, .wmf and .ps. It can be customized according to various graphic needs and enables you to copy and paste in Word or PowerPoint files. Users can create a bar chart, pie chart, histogram, kernel density plot, line chart, boxplot, heat map, and word cloud. Boxplots are also known as whisker diagrams.
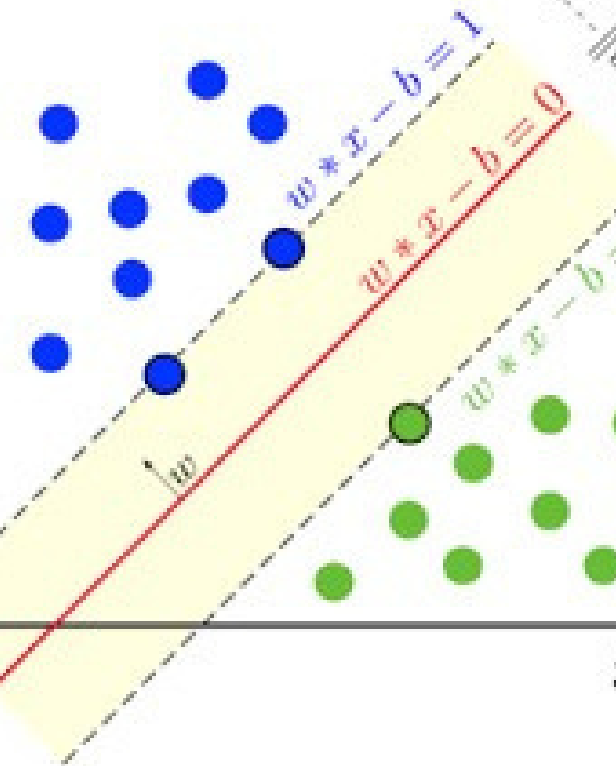
They will display the distribution of data based on the following parameters:

- Minimum
- First quartile
- Median
- Third quartile
- Maximum

Support Vector Machine

Mohammad Faisal J 727621BCS009

One of the most cutting-edge researches in artificial intelligence that best represent intelligent features is machine learning. Different from the traditional statistics based on the gradual theory, the data-based statistical learning simulates the ability of humans to learn and generalize from practice. It mainly studies the methods from the observation data that cannot be obtained through the principle analysis, and will get the law applied to the analysis of objective phenomena, predicting and judging unknown data or new data that cannot be observed.

In the 1990s, Russian mathematician Vapnik proposed the concept of Support Vector Machines (SVM): Support Vector Machines is based on statistical learning theory, and structural risk minimization principle to establish a data model, to solve Statistical pattern recognition in the case of limited data samples. Compared with traditional machine learning methods, this method has many advantages such as simple structure, good adaptability, global optimization, fast training speed and strong generalization ability.

Support Vector Machine is a data-based machine learning method developed according to statistical learning theory, which is based on the principle of structural risk minimization. The support vector machine can maximize the promotion ability of the learning machine.

Even if the collected discriminant function is based on limited data, the prediction error of the independent test set can still be small. In addition, the support vector machine is a convex quadratic optimization problem, which can guarantee that the obtained extremum solution is a global optimal solution. These two characteristics make the support vector machine an excellent machine learning algorithm. Support vector machine is the latest and most practical part of statistical theory. Its main content was basically completed in 1992-1995, and it was still in the stage of continuous development. It can be said that the statistical learning theory has received more and more attention since the 1990s, largely because of the development of support vector machines. The success of SVM includes two key technologies.
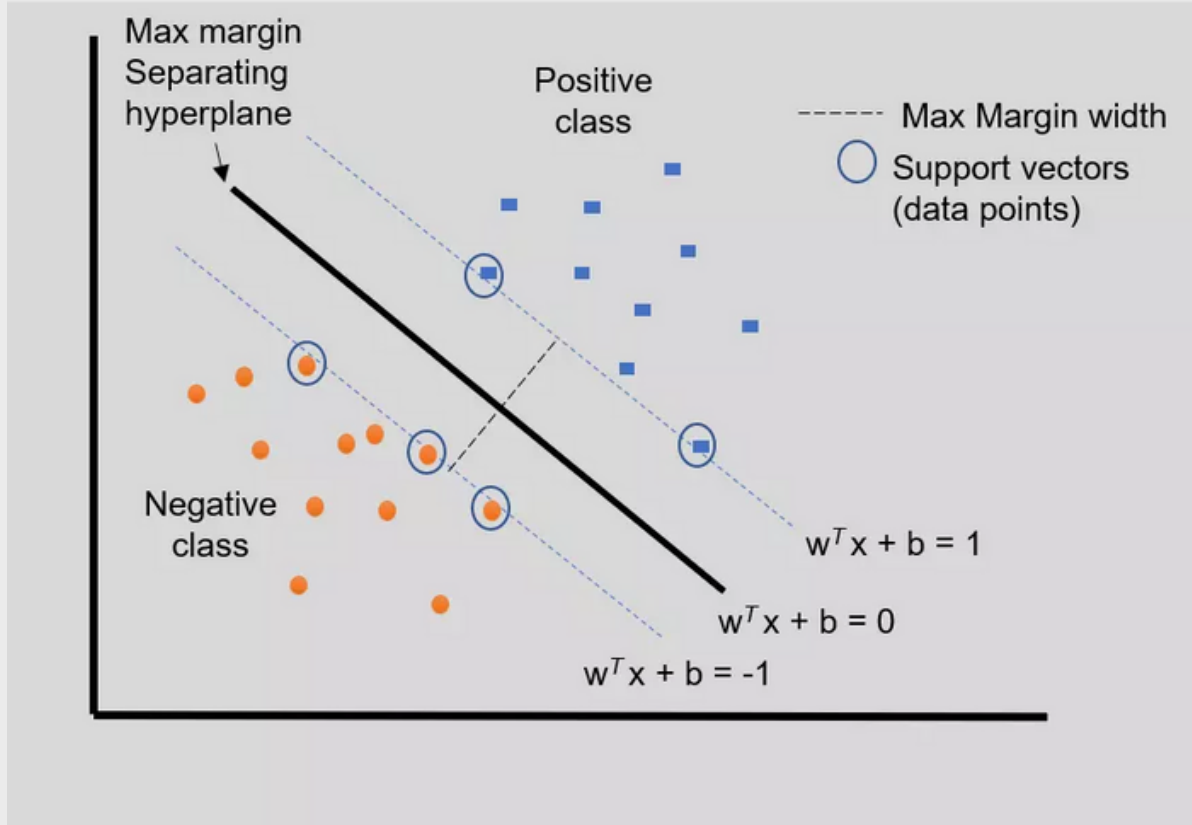
On the one hand, it solves the problem of data classification, and uses the support vector machine to obtain the most classified surface, so that the most classified surface has the most interval. On the other hand, to solve the regression problem, the kernel function method of support vector machine is used to obtain the linear learning algorithm which can replace the nonlinear transformation.

The advantages of support vector machines are:

- Effective in high dimensional spaces.
- Still effective in cases where number of dimensions is greater than the number of samples.
- Uses a subset of training points in the decision function (called support vectors), so it is also memory efficient.
- Versatile: different Kernel functions can be specified for the decision function. Common kernels are provided, but it is also possible to specify custom kernels.

The disadvantages of support vector machines include:

- If the number of features is much greater than the number of samples, avoiding over-fitting in choosing Kernel functions and regularization term is crucial.
- SVMs do not directly provide probability estimates, these are calculated using an expensive five-fold cross-validation.
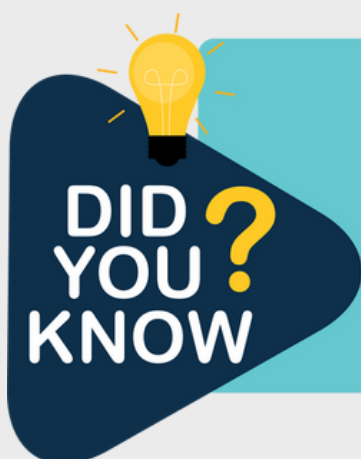
Dr. Homi Jehangir Bhabha

Dr. Homi Jehangir Bhabha - The father of the Indian Nuclear Research Programme India achieved nuclear capability thanks to the efforts of Homi, thereby avoiding certain conflict simply through non aggression treaties. This also made us one of the few nations to have atomic power as a source of energy as well as a way to weaponise.

Decision Intelligence(DI)

Ashwin M 727622BCS309

Decision Intelligence(DI) is the new technology that helps to create an application of Machine Learning and automation to augment human decision-making by linking data with decisions and outcomes. DI evaluates decision outcomes and optimizes in continuous manner. In 2018 Google had launched their own decision intelligence department. Gartner analysts mentioned Decision Intelligence will be a Top most Technology Trend for 2022.

Decision Intelligence helps users make better, faster, insights-driven decisions at cloud scale with continuous improvement. Decision Intelligence acts as a bridge between Business Intelligence and Artificial Intelligence Decision Intelligence is useful for business users, analysts, and data experts.

Enabling business decision making

There are three levels at which DI can support business decisions — a bit like the increasing levels of autonomy in assisted driving. The first level is decision support, in which machines provide some basic tools to support human decision making, such as alerts, analytics and data exploration. The decisions themselves are made entirely by humans. The second level is decision augmentation, in which machines play a larger and more proactive role in the decision process. They analyze the data and generate recommendations and predictions for human decision-makers to review and validate.

For example, they could make a recommendation like, "You should buy 200 products from vendor A before March 30; this will enable you to save $20,000." Humans can make decisions based on the machine's suggestions by simply accepting the recommendation, or they can work cooperatively with the machine to amend the recommendation. The third level is decision automation, which further reduces the human involvement needed in the decision process. At this level, machines perform both the decision step and the execution step autonomously. For the first step, they make autonomous decisions, using a combination of tools such as rules, optimizations and AI-based predictions. For the second step, they automatically implement those decisions without human involvement. Instead, humans have a high-level overview, monitoring the risks and any unusual activity and regularly reviewing outcomes to improve the system.

Fog Computing

Karthick P S 727622BCS306

Decision Intelligence(DI) is the new technology that helps to create an application of Machine Learning and automation to augment human decision-making by linking data with decisions and outcomes. DI evaluates decision outcomes and optimizes in continuous manner. In 2018 Google had launched their own decision intelligence department. Gartner analysts mentioned Decision Intelligence will be a Top most Technology Trend for 2022.

Fog computing is the computing, storage, and communication architecture that employs EDGE devices to perform a significant portion of computation, storage, and communication locally before routing it over the Internet backbone.

Fog computing is a type of distributed computing that connects a cloud to a number of "peripheral" devices. (The term "fog" refers to the edge or perimeter of a cloud.) Rather than sending all of this data to cloud-based servers to be processed, many of these devices will create large amounts of raw data (for example, via sensors).

The goal of fog computing is to conduct as much processing as possible using computing units that are co-located with data-generating devices so that processed data rather than raw data is sent and bandwidth needs are decreased.

Another advantage of processing locally rather than remotely is that the processed data is more needed by the same devices that created the data, and the latency between input and response is minimized.

Application of Fog Computing

- It is utilized when only a small amount of data has to be sent to the cloud. This data is chosen for long-term storage and is accessed by the host less frequently.
- It is utilized when a large number of services must be delivered over a broad region and at various places
- Fog computing is required for devices that are subjected to demanding calculations and processing.
- Fog computing is utilized in IoT devices (for example, the Car-to-Car Consortium in Europe), Devices with Sensors and Cameras (IIoT Industrial Internet of Things), and other applications.
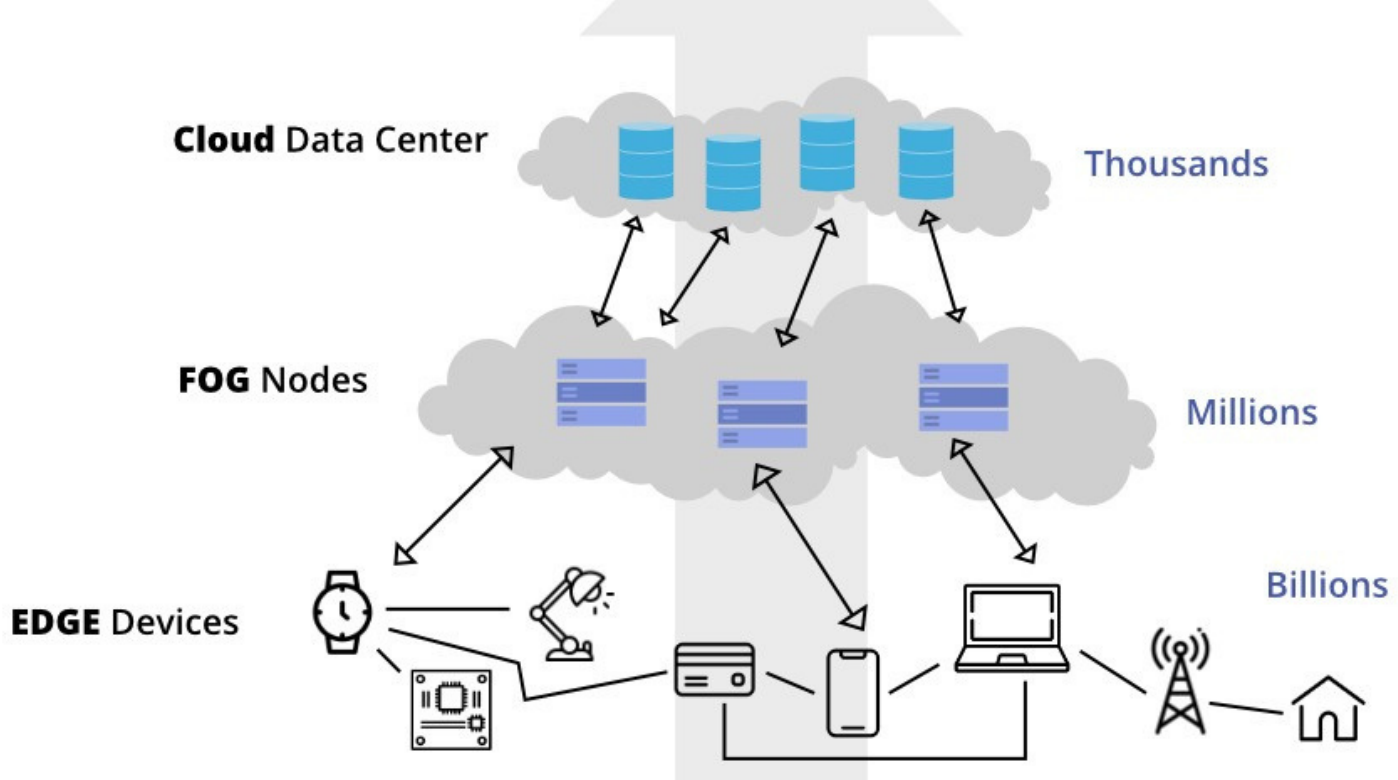
Advantages of Fog Computing

- The quantity of data that has to be transmitted to the cloud is reduced using this method.
- Because the distance that data has to travel is decreased, network bandwidth is saved.
- Reduces the system's reaction time.
- Because the data is kept near to the host, it increases the system's overall security.

Disadvantages of Fog Computing

- Increased traffic may cause congestion between the host and the fog node (heavy data flow).
- When a layer is added between the host and the cloud, power usage rises.
- It is challenging to coordinate duties between the host and fog nodes, as well as the fog nodes and the cloud.
- Data management becomes laborious because, in addition to storing and computing data, data transfer requires encryption and decryption, which releases data.

Dr. A. Sivathanu Pillai - Oversaw the creation of Indigenously developed missile systems. India's self sustaining missile developing programme is called BrahMOS. Dr. Pillai developed the concept of the joint venture BrahMOS, which makes India one of the few countries to develop it's own ballistic missiles as well as produce and supply missiles in other key areas of the world. The onset of BrahMOS led to the negation of the absolute power held by Western countries.

Pen Computing

Ragul J 727621BCS008

Decision Intelligence(DI) is the new technology that helps to create an application of Machine Learning and automation to augment human decision-making by linking data with decisions and outcomes. DI evaluates decision outcomes and optimizes in continuous manner. In 2018 Google had launched their own decision intelligence department. Gartner analysts mentioned Decision Intelligence will be a Top most Technology Trend for 2022.

And now, we find a lot of changes with the size of the computing devices. Computing devices had reduced from the room to palm. Portability of computing machine has become easier than the transportation of human beings. Continuous research on the nanotechnology and semi conductors are the biggest reason for such massive change. Computers have changed from room size to hand size, then to palm and pocket size.

One of the most recent pocket size, invention with the base of nanotechnology is Pen Computing. Using of "Pen" for computation purpose is the main goal of pen computing. In 'Pen Computing' uses 5 Pens as the medium of computing. It is also called as 5 Pen Technology or P-ISM. 5 pens which are involved in the process of computing, will have different functionalities and connect as one to form the computing device.

Components

Major components which are required for the computational purpose are served using 5 pens. Each and every pen acts as a smart device and functions as a part of the computer.

5 Major pens associated with '5 Pen Technology' are –

- CPU Pen
- Communication Pen
- LED Projector Pen
- Virtual Keyboard Pen
- Digital Camera Pen

CPU Pen

CPU pen is the core component of the 5 pen technology, which acts the 'Central Processing Unit' of a normal computer. Nano-sized Processor, temporary memory, permanent memory have been embedded within the CPU pen. These devices are connected using a single bus. And there will be no deviation in the basic functioning of these devices, except the performance.

It cannot process too many instructions at a single instance. Executing too many instructions may heat and hang the device. CPU Pen uses 'Dual-core processor' to process the instructions and it works on the Windows operating system. Due to the compatibility issue and security issue, people always prefer using Linux operating system for nanodevices than windows operating system. Probably this is the only Nano device which uses Windows operating system in it. Increasing the processing speed and memory space are the major challenge with CPU Pen.

Communication Pen

Each and every pen acts as an individual device. There should be a medium to connect all the pens as one. Communication pen does that process. It connects each and every pen using the wireless technologies such as Blue tooth, Cellular Network, and Radio Signals. The cellular network is generally used to connect the devices to the Internet. Blue tooth and Radio Waves are used to connect the pens internally to make it as single device.

LED Projector Pen

A 'display' 'Visual' output device is require to check the result of the execution. And it is not necessary that we need to have a monitor all the time to display the output. The projector can also be used for the process of displaying. Using projector will give the freedom of displaying the output, wherever one we wants. The concept of the projector has been incorporated and embedded with a pen to display the out. Although the size of the projector is A4 sized, It can provide a clear and good display. Display of this pen is approximately equal to the 1024 X 768 screen resolution.

Virtual Keyboard Pen

Virtual Laser Keyboard has been incorporated inside a pen, to project conventional QWERTY keyboard by emitting the laser beam. Input given via the virtual keyboard will transmit via the same laser beam to the pen which projects the laser beam. As like LED Projector, Virtual Keyboard can be established wherever it is required. Even though the radiation of laser beam is very negligible, One needs to be very careful while using it. The laser beam should not be allowed to pass through the human body to avoid the unnecessary effects.

Digital Camera Pen

Even though the camera is not 'that' required for the basic computational purpose, it cannot be neglected and ignored in the current communication age. Camera pen is one of the popular device, which has been included in this technology.Digital camera pen is connected to the other devices (pens) using the blue tooth technology. Having a digital camera pen will increase the efficiency of the portability and computation

Battery

The nano-sized battery has been incorporated within the pens. These batteries act as the source of power for each and every pen. Although the size of the battery is very small, the lifetime and performance of the battery is good. Since the pens don't have any component which consumes more power, the charge of the batteries will last more than the other batteries.

pen computing
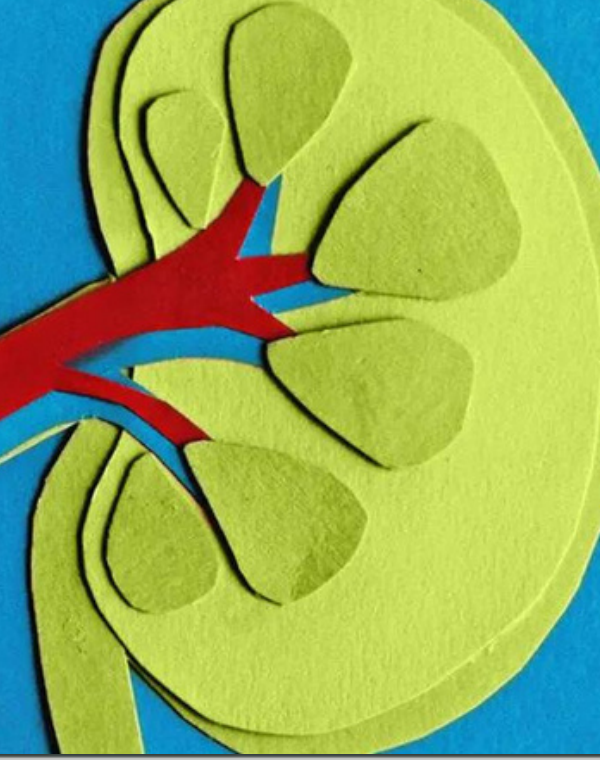
Early Detection of Chronic Kidney Disease Using Machine Learning

Santhosh Kumar R A 727619BCS104
Nishanth Bhoopathy R M 727619BCS052
Nimalan S   727619BCS010

Chronic kidney disease, also called chronic kidney failure, involves a gradual loss of kidney function. Advanced chronic kidney disease can cause dangerous levels of fluid, electrolytes and wastes to build up in the body. Chronic Kidney Disease is one of the most critical illness nowadays and proper diagnosis is required as soon as possible. Machine learning technique has become reliable for medical treatment. So using this machine learning algorithms and strategies it can be detected whether the person has a chronic kidney disease or not.

The purpose of early detection is to prevent the progression of chronic kidney disease and its associated complications, with subsequent improvements in patient outcomes and reductions in the impact of chronic kidney disease on healthcare resources.

End-stage kidney disease (ESKD) is the last stage of long-term (chronic) kidney disease. This is when the kidneys can no longer support the body's needs. Kidney disease also increases the risk of having heart and blood vessel disease. These problems may happen slowly over a long time. Early detection and treatment can often keep chronic kidney disease from getting worse. When kidney disease progresses, it may eventually lead to kidney failure, which requires dialysis or a kidney transplant to maintain life.

Earlier CKD detection could improve patient outcomes and delay the need for dialysis . Potentially reducing the cost. This is made possible by this application. This application aims at saving people from the severe symptoms of CKD by detecting CKD at earlier stages.

Chronic kidney disease affects 8% to 16% of the population worldwide and is a leading cause of death. Optimal management of CKD includes cardiovascular risk reduction, treatment of albuminuria, avoidance of potential nephrotoxins, and adjustments to drug dosing. Patients also require monitoring for complications of CKD, such as hyperkalemia, metabolic acidosis, anemia, and other metabolic abnormalities.

Diagnosis, staging, and appropriate referral of CKD by primary care clinicians are important in reducing the burden of CKD worldwide. The application helps in easy detection of the disease which is of high accuracy and prediction which helps a user to detect the disease. This application is user friendly to, the user can make use of this application to detect the disease easily from their home.
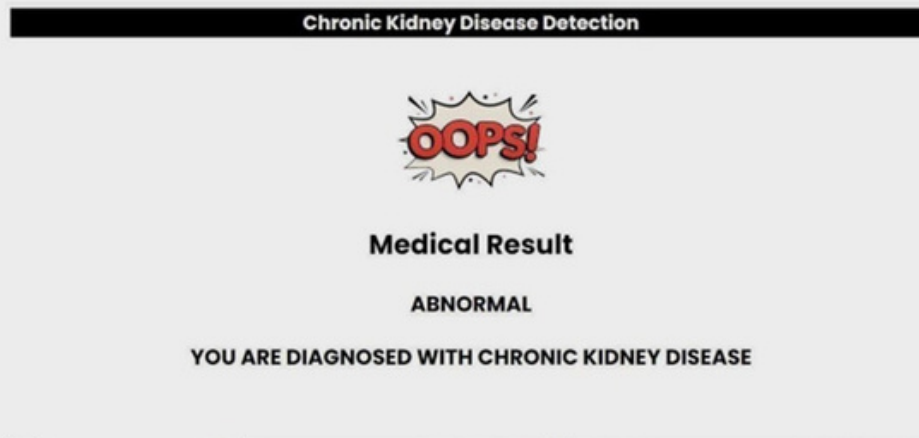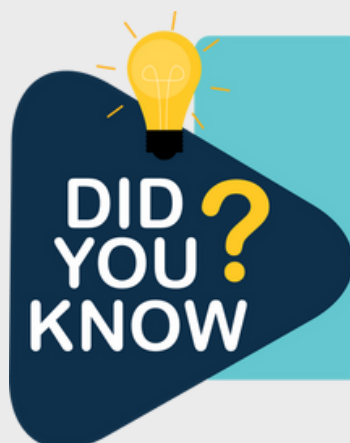

Fig: Chronic Kidney Disease Prediction

Fig: Chronic Kidney Disease Prediction – Normal Stage

When people develop chronic kidney disease (CKD), their kidneys become damaged and over time may not clean the blood as well as healthy kidneys. If kidneys do not work well, toxic waste and extra fluid accumulate in the body and may lead to high blood pressure, heart disease, stroke, and early death.

Riddles

1) I can write without a pen, without the number 10, what am I?

2) I have a tail and two flat ears. I move with no feet.

3) 38 years old, but only turned 11.

4) What do you get if you stuff your computer's disk drive with herbs?

5) What do you call a computer hero?

6) From which company Steve Jobs took the idea for the graphical user interface with a mouse

7) Who perpetrated the "biggest military computer hack of all time" in 2002?

8) What was the first computer virus in the DOS system?

9) By who and in which year was the India's first supercomputer bought?

10) What is the fastest speed that NASA has achieved in terms of internet speed?

ANSWERS

1.Keyboard	6.Xerox
2.Mouse	7.Gary McKinnon
3.Windows	8.Brain virus
4.A thyme machine	9.1970, Asian Paints
5.A screen saver	10. 91 Gigabits per second

https://www.forbes.com/sites/forbestechcouncil/2022/05/25/is-decision-intelligence-the-new-ai/?sh=37578ed34e42

https://www.tellius.com/decision-intelligence-what-it-is-and-why-it-matters/

ABOUT DIGITIMES

DigiFlash is the student association of Computer Science and Engineering Department, MCET, Pollachi. The objective of our association is to innovate, create and sharpen the minds of the students to compete globally. It is a platform to improve the student's knowledge and also create opportunities to interact with leading industry persons. Digiflash is organizing number of Co-Curricular activities including special lectures by Experts, Workshops, Technical Seminars, Coding Events, Paper & Poster Presentations and Webinars. Digitimes is a part of Digiflash. A magazine that features the latest Technological advancements in the field of Computing.

EDITORIAL TEAM:

Mohammed Ashraf A	727620BCS051
Maha Dhanush A	727620BCS093
Arul Praveena B	727620BCS043
Guruharish S	727620BCS076
Bharathi Vasan M	727620BCS057
Umesh Krishnan G	727620BCS095
Sri Dhanvarsh S	727621BCS315
Abdul Basith S	727620BCS042
Ashwin Karthik S	727621BCS312
Ragul J	727621BCS008
Dhiyanesh G	727621BCS060
Vivitha Shree B	727621BCS082
Mohamed Abith M	727621BCS065
Aswath S	727621BCS027

CHIEF EDITORS:

Dr.G.Anupriya, Professor/CSE
Mr.K.Prabhu, Assistant Professor/CSE

Send your articles for the forthcoming issue either by E-Mail to
prabhu@drmcet.ac.in or Submit a hard copy to Mr.K.Prabhu, AP/CSE