Dr. MAHALINGAM COLLEGE OF ENGINEERING AND TECHNOLOGY
An Autonomous Institution
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Udumalai Road, Pollachi - 642 003. Tamilnadu.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DIGIFLASH PROUDLY PRESENTS

DIGITIMES

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Dr. MAHALINGAM

MCET

COLLEGE OF ENGINEERING AND TECHNOLOGY

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.

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STUDENT PROJECTS

DATA SCIENCE

Mythili N
17BCS097

Data science is a multidisciplinary blend of data inference, algorithm development, and technology to solve analytically complex problems. At the core is data. Troves of raw information, streaming in and stored in enterprise data warehouses. There is much to learn by mining it. Data science is ultimately about using this data in creative ways to generate business value. This aspect of data science is all about uncovering findings from data. Diving in at a granular level to mine and understand complex behaviors, trends, and inferences. It's about surfacing hidden insight that can help enable companies to make smarter business decisions.

For example

- Netflix data mines movie viewing patterns to understand what drives user interest, and uses that to make decisions on which Netflix original series to produce.
- Target identifies what are major customer segments within its base and the unique shopping behaviors within those segments, which helps to guide messaging to different market audiences.
- Proctor & Gamble utilizes time series models to more clearly understand future demand, which helps plan for production levels more optimally. How do data scientists mine out insights? It starts with data exploration.

99% of organizations are actively investing in data transformation initiatives

.

5G -5th GENERATION MOBILE NETWORK

Sibi M
18BCS075

5G is a new kind of network: a platform for innovations that will not only enhance today's mobile broadband services, but will also expand mobile networks to support a vast diversity of devices and services and connect new industries with improved performance, efficiency, and cost. 5G will redefine a broad range of industries with connected services from retail to education, transportation to entertainment, and everything in between. The technology can be as transformative as automobiles and electricity. In general, 5G use cases can be broadly categorized into three main types of connected services:

Enhanced Mobile Broadband

5G will not only make our smartphones better, but it will also usher in new immersive experiences, such as VR and AR, with faster, more uniform data rates, lower latency, and cost-per-bit.

Mission-Critical communications

5G will enable new services that can transform industries with ultra-reliable/available, low latency links such as remote control of critical infrastructure, vehicles, and medical procedures.

Massive Internet of Things

5G will seamlessly connect a massive number of embedded sensors in virtually everything through the ability to scale down in data rates, power and mobility to provide extremely lean/low-cost solutions.

A defining capability of 5G is also the design for forwarding compatibility and the ability to flexibly support future services that are unknown today.

Per IMT-2020 requirements, 5G is expected to deliver peak data rates up to 20 Gbps. Qualcomm Technologies first 5G NR modem, the Qualcomm Snapdragon™ X50 5G modem, is designed to achieve up to 5 Gbps in a downlink peak data rate. The new 5G NR air interface introduces many foundational wireless inventions and the top five are:

- Scalable OFDM numerology with 2n scaling of subcarrier spacing
- Flexible, dynamic, self-contained TDD sub-frame design
- Advanced, flexible LDPC channel coding
- Advanced massive MIMO antenna technologies
- Advanced spectrum sharing techniques

5G is a unified platform that is more capable than 4G While 4G LTE is focused on delivering much faster mobile broadband services than 3G, 5G is designed to be a unified, more capable platform that will not only elevate mobile broadband experiences but also support new services such as mission-critical communications and the massive IoT.

5G will also natively support all spectrum types (licensed, shared, unlicensed) and bands (low, mid, high), a wide range of deployment models (from traditional macro-cells to hotspots), as well as new ways to interconnect (such as device-to-device and multi-hop mesh).

Do You Know...?

5G can be significantly faster than 4G, delivering up to 20 Gigabits-per-second (Gbps) peak data rates and 100+ Megabits-per-second (Mbps) average data rates. 5G has more capacity than 4G. 5G is designed to support a 100x increase in traffic capacity and network efficiency. 5G has lower latency than 4G.

WHY KOTLIN IS THE FUTURE OF ANDROID APPLICATION DEVELOPMENT?

Vasanth T S
19BCS024

Kotlin, a statically-typed programming language that is 100% compatible with Java, can be compiled to JavaScript and runs on the Java Virtual Machine (JVM), which was created by Jet Brains back in 2010. Jet Brains major goal was to design an industrial-level object-oriented programming language that would be fully compatible with existing Java and Android projects and still eliminate some of the biggest issues of Java programming including nullity and excessive coding.

Over the years, the language had gone through many stages before its stable version was unveiled in 2016. Kotlin is relevant today because of two reasons.

- It has been developed as a solution to the problems that Android developers have faced over some time. Therefore, it answers most of the main issues that surfaced in Java, providing developers with interoperability, safety, clarity, and tooling support.
- But the reason why it is touted as a tour-de-force in the Android app development ecosystem is because major tech giant and the parent company of Android - Google, in its annual developer conference Google I/O 2017 announced that Kotlin is now an official Android language and Google will provide its first-class support for Kotlin on the Android platform.

With Google itself becoming Kotlin oriented, major developers, are moving towards adopting it and the fact that many Java apps are being rewritten in Kotlin now, is being viewed as the future of building Android apps. The fastest-growing language community in percentage terms is Kotlin. It grew by 58% in 2018 from 1.1M to 1.7M developers.

Since Google has made Kotlin a first-class language for Android development, this growth is expected to continue, in a similar way to how Swift overtook Objective-C for iOS development. This language is simply creating waves in the world of android application development.

Kotlin will continue to grow in popularity, and eventually dominate the Android space especially for new applications built in it. The biggest question out there is whether it will manage to spread out into other parts of development as successfully as it has managed to spread into not only Android not only but also web via KotlinJS, and native compilation targets.

know about KOTLIN...

Kotlin is a programming language developed by JetBrains (the makers of IntelliJ IDEA), which compiles down to Java bytecode.

ARTIFICIAL INTELLIGENCE IN AUTONOMOUS VEHICLES

SIBI CHAKRAVARTHY P
18BCS001

Artificial Intelligence is the intelligence that is displayed by machines. AI can perform functions like learning, problem-solving and implementation in various fields. AI has an application in various fields like machine learning, natural language processing, robotics, medical diagnosis, computer vision, and planning. Autonomous vehicles are one of the greatest uses of AI. Autonomous vehicles are vehicles that are self-driven, driverless or robot-driven cars. It is a vehicle that can sense the environment around it and moves with no input or partial input by the human.

These driverless cars combine a variety of sensors to understand and realize their surroundings. These sensors are sonar, odometer and inertial measuring units, radar and GPS (Global Positioning System). The autonomous vehicles become aware of the obstacles coming their way and also identify the suitable navigation paths. Though people think that self-driven cars are the future, there is still a number of challenges in its way. These cars cannot recognize the presence of bicyclists and pedestrians on roads, as well as any animal which might appear on a road. AI will be used for speech recognition, eye tracking, camera capturing, road condition evaluation, virtual assistance, and driver monitoring.

The autonomous vehicles are provided with cognitive functions and logical as well as decision-making capabilities just like the human drivers possess so that they can adjust to any situation of traffic to avoid any accidents. These cars are provided with these sensors and other communication devices so that they can store this huge amount of data and AI enables them to analyze the way the car should drive. This data is processed by supercomputers and other data communication systems.

The radars and cameras are used to generate maps of the surrounding area, the traffic conditions and give all the valuable inputs to the autonomous driving cloud platform. There is an intelligent agent that makes use of AI algorithms to take meaningful and correct decisions. All the previous data is also stored which might help in making future decisions if any similar condition is encountered. All the driving experiences are stored in the database so that safer and better experiences can be created for the users. Artificial Intelligence, especially the neural networks and deep learning are the key factors in the proper and safe functioning of the autonomous vehicles.

AUGMENTED REALITY AND VIRTUAL REALITY

Chanjeev Kant K
19BCS015

One of the biggest confusions in the world of augmented reality is the difference between augmented reality and virtual reality. Both are earning a lot of media attention and are promising tremendous growth. So, what is the difference between virtual reality vs. augmented reality? Virtual reality (VR) is an artificial, computer-generated simulation or recreation of a real-life environment or situation. It immerses the user by making them feel like they are experiencing the simulated reality first-hand, primarily by stimulating their vision and hearing. VR is typically achieved by wearing a headset like Facebook Oculus equipped with the technology, and is used prominently in two different ways,

- To create and enhance an imaginary reality for gaming, entertainment, and play (Such as video and computer games, or 3D movies, head-mounted display).
- To enhance training for real-life environments by creating a simulation of reality where people can practice beforehand such as flight simulators.

Virtual reality is possible through a coding language known as VRML (Virtual Reality Modelling Language) which can be used to create a series of images, and specify what types of interactions are possible for them. Augmented reality (AR) is a technology that layers computer-generated enhancements atop an existing reality to make it more meaningful through the ability to interact with it.

AR is developed into apps and used on mobile devices to blend digital components into the real world in such a way that they enhance one another, but can also be told apart easily. AR technology is quickly coming into the mainstream. It is used to display score overlays on telecasted sports games and pop out 3D emails, photos or text messages on mobile devices. Leaders of the tech industry are also using AR to do amazing and revolutionary things with holograms and motion-activated commands.

Augmented reality and virtual reality are inverse reflections of one another with what each technology seeks to accomplish and deliver for the user. Virtual reality offers a digital recreation of a real-life setting, while augmented reality delivers virtual elements as an overlay to the real world. Virtual is real now! VR and AR, the twin technologies that lets users experience things in virtual, that are extremely close to real, are today being used by businesses of all sizes and shapes. But the underlying technology can be quite complex.

Medical students use AR technology to practice surgery in a controlled environment. VR, on the other hand, opens up newer avenues for gaming and interactive marketing. Both technologies are still in their emerging stages but hold immense promise for businesses even now. Moreover, an entrepreneur who enters the industry early improves the chances for success. AR/VR development is steadily getting easier and cheaper. 5G networks will facilitate super-fast downloads and streaming, energizing VR and AR devices.

Do You Know...?

VR creates an immersive virtual environment, while AR augments a real-world scene. VR is 75 percent virtual, while AR is only 25 percent virtual. VR requires a headset device, while AR does not. VR users move in a completely fictional world, while AR users are in contact with the real world.

AMAZON ELASTIC BLOCK STORE

Gowshika J
18BCS008

Amazon Elastic Block Store (EBS)

- Provides block level storage volumes (1 GB to 1 TB) for use with Amazon EC2 instances.
- Multiple volumes can be mounted to the same instance.
- EBS volumes are network-attached, and persist independently from life.
- Storage volumes behave like raw, unformatted block devices, allowing users to create a file system on top of Amazon EBS volumes, or use them in any other way THAT ONE would use a block device (like a hard drive).
- EBS volumes are placed in a specific Availability Zone, and can then be attached to instances also in that same Availability Zone.
- Each storage volume is automatically replicated within the same Availability Zone.

Amazon Simple Storage Service (S3)

Amazon S3 provides a simple web services interface that can be used to store and retrieve any amount of data, at any time, from anywhere on the web users can Write, read, and delete objects containing from 1 byte to 5 terabytes of data each. The number of objects the user can store is unlimited.

Each object is stored in a bucket and retrieved via a unique, developer-assigned key. A bucket can be stored in one of several Regions.

Users can choose a Region to optimize for latency, minimize costs, or address regulatory requirements. Objects stored in a Region never leave the Region unless the user transfers them out.

Amazon Virtual Private Cloud (VPC)

Amazon VPC lets one provision a logically isolated section of the Amazon Web Services (AWS) Cloud. A complete control is available over virtual networking environment, including:

- Selection of the own IP address range
- Creation of subnets, and
- Configuration of route tables and network gateways.

VPC allows bridging with an onsite IT infrastructure with an encrypted VPN connection with an extra charge per VPN Connection-hour. There is no additional charge for using Amazon Virtual Private Cloud, aside from the normal Amazon EC2 usage charges.

Amazon Elastic Map Reduce (EMR)

Amazon EMR is a web service that makes it easy to quickly and cost-effectively process vast amounts of data using Hadoop.

Amazon EMR distributes the data and processing across a resizable cluster of Amazon EC2 instances.

With Amazon EMR one can launch a persistent cluster that stays up indefinitely or a temporary cluster that terminates after the analysis is complete. Amazon EMR supports a variety of Amazon EC2 instance types and Amazon EC2 pricing options (On-Demand, Reserved, and Spot)

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Amazon Relational Database Service (RDS)

- Amazon RDS is a web service that makes it easy to set up, operate, and scale a relational database in the cloud.
- Amazon RDS automatically patches the database software and backs up the database, storing the backups for a user-defined retention period and enabling point-in-time recovery.
- Amazon RDS supports scaling of the compute resources or storage capacity associated with the Database Instance.
- Users pay only for the resources actually consumed, based on the DB Instance hours consumed, database storage, backup storage, and data transfer.
- On-Demand DB Instances allow one to pay for compute capacity by the hour with no long-term commitments.

Amazon DynamoDB

- DynamoDB is a fast, fully managed NoSQL database service that makes it simple and cost-effective to store/retrieve any amount of data, and serve any level of request traffic.
- All data items are stored on Solid State Drives (SSDs), and are replicated across 3 Availability Zones for high availability and durability.
- DynamoDB tables do not have fixed schemas, and each item may have a different number of attributes.
- DynamoDB has no upfront costs and implements a pay as you go plan as a flat hourly rate based on the capacity reserved.

Amazon Elastic Beanstalk

AWS Elastic Beanstalk provides a solution to quickly deploy and manage applications in the AWS cloud.

- Elastic Beanstalk leverages AWS services such as Amazon EC2, Amazon S3.
- To ensure easy portability of an application, Elastic Beanstalk is built using familiar software stacks such as,
    - Apache HTTP Server for Node.js, PHP and Python Passenger for Ruby
    - IIS 7.5 for .NET
    - Apache Tomcat for Java.

Amazon Cloud Watch

Amazon CloudWatch provides monitoring for AWS cloud resources and the applications customers run on AWS. Amazon CloudWatch enables one to monitor their AWS resources up-to-the-minute in real-time including:

- Amazon EC2 instances
- Amazon EBS volumes
- Elastic Load Balancers

Amazon RDS DB instances

Customers can also supply their own custom application and system metrics, such as memory usage, transaction volumes, or error rates.

Amazon Simple Workflow Service (SWF

- Amazon SWF is a task coordination and state management service for cloud applications.
- Using Amazon SWF, user can structure the various processing steps in an application that runs across one or more machines as a set of tasks.

AGILE TECHNOLOGY AND DESIGN THINKING

Rakesh C
17BCS007

What is Agile?

Agile is a time boxed, iterative approach to software delivery that builds software incrementally from the start of the project, instead of trying to deliver it all at once near the end. Scrum, a subset of agile, is a lightweight process framework for agile development, used when incremental builds are delivered to the customer nearly every two to three weeks in time.

What is Design Thinking?

Design thinking is a process for creative problem solving. Design thinking has a human-centred core. It encourages organizations to focus on the people‘s creativity which leads to better products, services, and internal processes.

Which one is needed and why?

While Agile is an approach to problem-solving, design thinking is an approach to problem finding. Design thinking calls for a high degree of empathy and understanding of end users, and an iterative process of developing new ideas, challenging assumptions, and redefining problems, with the goal of identifying alternative solutions that might not necessarily be apparent.

Empathize

Understand people, their behaviors, and motivations. Because people often don’t know, or can’t articulate, these things explicitly, understanding emerges through viewing users and their behaviors in context to identify patterns, ask questions, and challenge assumptions.

Define

Create an actionable problem statement to define the right challenge to address, as well as the set of needs that are important to fulfil, based on the organization, its goals, and the perspective of end users.

Ideate

Leverage techniques such as brainstorming, mind mapping, sketching, or creating paper prototypes to step back, go wide, and come up with more innovative or impactful solutions that weren‘t originally envisioned.

Prototype

Bring ideas to life by showing, not telling; quickly create working prototypes to put something into user’s hands and begin to collect real-world feedback.

Test

Learn from user's experience, iterate, and repeat the process as needed until reaching a Minimum Viable Product (MVP).

Once the true nature of the problem to be solved, has been identified the team can leverage Agile to incrementally build out the solution, taking it from MVP to pilot to large-scale production. Moreover, agile becomes the mechanism to enhance the solution over time, making it a living product that evolves with user feedback and new business or market needs. This leads to another important similarity between design thinking and agile: frequent iteration. By creating regular interaction points through meetings and demos, the development team can continually gather new insights that help them adapt and better align the software being developed with both user and business goals. While design thinking and agile can be applied alone, the two approaches are better together, creating a mutually reinforcing environment focused on user-centricity and rapid iteration as a means of reaching optimal outcomes.

Design thinking brings a strong user focus while agile is an excellent way to incrementally deliver solutions, ensuring user needs are kept front and center throughout the entire design and development process. For teams looking to leverage agile and design thinking for the first time, recommendations that are to be keep in mind:

Start small

Focus on high-value, low-risk opportunities to gain experience using design thinking and agile together. Then, as capability matures, have more challenging initiatives.

Create cross-functional teams

To facilitate the required creativity, create cross functional teams that work together to design and develop solutions. Here the team should be physically collocated with end users to promote frequent collaboration.

Balance design and development

Focus on high-value, low-risk opportunities to gain experience using design thinking and agile together. Then, as capability matures, have more challenging initiatives

Create cross-functional teams

To facilitate the required creativity, create cross functional teams that work together to design and develop solutions. Here the team should be physically collocated with end users to promote frequent collaboration.

What is Agile methodology...?

The Agile methodology is a way to manage a project by breaking it up into several phases. It involves constant collaboration with stakeholders and continuous improvement at every stage. Once the work begins, teams cycle through a process of planning, executing, and evaluating.

EMPLOYEES PERFORMANCE PREDICTION USING MACHINE LEARNING ALGORITHMS

Gokul S P 17BCS031
Meera T 17BCS053
Barathkumar G 17BCS06

Employee performance drives company success to achieve its goals. Predicting employee performance in the future is a necessity for companies to succeed. The proposed work presents how the machine learning algorithm is used to predict and analyse the performance of employees on various factors including, individual and domain specific characteristics, nature and socioeconomic status and different factors. In this project, the data is collected, analyzed and finding out the factors affecting the employee performance using data pre-processing techniques like label encoding, correlation coefficient were used.

For predicting the output, machine learning algorithms like decision tree, logistic regression, Naive Bayes, Support Vector Machine were used. From that, Decision Tree algorithm gave the accuracy of 0.90 as highest accuracy and based on the performance rating employees were categorized into Good, Average and Bad. The focus is on predicting the employee performance by using some of the attributes of the employee, which is useful to the company.

Data Collection and Understanding Pro

Data collection as well as understanding that data is the major part of this system. The Employee dataset has been taken from www.kaggle.com website. This data is in excel file format. System will read this file using “pandas” which is a python library.

Data preprocessing

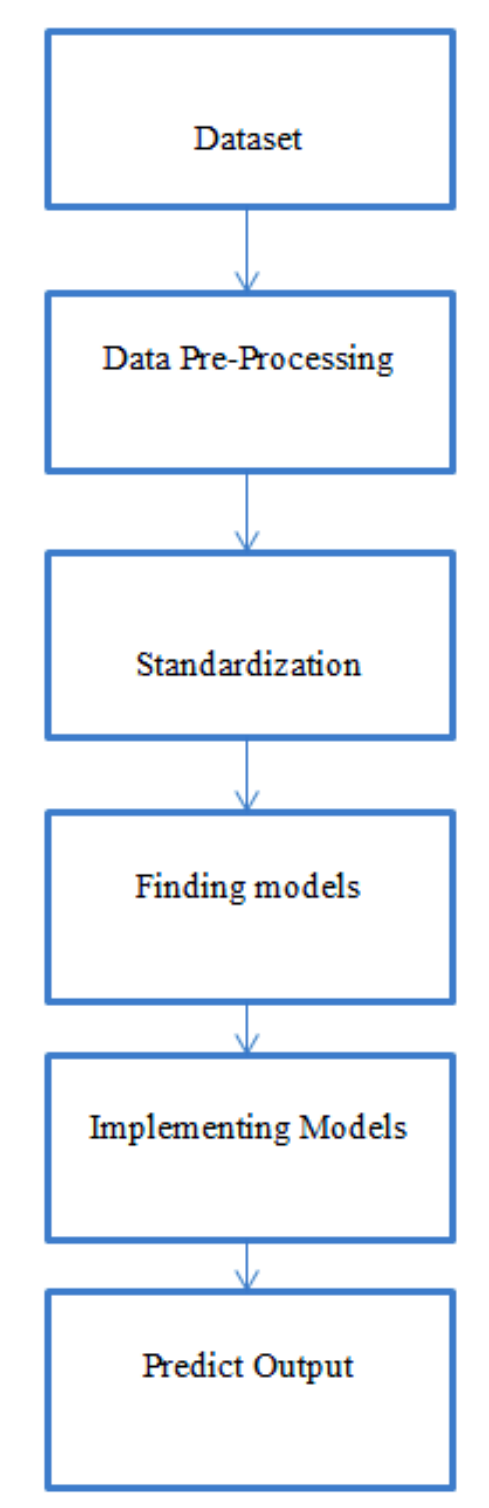
Data preprocessing is a data mining technique that involves transforming raw data into an understandable format. Real-world data is often incomplete, inconsistent, and lacking in certain behaviors or trends, and is likely to contain many errors. The missing values should be handled properly. A particular row is deleted if it has a null value for particular features. Mean value of the particular features can also be calculated in order to replace the missing values. Categorical variables like Gender, Marital Status will cause problem, so they are converted into numerical values. To convert categorical variable into numerical data the Label Encoder is used from pre-processing libraries.

Feature selection

To analyze the data, various data processing techniques like Label Encoding and Standardization is used. Correlation Coefficient is used to interpret the relationship between variables. The most important features selected are Department, Job Role, Environment Satisfaction, Last Salary Hike Percent, Work Life Balance, Experience Years at this Company, Experience years in current role, Years Since Last Promotion, Years With Current Manager.

Predict the output

A set of machine learning algorithms like Decision Tree, Support Vector Machine, Logistic Regression, Naive Bayes were used to predict the employee performance. The factors affecting the employee performance were determined and the best algorithm has also been identified.



Flow Diagram of the Machine Learning Algorithm

SPEECH SYNTHESIS AND TEXT ANNOTATION SYSTEM IN TAMIL LANGUAGE

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Selvapreetha S 17BCS045

Naveen R 17BCS105

Text annotation is an important step in Sentiment analysis, Named Entity Recognition system, NLP based Query processing, etc. In this project Tamil text is annotated in word-level and sentence-level with Grammatical information. Word level text annotation is done by using POS tagging. Sentence-level text annotation is done by identifying the type of sentence. The Dataset for types of sentences is collected and equally distributed among different types of sentences. Features extracted from the text are Count Vectors and TF-IDF vectors at character level, word level and n-gram level. Various classifiers like Naïve-Bayes, SVM, Logistic Regression and Random Forest are used to build the ML model. POS tagging is used to annotate text at word level.

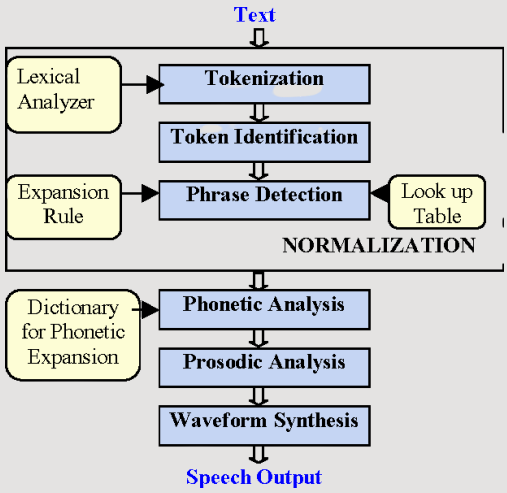
Supervised learning is used for POS tagging with LTRC tag set. Initially tagging is performed manually to identify the POS tags for each word. Then, Emission and Transmission matrix is created and the value is calculated. Viterbi matrix is created with the help of test sentence, emission and transmission matrix. Finally, traversing the Viterbi matrix identifies the optimal tag. This annotated text data can be used to perform various tasks such as Speech synthesis, Speech Recognition, Enquiry system, etc. The outcome of the system can be utilized in optimizing NLP tasks. Speech is considered as one of the earliest means of communication.

In this Digital era, Computers are playing a greater role in information transformation. One such system is a Text to Speech Synthesis System. However, a speech synthesizer which sounds similar to a human voice is preferred over a robotic voice. There are so many old prediction models that are based on sentiment analysis. The below flowchart describes the working function of Tamil text to speech synthesis system based on grammatical analysis. The Text analysis is done on the given input text and the system provides the output as Type of sentence of the given input text. Then the identification of pitch, intonation and duration takes place to produce speech

Text annotation is an action that deliberately interacts with a text to enhance the understanding of the text. It provides useful information from the text which can be used in later part of the NLP system. This project proposes Tamil text annotation in Word level and Sentence level. The input text from the user is pre-processed and the data is given to the ML model. The ML classifier is used to classify the type of the sentence which forms the Sentence level annotation.

The input text is tokenized and given to the HMM to identify the POS tags of the Sentence which forms the word level annotation. The input sentence given by the client in Tamil Language is handled step by step. There are six fundamental advances or levels engaged with the text annotation in Sentence level. These are the following steps for Sentence level text annotation.

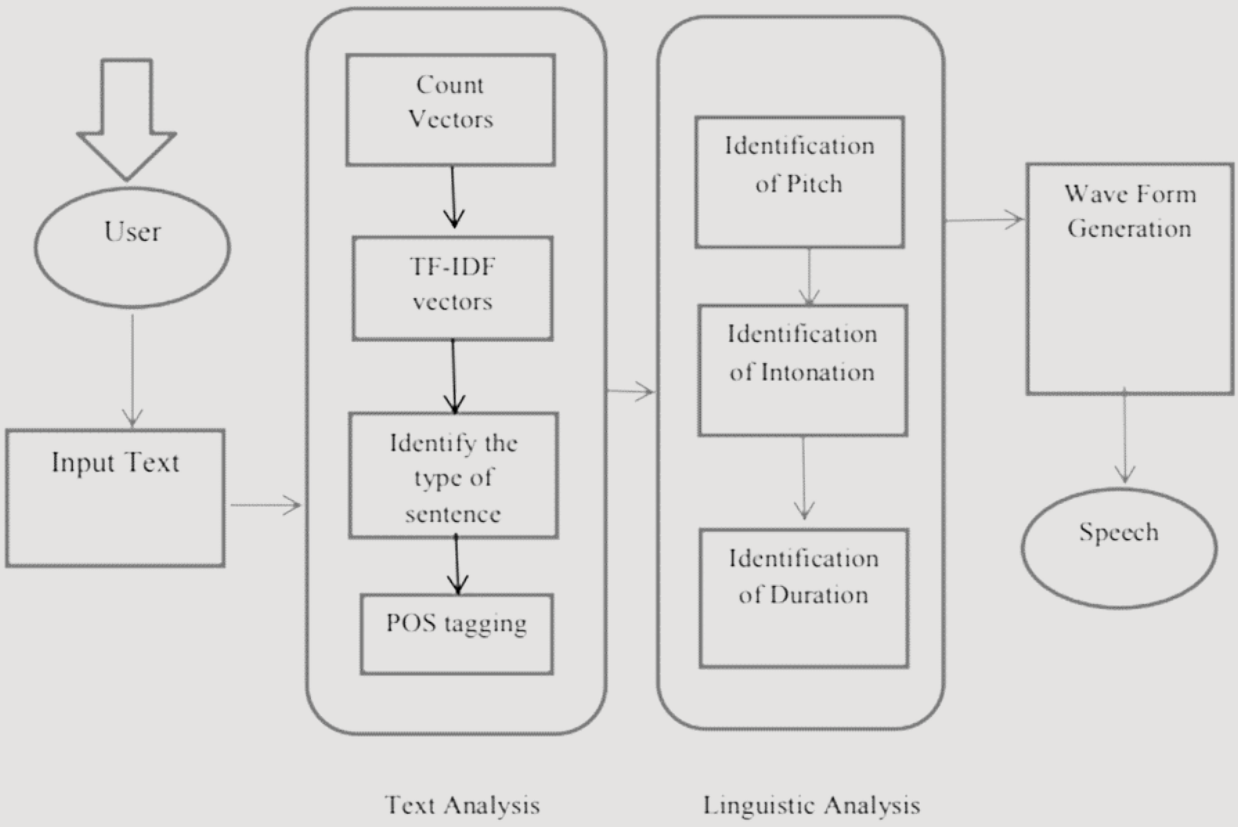
1. Dataset Preparation
2. Feature Extraction
3. Identification of Count Vectors
4. Identification of TF- IDF Vectors
5. Training and Evaluation of ML models
6. Pipeline Creation



Text annotation in tamil language

There are five different levels engaged with the text annotation in Word level. These are the following steps for Word level text annotation:

1. Dataset Preparation
2. Formation of Emission Matrix
3. Formation of Transition Matrix
4. Formation of Viterbi Matrix
5. Traversal of Viterbi Matrix



Block diagram of the Speech Synthesis System

HEART FAILURE DETECTION USING AI IN A SINGLE HEARTBEAT

Aswin N C 17BCS001

Artificial Intelligence (AI) is a multidisciplinary field whose goal is to automate activities that presently require human intelligence. The primary goal is to improve computer behaviour so that it can be called intelligent. It is a field of study based on the premise that smart thought can be regarded as a form of computation one that can be formalized and ultimately mechanized.

The major problem areas addressed in A.I. can be summarized as Perception, Manipulation, Reasoning, Communication, and Learning. The success of AI: Artificial Intelligence has revolutionized the diagnosis of cancer. The supercomputer of IBM Watson is already able to see deviations in the health of the individual. Statistically, it is found that in about 30 % of cases Watson puts patients with an additional diagnosis which is generally missed by medical people. Even more impressive results have been achieved by AI at the Houston Methodist Research Institute in Texas.

Artificial intelligence is used to explore the millions of mammograms (the speed of analysis is 30 times more than human) and gives solutions with 99% accuracy. A driver in the US, who suffered a pulmonary embolism while driving was saved by the Tesla Autopilot system to drive him to a nearby hospital. Microsoft has demonstrated that AI caught up with the man in the efficiency of automatic speech recognition.

The company used the so-called high-precision recurrent neural networks to achieve results. There are a variety of different causes for CHF but the fundamental chronic condition generally results from the heart being unable to pump blood effectively through the body.

X-rays, blood tests, and ultrasounds all offer clinicians useful ways to diagnose CHF, but one of the more common methods involves using electrocardiogram (ECG) signals to determine heart rate variability over several minutes or even multiple measurements over days. An impressive new approach has now been demonstrated, using a convolutional neural network (CNN) that can identify CHF nearly instantly by checking ECG data from just one heartbeat. Applying artificial intelligence to the electrocardiogram (ECG) enables early detection of left ventricular dysfunction and can identify individuals at increased risk for its development in the future.

The research published in Nature Medicine found that the accuracy of the AI/ECG compares favorably to other standard screening tests like prostate specific antigen for prostate cancer and mammography for breast cancer. Asymptomatic left ventricular dysfunction (ALVD) is characterized by the presence of a weak heart pump with a risk of heart failure. It is present in 3% to 6% of the general population and is associated with reduced quality of life and longevity. However, it is treatable when found. Currently, there is no inexpensive, non-invasive, painless screening tool for ALVD available for diagnostic use. To address this, Paul Friedman and colleagues tested whether ALVD could be reliably detected in the ECG by a properly trained neural network.

The team used paired 12-lead ECG and echocardiogram data, including the left ventricular ejection fraction , from 44,958 patients at the Mayo Clinic, and trained a convolutional neural network to identify patients with ventricular dysfunction, defined as ejection fraction less than 35 %, using the ECG data alone.

Puzzles

1. How can you represent days of month using two 6 sided dice? You can write one number on each face of the dice from 0 to 9 and you have to represent days from 1 to 31, for example for 1, one dice should show 0 and another should show 1, similarly for 29 one dice should show 2 and another should show 9.

2.Policeman decided to punish the Prisoner and asked him to make a statement. The Prisoner should make such a statement so that he would be alive. If the statement is held true by Policeman, the Prisoner will be hanged to death and if the statement is held false, the Prisoner will be shot dead

3.In a one day international cricket match, considering no extras (no wides, no 'no' balls, etc.) and no overthrows.
What is the maximum number of runs that a batsman can score in an ideal case? Note: "Here we assume ideal and little practical scenario. We assume that batsman cannot run for more than 3 runs in a ball, as otherwise there is no limit, he can run infinite runs(theoretically) in a ball, as far as opposite team does not catch the ball."

Answers

1.Dice 1: 0 1 2 3 5 7
Dice 2: 0 1 2 4 6 8

2. The Prisoner said, 'I will be shot dead'

If Policeman says the statement is true, the Prisoner will be hanged to death which will make his statement false.

If Policeman says the statement is false, the Prisoner will be shot dead which will make the statement true.

3. 1653

https://datajobs.com/what-is-data-science

https://nap.nationalacademies.org/read/24649/chapter/4

https://www.cprime.com/resources/what-is-agile-what-is-scrum/

https://aws.amazon.com/ebs/

https://www.qualcomm.com/5g/what-is-5g

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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.

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