DWARAKA DOSS GOVERDHAN DOSS VAISHNAV COLLEGE
(AUTONOMOUS)
Reaccredited With A++ Grade by NAAC
College with Potential for Excellence, Linguistic Minority Institution,
Affiliated to University of Madras, Arumbakkam, Chennai - 600 106

PG & Research Department of Master of Computer Applications

WEBYTZ 23/24

Shri. ASHOK KUMAR MUNDHRA
Secretary

Dr. S. SANTHOSH BABOO
Principal

FACULTY MEMBERS OF THE DEPARTMENT

Dr. T. SANTHANAM
Associate Professor & Head Of the Department

Dr. T. VELMURUGAN
Associate Professor

Dr. S. SANTHOSH BABOO
Principal

Dr. R. ANANDHI
Assistant Professor

Dr. T. SRIDEVI
Assistant Professor

Ms. A.S.THENMOZHI
Assistant Professor

Dr. M.P. SUKASSINI
Assistant Professor

Dr. S. DEEPALAKSHMI
Assistant Professor

EDITORIAL TEAM

Dr. T. SRIDEVI
Assistant Professor

Dr. S. DEEPALAKSHMI
Assistant Professor

EDITORIAL COMMITTEE

G. DHANUSH GOPI
I MCA Student

G. MADHUMITA
I MCA Student

DITI V JAIN
I MCA Student

S. SWATHY
I MCA Student

MESSAGE FROM THE SECRETARY'S DESK

I am delighted to learn about the release of the "WeBytz" newsletter by the MCA Department, which aims to feature the department's activities. I anticipate that this newsletter will serve as a platform to showcase the accomplishments and efforts of both faculty and students. Additionally, I have confidence that the students and staff of the department took advantage of this opportunity to test and enhance their intellectual skills, reaching a diverse readership. My congratulations go to the editorial team, staff, and students of the MCA department for the successful launch of this newsletter.

MESSAGE FROM THE PRINCIPAL'S DESK

It brings me great joy and satisfaction as the Principal of D.D.G.D.V.C. to announce the annual release of the "WeBytz" newsletter by the Department of MCA. This publication serves as a valuable platform to showcase the noteworthy achievements of students in curricular, co-curricular, and academic domains. I am optimistic that the newsletter will aptly reflect a comprehensive overview of the department's performance and its significant contributions to the overall development of our students. I extend my sincere congratulations to the dedicated editorial board for their tireless efforts in bringing this informative newsletter to fruition.

MESSAGE FROM THE HOD'S DESK

The Department of MCA is one of the pioneering departments of this institution. We offer our students a good educational experience with the latest requirements in IT as their academic subjects. The department also conducts various programs to enrich the technical skills of the students. It is indeed my great pleasure that our department is publishing the annual newsletter "WeBytz" inscribing every aspect of departmental activities and events held from the academic year 2023-2024. The newsletter aims to bring into view various happenings in the department. I congratulate the editorial board who has taken the initiative for publishing this newsletter.

ABOUT THE DEPARTMENT

The Department of MCA was established in 1987 with the aim of creating a conducive ambiance for learning management and career-oriented subjects. Over the years, the curriculum has been fine-tuned by introducing specialised subjects aligned with industry requirements, aiming to impart knowledge in the field of information technology and current trends.

OBJECTIVE

The main objective is to make students technically talented in the information technology field. The department has collaborated with IIT Mumbai's Spoken Tutorial Project, offering certificate courses to help students gain exposure to leading IT tools and languages, which are integral parts of the curriculum for earning credits. Students are advised to enrol in online MOOC courses to enhance their knowledge. The hallmark of the department is the regular update of the curriculum in consultation with IT experts on the Board of Studies (BoS) to introduce current technologies prevailing in the market. This ensures that students can upgrade their skills for employment.

MISSION

- Organise workshops at regular intervals to bridge the gap between academia and industry.

- Enable students to be industry-ready by developing a state-of-the-art curriculum in tune with industry requirements.

- Facilitate students to excel in the challenging scenario by providing the necessary skill set.

- Make students understand the concepts using innovative teaching materials.

VISION

Empower every student to be innovative, creative, and productive in the domain of computer science by imparting quality education, developing skills, and inculcating human values.

DEPARTMENT ACTIVITIES

GUEST LECTURE ON "DIGITAL TECHNOLOGIES"
on 14/07/2023

The Department of MCA organised a guest lecture on Digital Technologies featuring Mr. Mathivanan Elangovan, Founder & CEO of Mebot Robotics Pvt Ltd, Chennai, on July 14, 2023. Mr. Mathivanan provided a comprehensive overview of current digital technologies, including Full Stack Development, Machine Learning, Virtual Reality, Cloud Computing, and Data Science.

He emphasised the importance of acquiring skills in these domains for enhanced employability. The lecture included a captivating virtual reality demonstration, sparking enthusiasm among students. The event aimed to expose students to the latest technologies, showcase the potential of AR and VR, and impart knowledge on the required skill sets for employability.

Overall, it proved to be an enriching and inspiring experience, encouraging students to explore opportunities in the rapidly advancing digital era.

WORKSHOP ON "INTRODUCTION ON REACT JS"
on 21/07/2023

The ReactJS and client-side technologies workshop, led by Mebot's CEO, Mr. Mathivanan Elangovan, began with a comprehensive exploration of ReactJS modules and practical application development. Mr. Elangovan highlighted the necessity and benefits of learning client-side technologies in today's IT era. Focused on ReactJS, the workshop included hands-on sessions for basic application development, drawing active participation from 57 students, showcasing their engagement. The event yielded significant outcomes, involving ReactJS component creation, Single Page Application (SPA) development, and practical web application building.

Beyond theory, the workshop provided tangible insights, imparting valuable knowledge and skills crucial in the contemporary technological landscape. It effectively bridged theoretical understanding with practical application, offering students a platform to actively engage with industry-relevant concepts in ReactJS and client-side technologies.
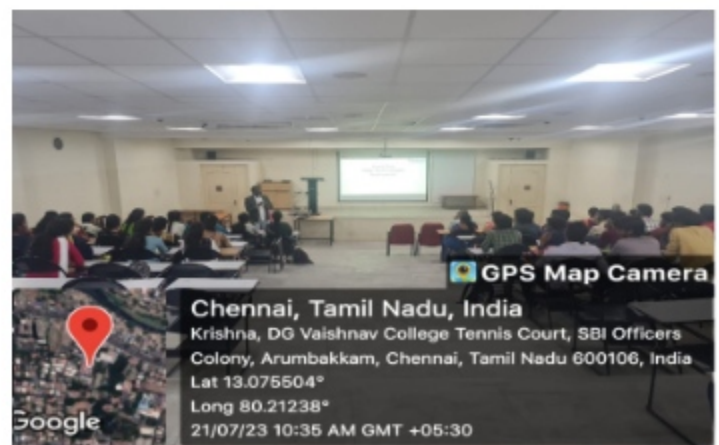
STUDENT INDUCTION PROGRAM
on 09/08/2023 & 10/08/2023

The Students' Induction Programme (SIP 2023) spanned two days, commencing on 09.08.23. The first day included sessions led by Dr. T. Santhanam, covering department rules, MCA curriculum, and second-year students presented their group projects showcasing employment-relevant insights. Dr. Gopikrishnan Santhanam, an alumni, inspired students in Session 2 on the importance of MCA and IT industry skills.

Day 2 (10.08.2023) featured an introduction to Power BI and Tableau, engaging students in hands-on projects, while Session 2 focused on holistic skill development through theoretical and practical activities, fostering exceptional competence and enthusiasm by Mrs. Paineni Jyothi, Mr. Samuel Arul, and Mrs. S. Vijayalakshmi from Bilight Solutions.

WORKSHOP ON "FOUNDATIONS OF DATA SCIENCE"
on 18/08/2023

On August 18, 2023, a workshop titled "Foundations of Data Science" was organised by the department, featuring Dr. S. Angel Deborah from SSN College of Engineering, Chennai. Dr. Deborah highlighted the distinctions between data science and machine learning, emphasising the significance of data preparation and exploration.

The second session included a hands-on experience using real-time datasets in Google Colab, covering steps in data preparation, exploration, and result analysis through plots. The students warmly received the session, expressing positive feedback. Dr. Deborah, pleased with the response, promised another session on Sentiment Analysis.
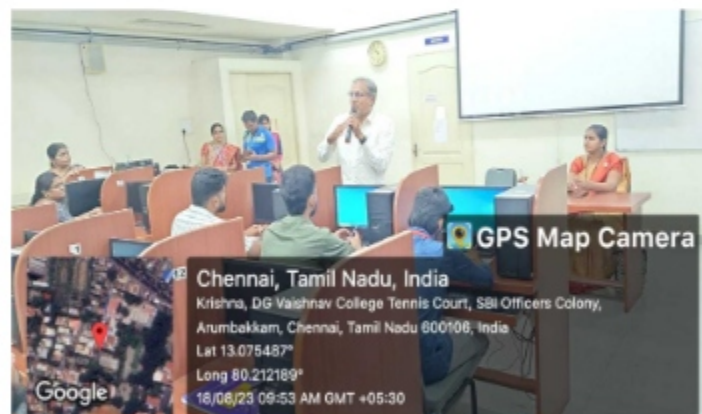
WORKSHOP ON "INDUSTRY NOW, NEXT AND BEYOND"
on 08/09/2023 & 09/09/2023

The two-day workshop, titled "Industry Now, Next and Beyond," featured Mr. Jayakanth, a Goldman Sachs Vice President and alumnus, sharing insights on the evolving industry landscape. He highlighted the impact of Artificial Intelligence and Machine Learning, envisioning a future where software generates codes. Topics covered included the Software Development Cycle, Continuous Integration,

and Deployment, showcasing rapid customer query resolution. Mr. Jayakanth underscored aligning skills with industry needs, emphasizing the demand for Data Structures and soft skills for business success. The second day focused on the Applications of Data Structures in Industries, stressing their role in decision-making, cost savings, and production enhancement. Attendees gained practical insights into implementing data structures for industrial scenarios, fostering creative solutions to challenges.

The workshop yielded profound insights, practical knowledge, and recognition of the potential to optimize processes and reduce costs, establishing a strong foundation for ongoing exploration and integration in diverse industrial sectors.

WORKSHOP ON "AUTOMATION TESTING TOOL"
on 21/09/2023 & 22/09/2023

The session commenced with an exploration of the distinctions between product-based and service-based companies. The focus then shifted to the automation testing tool, Selenium, emphasizing its significance in web automation. Students engaged in practical implementations, learning about ChromeDriver usage, simulating keyboard input with SendKeys, and mastering fundamental navigation commands like forward(), back(), and refresh().

A notable highlight was the in-depth exploration of XPath, covering both absolute and relative XPath.

Outcome of the Event: The session provided enlightenment on navigation commands, acquired knowledge about the Selenium testing tool and applications of the same.

WORKSHOP ON "SOFT SKILLS TRAINING"
on 09/10/2023 & 10/10/2023

The two-day workshop centred on enhancing communication skills, covering effective communication, active listening, business writing, and nonverbal communication. Day 1 emphasised the importance of communication in personal and professional life, exploring comfort, learning, and panic zones to encourage breaking out of comfort zones. Self-evaluation activities, communication types, and active listening were covered, fostering self-awareness and confidence.

Day 2 featured interactive activities on nonverbal communication, emphasizing body language and eye contact. The workshop significantly improved students' confidence and communication skills through practical learning experiences, providing valuable tools for personal and professional growth.

WORKSHOP ON "ESSENTIAL SKILLS FOR PERSONALITY DEVELOPMENT"

13/12/2023

The session was handled by Prof. R. Ramakrishnan and Dr. A. Mahalingam , Directors , Twin Tech Academy. The session commenced at 9:00 am, focusing on personality, its significance, coping with failure, and engaging in a SWOT analysis for self-assessment. The resource person elaborated on self-awareness, empathy, and sympathy, followed by Exercise 2, a role-play to handle different situations, with active student participation. In the second session, topics included attitude, lateral and critical thinking, and relationships.

Exercise 3 involved students choosing on-the-spot topics and delivering impromptu speeches for 2 minutes. The final exercise featured a case study for problem-solving and decision-making, motivating students to seize opportunities in public speaking.

WORKSHOP ON "ESSENTIAL SKILLS ON PERSONALITY DEVELOPMENT"

on 14/12/2023 & 15/12/2023

The PG and Research Department of MCA organized a two-day workshop on "Essential Skills on Personality Development" for second-year MCA students on December 14th and 15th, 2023. Led by Ms. S. Vijayalakshmi, Founder of MBold Services, the workshop emphasized refining personal and professional attributes, covering communication skills, confidence, leadership, time management, and emotional intelligence. The engaging sessions included activities and theoretical teachings, fostering an enjoyable and enlightening experience. Day 2 focused on resume preparation, a mock interview, and a group discussion, providing valuable practical lessons for students' professional development.

WORKSHOP ON "ARTIFICIAL INTELLIGENCE"
on 15/02/2024 & 16/02/2024

The PG and Research Department of MCA conducted a two-day workshop titled "Artificial Intelligence" for first-year MCA students on February 15th and 16th, 2024. Under the guidance of Dr. V. Sathya, Assistant Professor at SRMIST, and Ms. C. M. Nalayini, Assistant Professor at Velammal Engineering College, the workshop provided students with a concise overview of Artificial Intelligence, Machine Learning, and Algorithms.

Furthermore, interactive sessions allowed students to engage in practical exercises, including the creation and interaction with chatbots. This hands-on experience piqued students' interest and stimulated their desire to delve deeper into the realms of Artificial Intelligence and its associated algorithms.

WORKSHOP ON "APTITUDE TRAINING"
on 19/02/2024 & 21/02/2024

The PG and Research Department of MCA coordinated a comprehensive two-day workshop aimed at enhancing students' aptitude skills. Overseen by Mr. Prithvin Rajendran, Managing Director of Prime Educators, Chennai, the workshop encompassed aptitude training sessions along with the provision of relevant question papers.

Covering crucial aspect of aptitude, the workshop proved highly beneficial to students, equipping them with the necessary skills to confidently navigate aptitude assessments.

# WORKSHOP ON "INTERNET OF THINGS (IOT)"
on 28/02/2024

The PG and Research Department of MCA coordinated a comprehensive two-day workshop aimed at enhancing students' aptitude skills. Overseen by Mr. Prithvin Rajendran, Managing Director of Prime Educators, Chennai, the workshop encompassed aptitude training sessions along with the provision of relevant question papers, covering crucial aspects.
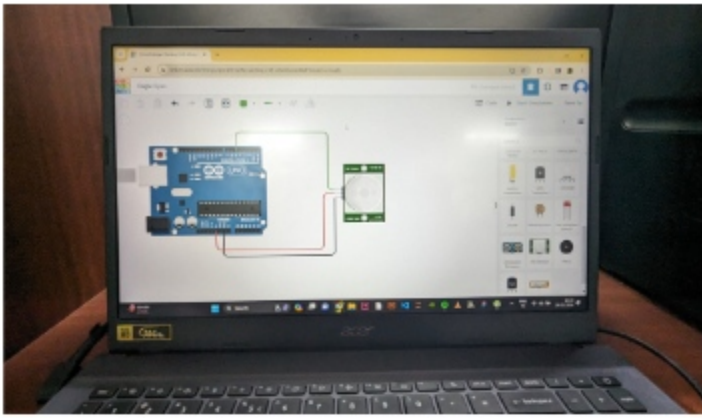
WORKSHOP ON "INTRODUCTION TO UI DESIGN USING FIGMA"

on 07/03/2024

On March 07, 2024 workshop titled "Introduction to UI design using Figma" was organised by the department. The workshop, initiated by Mr. Sandeep Baskaran, provided a comprehensive introduction to UX/UI principles and Figma tools. Under Mr. Arvind Senthil's guidance, students engaged in hands-on activities designing a YouTube music player UI, gaining practical insights into Figma's functionalities and basic UI principles. Emphasis on iterative design and user-centric approaches enriched participants' understanding. Feedback highlighted the workshop's success in enhancing students' UX/UI knowledge and Figma proficiency. Overall, the workshop equipped the students with essential skills and knowledge for pursuing UI/UX design, enhancing their career prospects in the field.
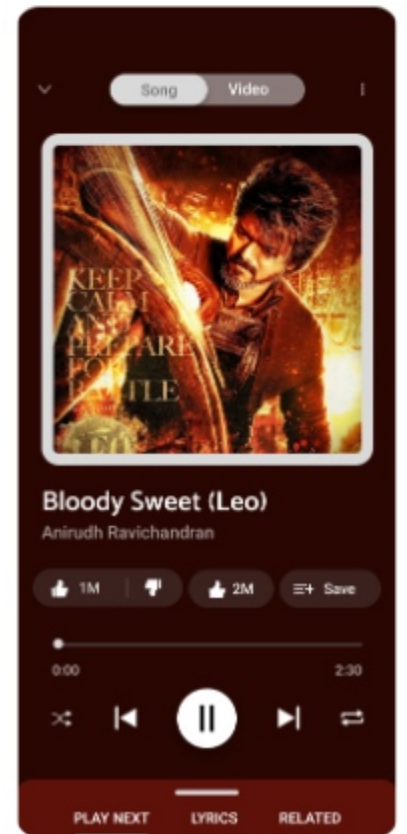
VALUE ADDED COURSE

CERTIFICATE COURSE ON REACT JS

The department has initiated a 60-hour certificate program focused on React JS, tailored for second-year MCA students, aiming to provide insights and practical experience in front-end development. Facilitated by Mebot Consulting and Robotics, the program includes introductory and subsequent sessions covering various aspects of React JS development and industry best practices.

CERTIFICATE COURSE ON TABLEAU

The department organised a 60-hour certificate program aimed at first-year MCA students, with a specific focus on Tableau Software. Bilight Solutions is facilitating the program, which began with an introductory session on Business Intelligence led by Mr. Murali Kasiviswanathan, Co-founder and BI Strategist. Following this, Mrs. P Jyothi, Mr. Samuel Arun, and Mr. Gopal conducted subsequent sessions covering different aspects of Tableau Desktop and Tableau Prep Builder.

RESEARCH ACTIVITIES

The department has reached new heights in its contribution to research. Our team regularly publishes research articles in well-regarded journals, actively participating in Faculty Development Programs (FDP), workshops, and webinars to enhance their knowledge and further contribute to research endeavours.

OUR PRESTIGIOUS Ph.D. SCHOLARS:

The following is a list of research scholars who have been conferred with a Ph.D. degree from the MCA department by the University of Madras between 2023 and 2024:

S.NO	RESEARCH SUPERVISIOR	RESEARCH SCHOLAR	TITLE	DATE OF VIVA-VOCE
1	Dr. T. VELMURUGAN	J. DHINAKARAN	A Hybrid Model for Parkinson Disease Prediction and Classification using Ensemble Stacking Learning Algorithm	31/05/2023
		N. JAGADEESAN	A Novel Ensemble Technique for the Predictions of Heart Disease Using Feature Selection Methods	19/10/2023

At present, the department has 8 research scholars pursuing their research.

BOOK PUBLICATIONS

In order to impart knowledge, the staff of the department has penned books for the educational society. The details of these books are outlined below:

S.NO	AUTHOR	TITLE	YEAR
1	DR. S. SANTHOSH BABOO	BlockChain and CyberSecurity	2023
2	DR. S. SANTHOSH BABOO	Machine learning Techniques and Algorithms	2023
3	DR. S. SANTHOSH BABOO	Retinal Image Segmentation with Region Merging for Detection of Diabetic Retinopathy Using CNN	2023
4	DR. R. ANANDHI	Programming in C and Lab	2023

PLACEMENTS

S.NO	NAME	YEAR	COMPANY
1	AROCKIA PAULINE A	II MCA	COMCAST (INTERN)
2	SASIDHARAN S	II MCA	COMCAST (INTERN)

CO-CURRICULAR ACTIVITIES

OVERALL WINNER – TEK WIZARD 2023 – PRESIDENCY COLLEGE(AUTONOMOUS)

Sasidharan S, Varsha V, Arockia Pauline A, Madeshwaren A from II MCA students secured first place in web design, debugging, debate and project presentation with a collective cash prize of Rs.10000/- .

Shrikant NM, Malathy S, Divya D, Kaviya S from II MCA secured 2nd place in the Adzap competition conducted by Dr.M.G.R Educational and Research Institute.

Sasidharan S from II MCA won 1st place in a national level coding competition conducted by the Computer Society Of India along with Srm University, Ramapuram Campus.

OVERALL WINNERS – INTERFACE 2023 – ANNA ADARSH COLLEGE FOR WOMEN

Malathy S and Kaviya S secured First Place in Tech Reels and Divya D and Malathy S secured First Place in Web Designing.

Divya D, Sivabhakiya B from II MCA has Won 2nd Place in Badminton and Malathy S from II MCA has Won 1st Place in Carrom.

Malathy S from II MCA secured the First place in Poster Presentation, and Diti V Jain from I MCA achieved the First place in Paper Presentation at Safer Internet Day hosted by Dissemination of Information Club of D.D.G.D.V.C .

OVERALL RUNNERS - JUNO2K24 - GURU NANAK COLLEGE (AUTONOMOUS)

Dhanush Gopi G, Diti V Jain, and Monicka M secured the First place and a Rs.3000 cash prize in the Dojo (Business Model) event, while **Madhumita G and Poornesh S** secured the second place with a Rs.2500 cash prize in the Link It (Connections) event at Juno 2K24.

Reshma G and Thivya K G from I MCA at SRM Arts and Science College were the runners-up in the Connections event at SRM Tech Xplore'24, earning a Rs.3000 cash prize.

Monicka M and Hasika B from I MCA secured the 3rd place in Paper Presentation, **Reshma G, Srivarshini R, and Monicka M** from I MCA won the 2nd prize in Advertisement Video, and **Swedha V and Poornima K** from I MCA achieved the 3rd place in Doodle competition at Interface'24 hosted by Anna Adarsh College for Women.

RESEARCH PAPER

Kaviya S, Sivaranjani K from II MCA have published a Research paper on **"Machine learning and Product Recommendation Systems"** at the National conference on Emerging Research Trends in Computer Science and Information Technology (ERTCSIT'23) conducted by Dr.Ambedkar Government Arts College and won **Best Paper Award.**

Malathy S, Arockia Pauline from II MCA have published a Research paper on **"Heart Failure Risk Analysis using Bagging and Boosting"** at the International conference on Mathematical Models in Computational Intelligence (ICMMCI'2023) conducted by Ethiraj College for Women, Chennai.

Kaviya S, Jayalakshmi V from II MCA have published a Research paper on **"Application of Machine learning Models for Gait Analysis"** at the International conference on Mathematical Models in Computational Intelligence (ICMMCI'2023) conducted by Ethiraj college for Women, Chennai.

Malathy S, Divya D from II MCA have published a Research paper on **"A Survey on Blockchain and Voting as its Application"** at the National conference on Emerging Research Trends in Computer Science and Information Technology (ERTCSIT'23) conducted by Dr.Ambedkar Government Arts College.

Vinishiya R, Jayalakshmi V from II MCA have published a Research paper on **"A SWOT Analysis About ChatGPT"** at the National conference on Emerging Research Trends in Computer Science and Information Technology (ERTCSIT'23) conducted by Dr.Ambedkar Government Arts College.

Thivya K G, Madhumita G, Reshma G, Srivarshini R from I MCA have published a Review paper titled **"Role of Machine Learning Algorithm in Brain-Computer Interface : A Comprehensive Review"** at the International Conference on Recent Research Advancements in Computational Sciences (ICRRACS 2023) conducted by Loyola College, Chennai.

THE EVOLUTION OF SMART DEVICES

In the ever-evolving landscape of technology, smart devices have emerged as the torchbearers of a connected and intelligent world. These devices, equipped with advanced sensors and communication capabilities, are reshaping the way we live, work, and interact with our surroundings.

Smartphones : The Pocket-Sized Powerhouse

Undoubtedly, smartphones stand as the epitome of smart technology. They provide an array of capabilities with high-definition displays, powerful processors. AI-driven virtual assistants, like Siri, Google Assistant, or Alexa, offer personalized assistance, providing information, managing tasks, and controlling other smart devices, making our lives more streamlined and efficient.

Smart Homes: Creating Connected Living Spaces

The concept of smart homes has gained immense popularity, promising convenience, security, and energy efficiency. A network of interconnected devices, from smart thermostats and lighting systems to intelligent security cameras and voice-controlled assistants, allows homeowners to automate and control various aspects of their living environment remotely.

These devices not only enhance comfort but also optimize resource consumption, contributing to sustainable living. For instance, smart thermostats learn household patterns, adjusting temperatures for energy efficiency. Similarly, smart lighting systems adjust brightness based on natural light availability, reducing electricity wastage.

Wearable Technology: Wellness at Your Fingertips

Wearable devices, such as smartwatches , fitness bands, and health trackers, have significantly impacted personal health and wellness. These devices monitor vital signs, track fitness metrics, and provide insights into daily activities, empowering individuals to take charge of their health.

Beyond fitness, wearable tech has expanded into healthcare, with devices capable of monitoring heart rate, sleep patterns, and even detecting irregularities that could signal potential health issues.

Challenges on the Horizon:

As we embrace the era of smart devices, challenges emerge on the horizon. Privacy concerns, security vulnerabilities, and ethical implications of AI integration require careful consideration. Safeguarding personal information, securing interconnected devices from cyber threats, and ensuring transparent and ethical use of AI will be critical in fostering trust and maximizing the potential benefits of smart devices.

Few Applications:

Video Doorbell: A video allows you to see and speak with whoever is at your door, even when you're not at home. Our budget-friendly favorite is the Ezviz DB1C Wi-Fi Video Doorbell. It offers sharp HD video, local and cloud video storage, and supports voice commands through Alexa and Google Assistant.

Smart Locks: A smart lock allows you to lock and unlock your door with your voice, smartphone, or traditional key. The Ultraloq U-Bolt Pro Wi-Fi is our top pick, offering multiple ways to access your home and advanced security features.

Conclusion:

Forget fancy gadgets - smart devices are sparking a digital revolution! From phones to watches, speakers to TVs, they're seamlessly woven into our daily lives. The future is smart, with our devices working together to make everything easier and better.

References:

- A Concept of paradigm of the IOT by Manuel Silverio-Fernández , Suresh Renukappa and Subashini Suresh

- Ubiquitous Computing - Smart Devices, Environment and Interactions by Stefan Poslad

**SANDHYA R
VASUNDRA S
DURGA SHREE S**

I MCA

UNLOCKING EFFICIENCY
The Essence of Automation

Let's embark on a comprehensive exploration of automation – the silent force reshaping our work and daily lives. Beyond the buzzwords, let's unravel the intricacies and understand how automation is becoming the backbone of modern workflows.

Understanding the Basics of Automation:

At its core, automation is about letting machines handle repetitive tasks, freeing us to focus on more complex and creative aspects of our work. Picture it as having a reliable assistant who excels at handling routine chores.

Ever wondered how your favourite apps seem to know exactly what you need? Automation works through a series of if-this-then-that commands. It's like creating a set of rules that guide machines on what to do in different scenarios.

A Realistic View:

There's a common concern that automation might replace human jobs. However, history shows that technological advancements create new opportunities. Automation might change the nature of some jobs, but it also opens doors to innovative roles and industries.

Adopting new technologies isn't without hurdles. Security concerns, potential job displacement, and the need for upskilling are challenges that accompany the rise of automation. However, each challenge is an opportunity for growth and adaptation.

A Powerful Duo:

Artificial Intelligence (AI) and automation are like dynamic dance partners. AI adds intelligence to automation, enabling machines not just to follow instructions but to learn and make decisions. This collaboration is reshaping how we approach problem-solving.

## A Democratisation of Technology:

Automation is no longer exclusive to large corporations. With the rise of user-friendly tools and platforms, small businesses and individuals can leverage automation to streamline their processes. It's about making powerful technology accessible to everyone.

The Heart of Automation:

Contrary to the fear of machines taking over, the true essence of automation lies in collaboration. Machines handle repetitive tasks with precision, while humans bring creativity, critical thinking, and emotional intelligence to the table. Together, they form a powerful team.

Future Horizons:

As we peer into the future, the integration of automation with emerging technologies like Virtual Reality (VR), Augmented Reality (AR), and the Internet of Things (IoT) promises an even more interconnected and efficient world. The possibilities are vast, and the landscape is everevolving.
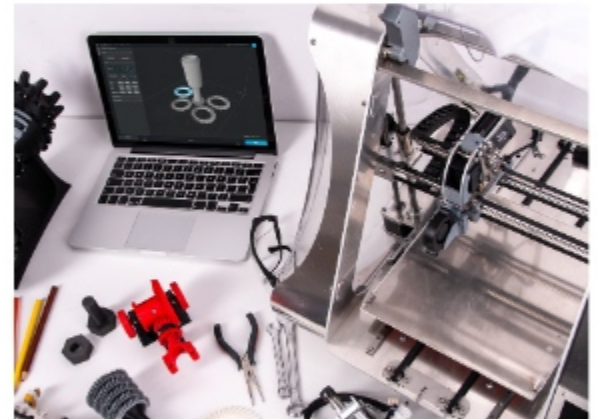
In conclusion, automation is not just a tool; it's a transformative force shaping the way we live and work. As we navigate this automated future, let's embrace the changes, foster a culture of continuous learning, and collaborate to make technology work for us.

References:

- Intelligent Automation Systems at the Core of Industry 4.0 by Amit Kumar Tyagi, Terrance Frederick Fernandez, Shashvi Mishra & Shabnam Kumari.

- Essence and Value of Automation of Accounting and Analytical Process in System Management by Enterprises of the Restaurant Business by Shmatkovska, Tetiana O.

KARANKUMAR G
SATHISH T
YOGANNASAMY N
I MCA
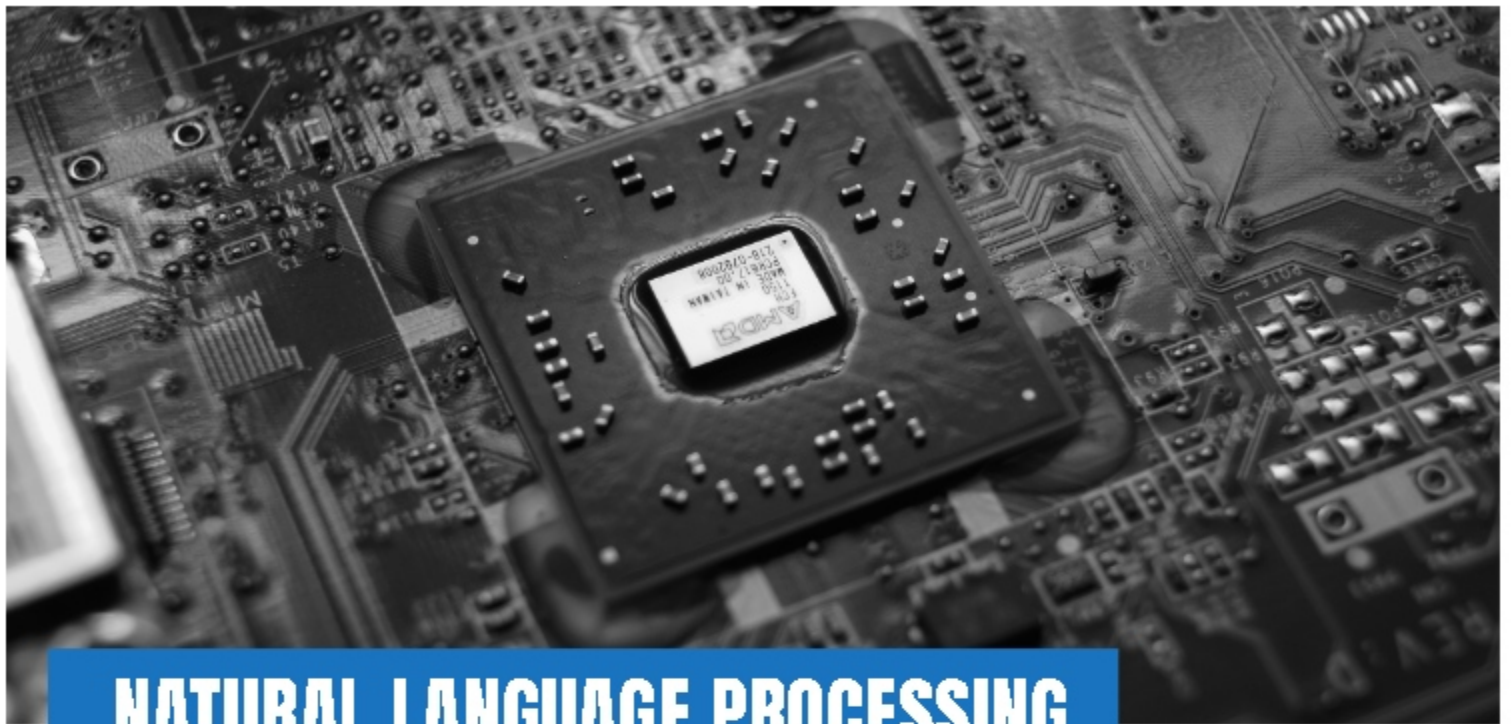
NATURAL LANGUAGE PROCESSING

In today's technology-driven world, communication is the cornerstone of progress. While we humans excel in understanding the nuances of human language, computers often struggle to grasp the complexities of our natural expressions. This is where Natural Language Processing (NLP) steps in, bridging the gap between human and machine communication.

NLP is a subfield of artificial intelligence (AI) that focuses on enabling computers to understand, interpret, and generate human language. It encompasses a wide range of tasks, from machine translation and text summarization to sentiment analysis and chatbots.

Plethora of Natural Language Processing :

NLP has a various kinds of real-world applications, revolutionizing various industries. Here are some notable examples:

1. **Machine Translation:** NLP powers translation tools like Google Translate, breaking down language barriers and facilitating global communication.

2. **Text Summarization:** NLP algorithms can condense lengthy texts into concise summaries, saving time and extracting key information.

3. **Sentiment Analysis:** NLP techniques can analyze the emotional tone of text, enabling businesses to gauge customer sentiment and improve product or service offerings.

4. **Chatbots:** NLP-powered chatbots provide 24/7 customer support, answering questions, resolving issues, and enhancing customer experience.

Do you Know?

Natural language processing (NLP) is rapidly evolving and has the potential to revolutionizemany industries. NLP will enable machines to tailor experiences to individual preferences,facilitate seamless interactions between humans and machines, empower humans with intelligent tools, make AI more explainable and transparent, generate creative content, and address social challenges. These are just a few examples of the many ways that NLP is being used and could be used in the future. As NLP continues to evolve, it is likely to have an even greater impact on our lives.

HOW DOES NLP WORK?
It works just like your mind does
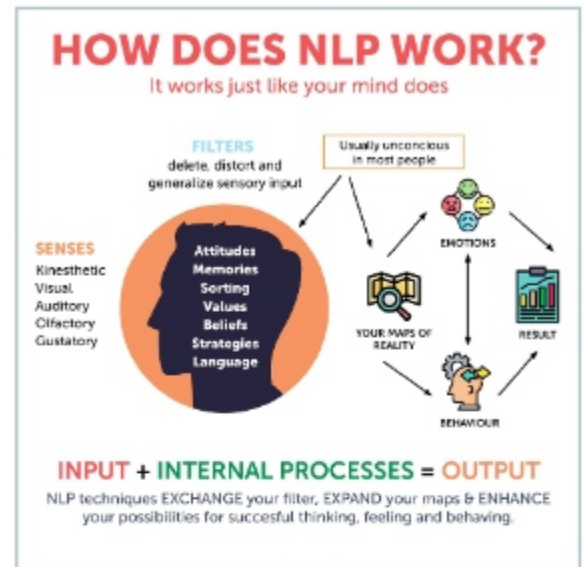
Plethora of NLP in Industries :

- **Technology:** NLP drives machine translation, speech recognition, and virtual assistants.

- **Healthcare:** NLP aids in medical diagnosis, drug discovery, and patient monitoring.

- **Finance:** NLP powers financial sentiment analysis, fraud detection, and automated risk assessment.

Conclusion :

NLP is a rapidly evolving field with immense potential to transform industries and enhance our daily lives. As NLP algorithms become more sophisticated and data availability increases, we can expect even more groundbreaking applications that seamlessly integrate human language.

References:

Natural Language Processing by K.R.Chowdhary

https://www.ibm.com/natural-language-processing

JOFIN N S JEEN
NITHISH RANA
SAI KRISHNAN SP
I MCA

EVOLUTION OF ARTIFICIAL INTELLIGENCE
From Concept to Reality

Artificial intelligence refers to the simulation of human intelligence processes by machines, particularly computer systems. It encompasses a range of technologies and techniques that enable machines to perform tasks that would typically require human intelligence. These tasks include natural language processing, speech recognition, expert systems, and machine vision.

How Artifical Intelligence Works:

AI systems rely on specialized hardware and software to develop and train machine learning algorithms. While no single programming language is synonymous with AI, popular choices among developers include Python, R, Java, C++, and Julia. AI systems work by analyzing large volumes of labeled training data, identifying patterns and correlations, and using these patterns to make predictions about future states.

For instance, a chatbot can learn to generate lifelike conversations by analyzing text examples, while an image recognition tool can identify and describe objects in images by reviewing millions of examples. Furthermore, advancements in generative AI techniques have enabled the creation of realistic text, images, music, and other media.

Importance of Artifical Intelligence:

The impact of AI extends beyond the realm of science and technology. It has the potential to transform the way we live, work, and play. AI has already been effectively used in various business applications, automating tasks such as customer service, lead generation, fraud detection, and quality control.

In fact, AI often outperforms humans inrepetitive, detail-oriented tasks, delivering faster results with fewer errors.

With its ability to process massive amounts of data, AI provides enterprises with valuable insights into their operations.This newfound efficiency has opened doors to new business opportunities and helped companies like Alphabet, Apple, Microsoft, and Meta gain a competitive edge. AI technologies are now integral to these companies, improving operations and driving innovation across multiple domains.

Pros of Artifical Intelligence:

1. **Excellence in Detail-Oriented Tasks:** AI has demonstrated its ability to excel in detail-oriented jobs, such as diagnosing certain types of cancers with remarkable accuracy.

2. **Time Efficiency for Data-Heavy Tasks:** Industries that deal with vast amounts of data, such as banking, pharma, and insurance, benefit from AI's ability to analyze big datasets quickly.

3. **Labor Savings and Increased Productivity:** Automation, enabled by AI, streamlines processes and reduces the need for human intervention, leading to labor savings and improved productivity.

Cons of Artifical Intelligence:

1. **Expensive Implementation:** AI programming requires significant investment in specialized hardware and software, making it costly for many organizations to adopt.

2. **Limited Supply of Qualified Workers:** The demand for AI expertise exceeds the current supply of qualified professionals, posing challenges in building and maintaining AI tools.

3. **Potential Bias and Discrimination:** AI systems can reflect the biases present in their training data, leading to biased and discriminatory outcomes, intentionally or inadvertently.

Ethical Considerations and AI Governance :

As AI becomes more pervasive, ethical considerations and governance become crucial. AI systems can reflect biases present in training data, leading to discriminatory outcomes. It is essential to monitor and address biases, ensuring fairness and inclusivity. The responsible use of AI involves ethical training processes, transparency, and accountability.

Developers must strive to avoid bias during AI training and consider the potential impact of AI on privacy, security, and job displacement. Regulatory frameworks are emerging to guide AI governance, but challenges remain in developing meaningful and up-to-date regulations.

Types of Artificial Intelligence:

1. **Reactive machines** are task-specific AI systems that do not possess memory. They can only react to current situations based on predefined rules. An example of a reactive machine is IBM's Deep Blue, which defeated chess grandmaster Garry Kasparov in the 1990s. While Deep Blue excelled at identifying pieces on a chessboard and making predictions, it lacked the ability to draw upon past experiences.

2. **Limited memory** AI systems can use past experiences to inform future decisions. These systems have the ability to learn and adapt based on historical data. Some self-driving cars employ limited memory AI to make informed decisions on the road.

3. **Theory of Mind** AI refers to systems that possess social intelligence and can understand human emotions, intentions, and behaviors. These AI systems can infer human intentions and predict behavior, making them valuable in team collaborations.

4. **Self-aware** AI systems possess a sense of self and consciousness, enabling them to understand their current state. While self-aware AI does not currently exist, it represents the possibility of AI systems with a level of cognition comparable to human intelligence.

The Future of AI

AI's future is bright! New tech and research will create even stronger AI. We need to balance this progress with ethics and responsible use. Overall, AI has boomed, and it's changing our world. As we move forward, let's harness its potential responsibly!

References:

https://en.wikipedia.org/wiki/History_of_artificial_intelligence

https://en.wikipedia.org/wiki/Timeline_of_artificial_intelligence

MADHAVAN A
PRASATH
MUTHU KRISHNAN
I MCA

AUGMENTED REALITY
Enhanced Reality Fusion

Earlier known as the Sword of the Damocles, Augmented Reality (AR) has come a long way since its inception almost half a century ago. This headmounted display technology was devised by a computer scientist named Ivan Sutherland. The technology has the ability to improve users' natural settings and form a swathe of virtual content in the real world via computer vision and object recognition.

The theory behind Augmented Reality

Augmented reality (AR) is the integration of digital information with the user's environment in real time. Unlike virtual reality (VR), which creates a totally artificial environment, AR users experience a realworld environment with generated perceptual information overlaid on top of it. Augmented reality is used to either visually change natural environments in some way or to provide additional information to users.

Boeing Computer Services Research employee Thomas Caudell coined the term augmented reality in 1990

AR Statistics Market Overview

The AR trends toward the growth. Augmented reality numbers have been increasing for the last decade in a fast-paced manner. In 2021, the worldwide AR market was estimated at only $25B. The core reason for rapid growth is an ideal product-market fit balance that stimulates the industry.

Brands adopt new AR-powered solutions like face filters, video editors, virtual try-on features, and many others. In turn, customers get a unique and user-oriented digital experience that meets their needs way more effectively than traditional market offerings.

This win-win strategy keeps both market sides motivated to release and consume new ARpowered solutions. And this approach is a core accelerator for growing AR trends.

Facts you need to know

1. Markets expect the Augmented Reality market figure to reach $61.39 billion USD by 2023.

2. The number of smartphone augmented reality users is expected to exceed 3.5 billion by 2022.

3. According to the Forrester report, it is projected that 14 million American employees will likely use smart glasses on a daily basis in their workplaces by 2025.

4. A survey of global consumers, revealing their interest in augmented reality shopping experiences by generation, shows that Gen Z is the most interested AR shopper.

The realm of AR applications is continuously expanding and innovating, with new possibilities emerging every day. we can anticipate even more groundbreaking applications that will shape the way we work, learn, and entertain ourselves in the years to come.

References:

https://unity.com/unity/features/arfoundation

https://venturebeat.com/business/digi-capital-over-4-1-billion-invested-in-ar-and-vr-in-2019/

https://en.wikipedia.org/wiki/Augmented_reality

POORNIMA K
PREMALATHA
SUBASREE

I MCA

EVOLUTION OF 6G TECHNOLOGY
A Glimpse into the Future of Connectivity

While we're still marveling at the possibilities unlocked by 5G, the horizon already glitters with the promise of 6G technology. This next evolutionary leap in wireless communication is envisioned to be a transformative force, not just in terms of speed and capacity, but in its ability to fundamentally reshape our world.

Building upon the foundation of 5G, 6G promises:

- **Unfathomable Speed:** Data rates exceeding 1 terabit per second are projected, making downloading an entire movie a blink-of-an-eye affair.

- **Ubiquitous Connectivity:** Seamless coverage, even in remote and challenging environments, will empower diverse applications and connect the currently unconnected.

- **AI-Infused Networks:** Integration of artificial intelligence will enable self optimizing, secure, and ultra-responsive networks.

- **The Internet of Senses:** A world where every object from clothes to furniture seamlessly transmits and reacts to sensory data, blurring the lines between the physical and digital.

- **Holographic Experiences:** Augmented and virtual reality will reach new heights of realism and interactivity, with near instantaneous data transfer supporting lifelike simulations.

However, with such transformative power comes the responsibility to address potential challenges. Security and privacy concerns will need to be meticulously addressed, equitable access to this technology must be ensured.

Impact of 6G Technology

The impact of 6G will be far-reaching, permeating every aspect of our lives:

- **Revolutionizing Industries:** Imagine autonomous vehicles communicating in real-time for safer roads, remote surgery enabled by near-zero latency networks, and smart farms optimizing resources for higher yields.

- **Empowering Individuals:** Telemedicine will reach new frontiers, personalized healthcare will become a reality, and remote education will be redefined with immersive learning experiences.

- **Connecting the Unconnected:** Bridging the digital divide, 6G can bring essential services and information to rural and underserved communities.

- **Sustainability Initiatives:** 6G-powered sensors can monitor environmental changes, facilitate efficient energy management, and contribute to building smart cities.
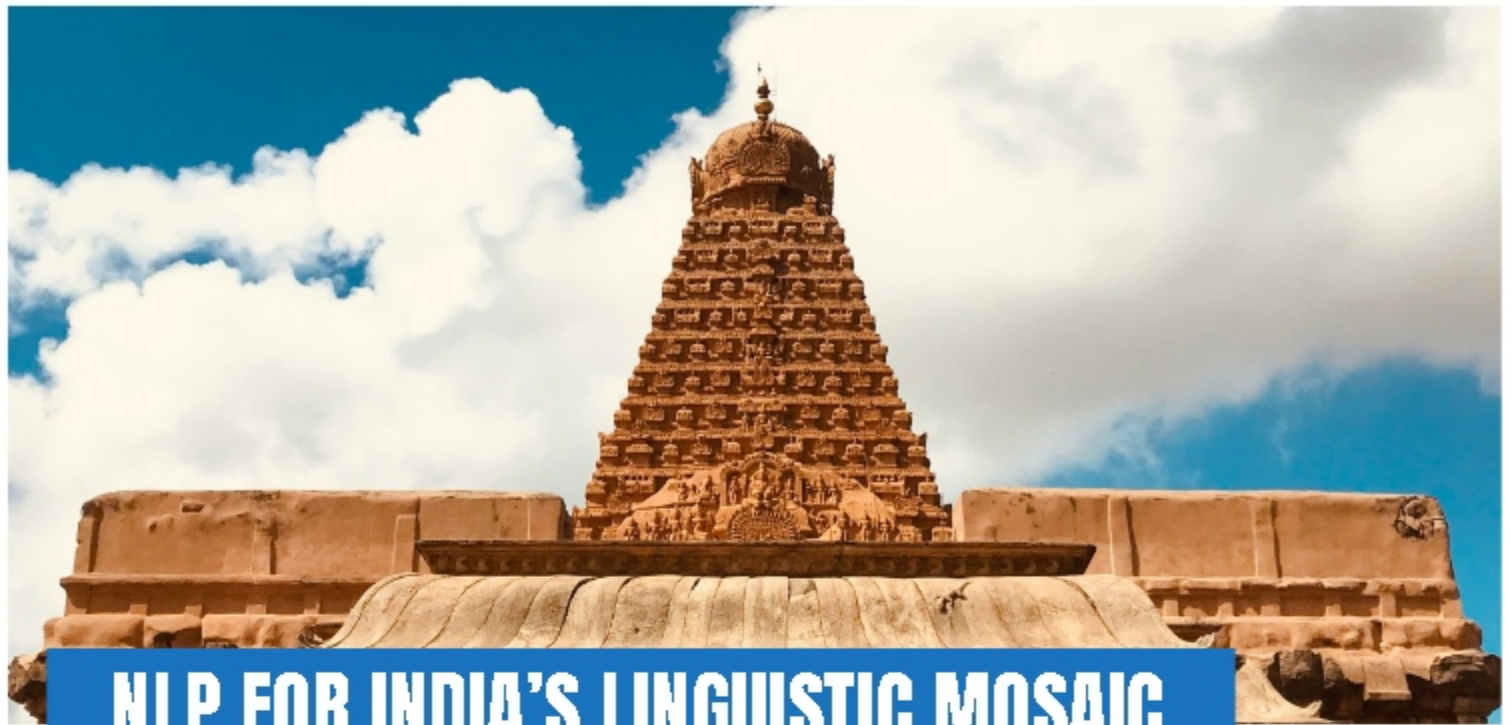

6G is still in its nascent stages, but the research and development underway is electrifying. The path to full deployment will be paved with technical advancements, policy discussions, and social considerations. Yet, one thing is certain: 6G is not just another upgrade; it represents a paradigm shift, ushering in a future where connectivity becomes the very fabric of our existence.

References:

https://www.mdpi.com/2071-1050/14/10/6356

https://www.docomo.ne.jp/english/corporate/technology/rd/docomo6g/

MALATHY S

II MCA

NLP FOR INDIA'S LINGUISTIC MOSAIC

NLP is a branch of data science that consists of systematic processes for analyzing, understanding, and deriving information from the text data in a smart and efficient manner. By utilizing NLP and its components, one can organize the massive chunks of text data, perform numerous automated tasks and solve a wide range of problems such as – automatic summarization, machine translation, named entity recognition, relationship extraction, sentiment analysis, speech recognition, and topic segmentation etc.

Before moving further, I would like to explain some terms that are used in the article:

- Tokenization – process of converting a text into tokens

- Tokens – words or entities present in the text

- Text object – a sentence or a phrase or a word or an article

What is Language?

Language is a wonderful tool of communication – its powered the human race for centuries and continues to be at the heart of our culture. The sheer amount of languages in the world dwarf our ability to master them all.

In fact, a person born and brought up in part of the country might struggle to communicate with a fellow person from a different state (yes, I'm talking about India!). It's a challenge a lot of us face in today's borderless world.

This is a research area that Natural Language Processing (NLP) techniques have not yet managed to master. The majority of breakthroughs and state-of-the-art frameworks we see are developed in the English language.

I have long wondered if we could use that and build NLP applications in vernacular languages.

Human beings by nature are diverse and multilingual, so it makes sense, right?

What are the Languages of the Indian Subcontinent?

The Indian Subcontinent is a combination of many nations, here's what Wikipedia says:

The Indian subcontinent is a term mainly used for the geographic region surrounded by the Indian Ocean: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.

These nations represent great diversity in languages, cultures, cuisines etc.
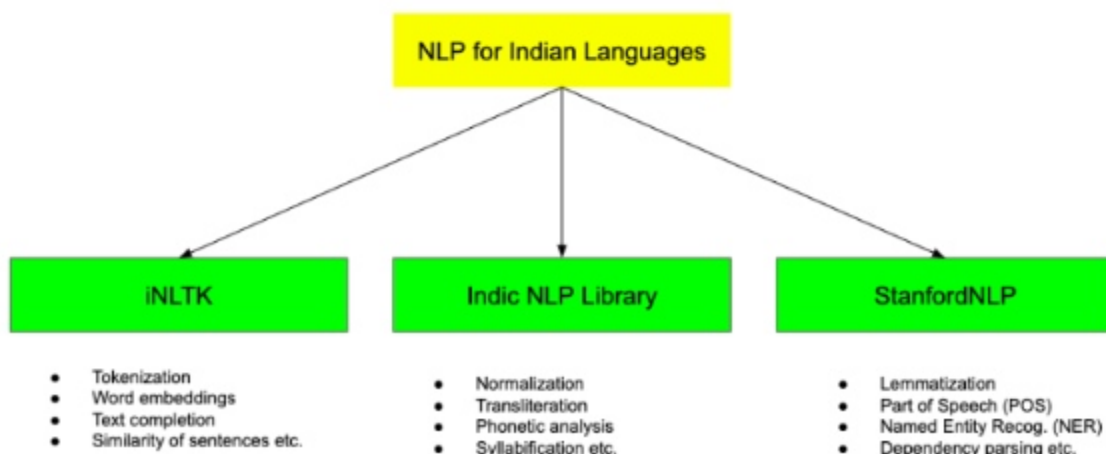
Even within India itself, there are a multitude of languages that are spoken and used in day to day life which itself showcases the basic need to be able to build NLP based applications in vernacular languages.

These are some of the languages of the Indian Subcontinent that are supported by libraries we'll see in this article (each library lists only unique languages it supports as there are many overlapping languages like hindi):

1. **iNLTK**- Hindi, Punjabi, Sanskrit, Gujarati, Kannada, Malyalam, Nepali, Odia, Marathi, Bengali, Tamil, Urdu.

2. **Indic NLP Library**- Assamese, Sindhi, Sinhala, Sanskrit, Konkani, Kannada, Telugu.

3. **StanfordNLP**- Many of the above languages.

Text Processing for Indian Languages using Python :

There are a handful of Python libraries we can use to perform text processing and build NLP applications for Indian languages. I've put them together in this diagram:

NLP for Indian Languages

| iNLTK | Indic NLP Library | StanfordNLP |

iNLTK
- Tokenization
- Word embeddings
- Text completion
- Similarity of sentences etc.

Indic NLP Library
- Normalization
- Transliteration
- Phonetic analysis
- Syllabification etc.

StanfordNLP
- Lemmatization
- Part of Speech (POS)
- Named Entity Recog. (NER)
- Dependency parsing etc.

All of these libraries are prominent projects that researchers and developers are actively utilizing and improving for working with multiple languages. Each library has its own strengths and that's why we will explore them one by one.

1. iNLTK (Natural Language Toolkit for Indic Languages)

As the name suggests, the iNLTK library is the Indian language equivalent of the popular NLTK Python package. This library is built with the goal of providing features that an NLP application developer will need.

iNLTK provides most of the features that modern NLP tasks require, like generating a vector embedding for input text, tokenization, sentence similarity etc. in a very intuitive and easy API interface.

Scan the QR Code or Visit : https://inltk.readthedocs.

2. Indic NLP Library

I find the Indic NLP Library quite useful for performing advanced text processing tasks for Indian languages. Just like iNLTK was targeted towards a developer working with vernacular languages, this library is for researchers working in this area.

Here is what the official documentation says about Indic NLP's objective:

"The Indic NLP Library is built to support most of the common text processing and NLP capabilities for Indian languages.

Indian languages share a commonality in terms of script, phonology, language syntax, etc. and this library is an attempt to provide a general solution to very commonly required toolsets for Indian language text."

This library provides the following set of functionalities:

- Text Normalization

- Script Information

- Tokenization

- Word Segmentation

- Script Conversion

- Translation

Scan the QR Code or Visit : https://readthedocs.org/projects/indic-nlp-library/

3. StanfordNLP

StanfordNLP is an NLP library right from Stanford's Research Group on Natural Language Processing.

The most striking feature of this library is that it supports around 53 human languages for text processing!

Out of these languages, StanfordNLP supports Hindi and Urdu that belong to the Indian Sub-Continent.

StanfordNLP is good for generating features of Computational Linguistics like Named Entity Recognition (NER), Part of Speech (POS) tags, Dependency Parsing, etc.

Scan the QR Code or

Visit : https://github.com/stanfordnlp/stanfordnlp

Sanskrit as an Example

Sanskrit is an Old Indo-Aryan language. As one of the oldest documented members of the Indo-European family of languages, Sanskrit holds a prominent position in Indo-European studies. It is related to Greek and Latin, as well as Hittite, Luwian, Old Avestan, and many other extinct languages with historical significance to Europe, West Asia, and Central Asia. It traces its linguistic ancestry to the Proto-Indo-Aryan language, Proto-Indo-Iranian, and the Proto-Indo-European languages.

What makes Sanskrit unique is the rule set that it formulates and the grammar that was formulated much before the language became widely accepted and spoken in the Indian sub-continent. While most languages we speak are "natural", Sanskrit by definition is a synthetic language.

References:

https://epubs.siam.org/doi/abs/10.1137/1.9781611974010.66https://sematext.com/glossary/devops/

https://www.tandfonline.com/doi/abs/10.1080/0952813X.2022.2115142

DEVOPS MODEL DEFINED

DevOps is the combination of cultural philosophies, practices, and tools that increases an organization's ability to deliver applications and services at high velocity: evolving and improving products at a faster pace than organizations using traditional software development and infrastructure management processes. This speed enables organizations to better serve their customers and compete more effectively in the market.

How DevOps Works?

Under a DevOps model, development and operations teams are no longer "siloed." Sometimes, these two teams are merged into a single team where the engineers work across the entire application lifecycle, from development and test to deployment to operations, and develop a range of skills not limited to a single function.

In some DevOps models, quality assurance and security teams may also become more tightly integrated with development and operations and throughout the application lifecycle. When security is the focus of everyone on a DevOps team, this is sometimes referred to as DevSecOps.

These teams use practices to automate processes that historically have been manual and slow. They use a technology stack and tooling which help them operate and evolve applications quickly and reliably. These tools also help engineers independently accomplish tasks (for example, deploying code or provisioning infrastructure) that normally would have required help from other teams, and this further increases a team's velocity.
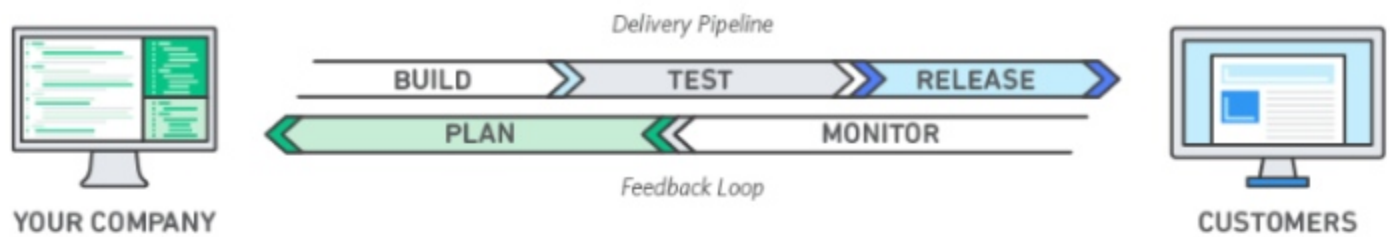
Why DevOps Matters

Software and the Internet have transformed the world and its industries, from shopping to entertainment to banking. Software no longer merely supports a business; rather it becomes an integral component of every part of a business. Companies interact with their customers through software delivered as online services or applications and on all sorts of devices. They also use software to increase operational efficiencies by transforming every part of the value chain, such as logistics, communications, and operations. In a similar way that physical goods companies transformed how they design, build, and deliver products using industrial automation throughout the 20th century, companies in today's world must transform how they build and deliver software.

DevOps Cultural Philosophy

Transitioning to DevOps requires a change in culture and mindset. At its simplest, DevOps is about removing the barriers between two traditionally siloed teams, development and operations. In some organizations, there may not even be separate development and operations teams; engineers may do both. With DevOps, the two teams work together to optimize both the productivity of developers and the reliability of operations. They strive to communicate frequently, increase efficiencies, and improve the quality of services they provide to customers. They take full ownership for their services, often beyond where their stated roles or titles have traditionally been scoped by thinking about the end customer's needs and how they can contribute to solving those needs. Quality assurance and security teams may also become tightly integrated with these teams. Organizations using a DevOps model, regardless of their organizational structure, have teams that view the entire development and infrastructure lifecycle as part of their responsibilities.

DevOps Practices Explained

There are a few key practices that help organizations innovate faster through automating and streamlining the software development and infrastructure management processes. Most of these practices are accomplished with proper tooling.

One fundamental practice is to perform very frequent but small updates. This is how organizations innovate faster for their customers. These updates are usually more incremental in nature than the occasional updates performed under traditional release practices. Frequent but small updates make each deployment less risky. They help teams address bugs faster because teams can identify the last deployment that caused the error. Although the cadence and size of updates will vary, organizations using a DevOps model deploy updates much more often than organizations using traditional software development practices.

Organizations might also use a microservices architecture to make their applications more flexible and enable quicker innovation. The microservices architecture decouples large, complex systems into simple, independent projects. Applications are broken into many individual components (services) with each service scoped to a single purpose or function and operated independently of its peer services and the application as a whole. This architecture reduces the coordination overhead of updating applications, and when each service is paired with small, agile teams who take ownership of each service, organizations can move more quickly.

DevOps Tools

The DevOps model relies on effective tooling to help teams rapidly and reliably deploy and innovate for their customers. These tools automate manual tasks, help teams manage complex environments at scale, and keep engineers in control of the high velocity that is enabled by DevOps. AWS provides services that are designed for DevOps and that are built first for use with the AWS cloud. These services help you use the DevOps practices described above.

References:

https://about.gitlab.com/topics/devops/

https://sematext.com/glossary/devops/

https://www.synopsys.com/glossary/what-is-devops.html

SANTHOSH P
SAI KRISHNAN SP
VINOTH R
ANUJ KUMAR
ABHISHEK M
I MCA

VALLUVERSE
Your Personal Pronouncing Assist!

Have you ever wondered that a system evaluates your speech and says, "Did you pronounce it correctly or not?". Well I've created a platform for this exact reason. It's interesting, isn't?

Allow me to introduce "Valluverse."

Introducing...

VALLUVERSE is an Open Course Platform. This contains the literary anthology that predominantly includes the Thirukural . Learners will find it useful to assess the level of their philology knowledge. At first, it just included the Thirukural Content to assist students in testing their knowledge and receiving free instruction in philology.

Also, it is an initiative called "**To Digitize and Conserve All Kinds of Literature Content in the modern era**". This can also resurrect the image of one of the greatest poets and philosophers of Tamil Literature – THIRUVALLUVAR in the modern era.

Spotlight

This idea came into spotlight when I faced certain issues. Such as: A lot of open library platforms have the mediocre user interfaces and certain websites are classified as regional anthologies according to their target audience. For the Anthology Contents, there isn't a Pronouncing Validator to verify the level of Orating. This feature isn't available on big platform like Google. Furthermore, the anthology content does not have a Free of Cost (FOC) Certification System.

Solution I Made:

The solution I made was: "VALLUVERSE". By just logging in and using the platform, students may access all of the anthology content in this the most user-friendly open course platform at no cost, with voice recognition validation certification available.

Scan QR Code or

Visit : https://dhanushgopi.github.io/valluverse/

User Guide to VALLUVERSE:

1. Enter the Kural Number in the given prompt.
2. The Kural will be displayed on the screen.
3. When the user pronounces it correctly, a success message is displayed.
4. When the user pronounces incorrectly then an Alert message is displayed.

Benefits:

"To Digitise and Conserve All Kinds of Literature Content in the Modern Era" being the main motive to create this platform which inspires the current generation to learn, connect and pronounce their literature in the correct manner with makes them a step closer to their roots in this modern era.

Future Potential:

The future goal is to establish a brand-new ecosystem as an "Open Course Platform" that offers free courses of all types and domains along with valuable certificates.

References:

https://developer.mozilla.org/en-US/

https://css-tricks.com/

https://www.theodinproject.com/

https://www.freecodecamp.org/

https://github.com/jonasschmedtmann

https://www.cyberdudenetworks.com/

DHANUSH GOPI G
I MCA

Explaination:

I designed this poster based on this research paper "Cyber Security Risks for Smart Cities" by Institute for Defense and Business. Primary intention to create this poster to make aware and to get aware of the Cyber Crimes in the "Smart Cities" and "how we can be prevent from the cyber crimes" .

Reference:

https://www.idb.org/what-are-the-cybersecurity-risks-for-smart-cities/