VISHNU
UNIVERSAL LEARNING

BVRIT HYDERABAD
COLLEGE OF ENGINEERING FOR WOMEN
(Approved by AICTE, New Delhi and Affiliated to JNTU Hyderabad)
ACCREDITED BY NAAC WITH GRADE : A | ACCREDITED BY NBA | NIRF RANKING BAND: 201 - 250

B-SMART

- We Explore We Exhibit

NAME TO FAME
HACKATHON STORIES
TECHNICAL TRENDS

Volume 8, Issue 1, April 2023
ISBN : 97893-85101 - 70 - 0

B-SMART

(**B**VRITian **S**tudent **M**agazine on **A**dvanced **R**esearch & **T**echnologies)

VISION

To emerge as the best among the institutes of technology and research in the country dedicated to the cause of promoting quality technical education.

MISSION

At BVRITH, we strive to

- Achieve academic excellence through innovative learning practices.
- Enhance intellectual ability and technical competency for a successful career.
- Encourage research and innovation.
- Nurture students towards holistic development with emphasis on leadership skills, life skills and human values.

B-SMART is here to keep the students and the faculty members informed with the latest development in the area of science, engineering & technology. It also inculcates the habit of reading among students about new trends in technology and emerging areas and to provide a platform to the student for sharing knowledge.

Principal's Message

Dr. K. V. N. Sunitha,
Principal, BVRITH

"The only way of finding the limits of the possible is, by going beyond them into the impossible."- Arthur C. Clarke

Limits are created by the mindsets. As we go forward beyond the limits in the path of excellence, the achievement is beyond our expectations. BVRIT HYDERABAD College of Engineering for Women believes that there is no limit for someone's achievement, if one works with a determined mind. This is the attitude which, the college, from its inception, inculcate in the students' minds. And the outcome is incredible… Our hard work and perseverance continue to show its results. The latest feather in our crown is that, BVRIT HYDERABAD is ranked 73rd among Top T-Schools in India 2023 by Dataquest.

We feel proud to announce that one of our alumni, Ms.Ch. Sowmya of ECE batch 2018-2022 is awarded with 2 University Gold Medals - one is the Best outgoing Student of B. Tech ECE out of all affiliated colleges and the second one is the Pisupaati Supriya Desai Gold Medal for the Best outgoing student in ECE in JNTUH affiliated colleges. For BVRIT HYDERABAD, she is the 3rd Student to get the University medals. Our students are now part of the built-in programme offered by IIT Madras and even some students do internship in IIIT Hyderabad.

Let me announce the prize winner for the previous edition. 'Kasula Spandana' of CSE (AIML), who is the contributor of 'Fabric that can hear', has won the prize in the last issue.

Now we have Volume 8, Issue 1 of BSMART, the Technical magazine of BVRIT HYDERABAD, where many of our recent achievements are mentioned. I congratulate the contributors of the articles and the faculty and student coordinators who worked sincerely to publish this edition of the magazine.

With Best Wishes

Dr. K.V.N. Sunitha

Contents

‘Name to Fame’

BVRIT HYDERABAD proudly introduces its star of the year and wishes her ‘The Best in Life’

Hi friends, I am Sowmya Chinthamaneni from the Department of Electronics and Communication Engineering Batch 2018-2022. I would first like to take this opportunity to thank our Principal mam Dr. K.V.N. Sunitha madam, faculty members, placements team, seniors and the most beautiful and kind Aayas and security team for their constant care and guidance.

College!!! The turning point in everyone’s life - One of the most interesting stages in life that gives you an opportunity to explore is the ‘College phase’. Life at college is the time when the teenage years end and we all dive deep into the ocean of new beginnings and possibilities. This golden period better equips you for all the challenges you’ll face in life and create a strong foundation of knowledge. My experience at BVRIT HYDERABAD College of Engineering for Women was a roller coaster.

The most wonderful year – My first year of B.Tech

Not knowing what challenges I was going to face- with this tiny fear, I made a new start. I made new friends, met seniors, got

introduced to new stuff that was exciting as well as weird, went to hackathons, feasts and many more. College helped me a lot in digesting things slowly, all the faculty members were so kind and helped me a lot by providing notes and making me understand concepts in a beautiful way. The best part of this year was Engineering lab I loved it. The most fearful part of this year was WISE but it got introduced me to coding which helped me too.

The most tough years – My second and third years of B. Tech

Entering into the core concepts of Electronics and Communication Engineering all the way to being affected by the pandemic, these two years of my B.Tech was hard but could get through successfully. My third year of B.Tech was a race!! Yeah, you heard it right it was a race. Seeing my seniors attending interviews and getting placed in good companies and praying someday I get my dream job was the most difficult part. College gave us rigorous trainings on aptitude, coding and many more which helped me in gaining confidence. This year was filled with developing new skills to grab good placements and definitely never ignored my academics.

The War – My Final year of B. Tech

Oooh myy goodddddd!!! It was World War 3. Everyone's faces were filled with fears, doubts, questioning ourselves are we giving our best, encouraging each other, sleepless nights, learnings, exams, interviews, results and many more. Thank you, placements team, for being our backbone in every step of placements. I spent most of my final year working as an intern in Harman connected services due to which I couldn't attend classes but I was able to perform well in my academics and placements because of wonderful faculty members.

The Beautiful Ending of my B.Tech

Finally, I got placed in JP Morgan Chase & Co the company I always dreamt of. That's not the end guys!! the most memorable part of my B. Tech life was when I was receiving Two university gold medals from Honourable governor of Telangana, Lieutenant governor of Puducherry Dr. Tamilisai Soundararajan which made my parents proud, Thank you Sunitha mam and Vishnu sir for making this day even more special by attending the convocation.

Never give up, I know it's hard but it gives sweet results.

Sowmya Chinthamaneni

ECE (18WH1A0419)

COVER STORIES

COVER STORY – 1

BAGGED FIRST PRIZE IN THE HACKATHON CONDUCTED BY SRM UNIVERSITY, AMARAVATI

Title :

RECOGNITION OF ABNORMAL GAIT

Team Members:

Ms. Hemasree Jonnalagadda

Ms. Sehaba Banu Shaik

(III Year ECE)

Mentors:

Mr. N.M Sai Krishna

(Assistant Professor, ECE)

Mr. R. Priyakanth

(Associate Professor, ECE)

Hi, I am Hemasree from III year ECE along with Sehaba Banu have participated in a 24 hour Hackathon Conducted by SRM University Amaravati from 14th Dec to 15th Dec 2022, presented our idea, 'Recognition of Abnormal Gait'. We have won 1st prize of cash prize ₹7000.Our product is about classifying different abnormalities in walking styles and detecting the type of abnormality, with the goal of making it easier for orthopedics, neurologists, and physiotherapists to diagnose. Our motivation for developing this product stems from the numerous applications of detecting abnormal walking in airports and public places, not just health care. We worked for the next 24 hours to make our idea a reality. We shared ideas, divided tasks, and fed off each other's energy. We learned how to work under pressure, prioritize tasks, and effectively communicate. We also gained new technical skills through the use of tensor flow and deep learning.

We have encountered many real-world situations while collecting datasets of different types like people having fractures etc. In the process of developing a prototype for the product we have visited hospitals to get to know the problem deeper. But the real prize wasn't the trophy or the cash prize. It was the experience of working on a challenging project with a diverse team, learning new things by seeing various projects, and pushing ourselves to our limits. It was the feeling of breaking barriers, both in terms of the problem statement and our own abilities.

After the hackathon, we realized that this was only the beginning of our journey. We were inspired to keep using our skills for the greater good, to continue breaking down barriers, and to never stop learning.

COVER STORY – 2

WON 1 LAKH SEED FUND AND NAMED AS ONE OF THE TOP TWO TEAMS OUT OF THE 10 SELECTED AT ALEAP-WE HUB

Title:

SURAKSHA

Team Members:

Ms. Y.Grahya

Ms. D.Vignya Reddy

Ms. B.Pravali

Ms. K.Deepika

(IV Year ECE)

Mentors:

Mr. N.M Sai Krishna

(Assistant Professor, ECE)

Mr. R. Priyakanth

(Associate Professor, ECE)

Our journey began with a problem statement that we were passionate about solving. We worked tirelessly to develop a solution and prepared to present it at Smart India Hackathon (SIH). However, despite our best efforts, we were not selected to move forward in the competition. But we didn't let the rejection stop us. So, we decided to pitch it at ALEAP-WE Hub. During our pre-incubation program for a month, we also visited Singareni coal mines. Next, we applied to Youth for Social Impact (YFSI), a prestigious entrepreneurship program. We were thrilled to be selected as one of the top 10 teams. Over the next month, we received mentorship from experienced entrepreneurs and refined our business strategy. We were grateful for the guidance and support that we received during this time. Finally, we attended a three-day boot camp where we had the opportunity to learn from the seasoned entrepreneurs. We gained insights into all aspects of entrepreneurship, from marketing and sales to financing and business development. At the end of the boot camp, we pitched our idea, called SURAKSHA, to the judges. We were thrilled to win a 1 lakh seed fund and be named one of the top two teams out of the 10 selected for the program.

We were grateful for the support and encouragement we received from YFSI, ALEAP-WE Hub, our college BVRITH, and the ECE department. Thanks to their support, we were able to turn our idea into a reality and make a real impact in the lives of coal mine workers. It was a journey filled with growth, learning, and success.

COVER STORY – 3

RECEIVED CASH REWARD OF RS 10K AS THE FIRST PRIZE WINNERS OF CHATGPTHON

Team Members:

Ms. Hari Sreenija

Ms. Kammari Nikitha

(II Year CSE)

The world of technology is constantly evolving, and hackathons have become a popular way for individuals to showcase their skills and creativity. Recently, our college hosted a hackathon named CHATGPTHON, which attracted a diverse group of participants. Our winning project aimed to address a common problem faced by people of deaf and dumb who face challenges in expressing their thoughts.

Despite the success, the team faced several challenges during the hackathon. We had a limited amount of time and resources to complete the project, and we also had to learn new technologies quickly. Additionally, we had to work together as a team and navigate through different approaches to achieve the common goal. We learned that working together as a team is essential to achieving success, and that it's important to be open to new ideas and approaches. We also learned the importance of taking risks and embracing failure as an opportunity to learn and grow.

Looking towards the future, the winning team hopes to continue developing our project and bringing it to market. In conclusion, the winning team's experience at the hackathon is a testament to the power of innovation and teamwork. Our project addressed a common problem and showed how technology can be used to make a positive impact on people's lives. We are privileged to be the first prize winners and feeling happy and hopeful to take all the measures to convert the idea to a product by the time, we are in third year.

COVER STORY – 4

EXPERIENCE OF WORKING AS THE TEACHING ASSISTANTS IN IIITH WORKSHOP

Title :

HANDS-ON WORKSHOP ON IOT AND ONEM2M FOR SMART CITIES

Team Members:

Ms. A. Asritha

Ms. P. Snehalatha

(III Year EEE)

Mentors:

Dr S.L Aruna Rao

(Professor, IT)

Mr. Guruswamy Revana

(Associate Professor, EEE)

Dr Nara Sreekanth

(Associate Professor, CSE)

This report is about our experience in working as Teaching Assistants in the College Research Affiliate Program's workshop on the Internet of Things (IoT) on March 18th and 19th 2023. Myself, Asritha and Snehalatha of the 3rd EEE got this wonderful opportunity based on our internship, which we completed at IIITH. The workshop was conducted by professors from the Signal Processing and Communication Research Centre. The workshop began with an introduction to IoT and covered lectures on sensors, microcontrollers, actuators, networking, cloud computing, fog computing, data analytics, and more. We worked with industry-standard tools and platforms like OneM2M. They also shared their experiences and insights into the. As TAs, we got a chance to work closely with the professors which helped us stay engaged and have a better understanding of IoT.

As TAs, we had the responsibility of assisting the students in setting up and configuring IoT systems. This was a very valuable learning experience for us. Definitely, the workshop was an excellent learning experience for all the participants, but for us, as TAs, it was a lifetime opportunity to help other participants with problem solving. This experience has made us more confident to face similar situations and helped us feel that learning is fun when we investigate different aspects of it.

COVER STORY – 5

WON CASH PRIZE 10000/- AND STOOD BEST AMONG TOP 5 PROJECTS AND WE RECEIVED CERTIFICATES IN IIT-M CONDUCTED BY PALS AT IIT-M (2023)

Title :

SMART CART WITH AUTOMATIC BILLING AND ANTI THEFT

Team Members:

Ms. M. Sahithi

Ms. S.K. Manasvi

Ms. G. Naga Preethi

Ms. M V Vanshita

(IV Year IT)

Mentor:

Ms. Ch. Sai Lalitha Bala
(Assistant Professor, IT)

We, the fourth-year IT students from BVRIT Hyderabad College of Engineering for Women, took part in a technical event at IIT Madras Research Park that was organized by PALS, an initiative of IIT Madras alumni.

We had presented our prototype - Smart Cart with Automatic Billing and Anti-Theft. The major objective of this project is to make it easier for customers to enter the store, make purchases and leave it by minimizing their time and effort requirements. In order to realize this, a RFID reader and an LCD screen are attached to the cart. The RFID reader scans the RFID tag on the item when it is placed near the RFID reader, where the item details will be displayed on the LCD screen. In this way, the cost and weight of the item gets added to the bill. When a customer finishes shopping, they can pay using the generated billing information sent as an SMS/message to the customer's telegram application. Hence, this system is suitable for use in places such as supermarkets, where it can help reduce the workforce and create a better shopping experience for customers. By this practice, the cart will itself do all the billing and the problem of long queues on counters will be solved.

COVER STORY – 6

WON SECOND PLACE AT IDEATHON 2k22- CONDUCTED AT VIT, BHIMAVARAM

Title :

CROP MONITORING

Team Members:

Ms. Nitisha T
(III CSE)
Ms. Pavithra B
(III CSE AIML)

Mentor:

Dr. J Naga Vishnu Vardhan
(Professor, ECE)
Dr. V. Hindumathi
(Associate Professor, ECE)

Crop monitoring using drones has become a popular method in recent years. This technology allows farmers and agronomists to collect high-resolution images and data about their crops, which can help them make informed decisions about irrigation, fertilization, and pest management. Drones equipped with cameras and sensors can fly over fields and capture detailed images of crops, which can be analysed to identify areas of the field that may be suffering from stress or disease. The images can also be used to measure plant height, biomass, and yield potential, providing valuable insights into the health and growth of the crops.

One advantage of using drones for crop monitoring is that they can cover large areas quickly and efficiently. Drones can also collect data more frequently, allowing farmers to track changes in their crops over time. Another benefit of using drones for crop monitoring is that they can provide more accurate and precise data than traditional methods. For example, drones can capture images with high spatial resolution, allowing farmers to see individual plants and even detect small variations in crop health.

COVER STORY – 7

SECURED SECOND PLACE AT VALIANT EVENT CONDUCTED AT VIT, BHIMAVARAM

Title :

MEGENCY

Team Members:

Ms. M Nikshiptha

(III Year EEE)

Ms. N Harshini

(III Year ECE)

Mentor:

Dr. J Naga Vishnu Vardhan

(Professor, ECE)

Dr. V. Hindumathi

(Associate Professor, ECE)

We see many people losing their lives as the medicines are not delivered on time this is because of road delivery and traffic on roads. The requirements are not reaching people near disaster areas. We see like in disaster areas people don't have proper food or any requirements. The rescue team has overcome it by delivering them by helicopter but it's very expensive for the government. Suppose a person had an accident he needs blood immediately but we need to get the blood from blood banks which is a bit far away and is certainly not possible by road. Many fire men are not having the proper information about the fire spot it is difficult for them to rescue the people who got stuck.

As this became a biggest issue in our society, we came with the solution that is delivering all the medical requirements which will be sustaining in certain temperature and not available in nearby places through drone. Where there will be no traffic created and fast supply of the goods. We will be attaching a fire extinguisher to the drone which will be spraying in the smaller areas and enter the fire spot and it will be attached with the thermal camera which gives the information about the people who got stuck.

COVER STORY – 8

SECOND PRIZE IN EVENT CONDUCTED BY VALIANT ORGANIZED IN VIT, BHUIMAVARAM.

Title :

GAME OF MINES

Team Members:

Ms. D. Harshitha
(III Year CSE)

Ms. T. Neha sree
(III Year AIML)

Mentor:

Dr. J Naga Vishnu Vardhan
(Professor, ECE)

Dr. V. Hindumathi
(Associate Professor, ECE)

The project Game of Mines is will be useful for defence team. The one of the main problems in the defence management will be due to landmines which were buried at the time of wars. Those were left over in ground since many years. The consequences of this problem can be devastating. Military personnel are particularly at risk, as they may be required to operate in areas that are known or suspected to contain landmines.

The metal detector to drone project is an innovative and exciting endeavour that seeks to combine two technologies to create a new solution for detecting metal objects in difficult-to-reach areas. This project aims to create a drone that is equipped with a metal detector. By doing so, the drone will be able to quickly and efficiently scan large areas and detect any metal objects that may be buried or hidden. This technology has the potential to revolutionize industries and the effectiveness of search and rescue missions.

It gives us 3D view of the particular area where we can see the buried landmines in the connected software. Overall, the metal detector drone has the potential to revolutionize various industries and improve the efficiency and safety of many tasks that involve the detection of buried metal objects.

COVER STORY – 9

REPORT ON THE PROJECT HEXAGON.

Title :

DIGITALIZATION OF ISOMETRIC DRAWINGS USING AI/ML TECHNIQUES

Team Members:

Ms. Ashritha Bhimavarapu

Ms. M.S.S Priyanka

(III Year CSE)

Ms. Kasula Spandana

Ms. Yellagandula Manaswini

(III Year AI & ML)

Ms. D. Avani Sri

(III Year IT)

Mentor:

Mr.Chandrasekhar Uddagiri

(Associate Professor, CSE)

Our team recently completed a co-innovation project with Hexagon on "Digitalization of isometric drawings using AI/ML techniques," and we are proud to say that it was a huge success. Our journey began with extensive research to understand the isometric drawing domain and determine where to start. We held weekly meetings with Hexagon and daily meetings with our mentor, Chandrasekhar Uddagiri, to ensure that we were on track and achieving our objectives.

Over the course of 2.5 months, we brainstormed, researched, and implemented our plan before creating a 3D digital twin of isometric drawings using image processing and AI. We were amazed at how quickly we accomplished our weekly objectives, and we were grateful for the opportunity to work on a real-world problem.

Our success has led to the expansion of the project to include customer drawings, which we hope to replicate in the coming quarter. Our team learned a lot throughout this project and is grateful for the support and guidance of our mentor, Chandrasekhar Uddagiri, and the opportunity provided by BVRIT Hyderabad and Hexagon Capability Center India. Overall, this project has been a great experience for our team, and we are excited to continue working on the next phase of the project.

COVER STORY – 10

SELECTED FOR THE GRAND FINALE OF SMART INDIA HACKATHON-2022

Title :

CaRe - Can Recycling

Team Members:

Ms. Keerthana Kyatam

Ms. Annam Bhuvaneshwari

Ms. N.Rishitha

Ms. Billa Vaishnavi

Ms. B.Lakshmi Tejaswini

(IV EEE)

Mentor:

Mrs. K. Amritha

(Associate Professor, EEE)

Mr. R. Priyakanth

(Associate Professor, ECE)

Hi, I am Keerthana Kyatam EEE IV year along with my team, Annam Bhuvaneshwari, N. Rishitha, Billa Vaishnavi and Tejaswini have participated in the finals of SMART INDIA HACKATHON 2022 with the idea "CA-RE (Can Recycling Smart bin)".

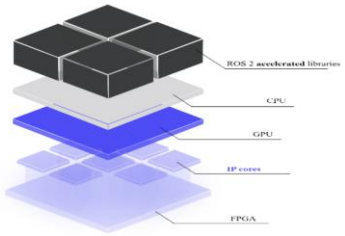
The aim of our idea is Economic Recycling. Economic Recycling of cans is not very successful now as, a separate can-collection infra structure is often missing or is inadequate. And the available ones suffer from high contamination levels. Aluminium is 2nd largest product used all over the world. Instead of recycling an aluminium can into metal sheets, we recycle it into a beverage can again. Our product collects the beverage can and to encourage the users/ consumers, when they throw a can in the bin, a QR Code is displayed on the display and if he/she scans the QR Code, they will be getting the rewards. Once the bin is full, a pop-up notification is sent to the collectors to collect the scrap. All this information is monitored and controlled in the app. Two separate logins will be provided for the user and collector respectively. The aim of the product is to participate for a social cause.

The feedback which we got from the evaluators helped us to understand many things. This hackathon experience made us to learn many more things and implement it.

TECHNICAL TRENDS – From Faculty

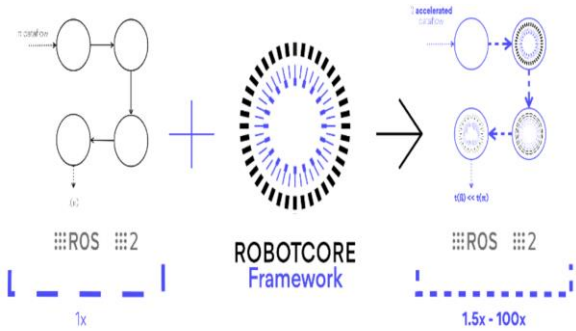
Framework: A Hardware Accelerated ROS2 for Robotics

Robot brain and robot behaviour take the form of computational graphs, with data flowing between computation Nodes, across physical networks (communication buses) while mapping to underlying sensors and actuators. The popular choice to build computational graphs for robots these days is the Robot Operating System (ROS), a framework for robot application development. ROS2 is the second iteration of ROS represents the common language roboticists use to build robots while providing a message-passing system between software components, drivers for robot hardware, state-of-the-art robotic algorithms, and powerful



developer tools to test, debug and visualize the robot. RobotCore is a robot-specific processing unit architecture to integrate hardware acceleration in the widely-used ROS 2 robotics software framework, which helps map ROS computational graphs to its CPU, GPU and FPGA efficiently to get the best performance.

RobotCore provides robotics architects with ROS 2 accelerated libraries that deliver faster computations (getting tasks done quickly once started), additional determinism (task happens in exactly the same timeframe, each time) and real-time (meeting the time deadlines set for each task).



Robot Core features multiple CPUs, a GPU and an FPGA interconnected in a common Ethernet data bus which allows combining the traditional control-driven approach used in robotics with a data-driven one. This means that when architected appropriately through acceleration kernels (IP cores), RobotCore is perfect to accelerate autonomous mobility, industrial manipulation and healthcare applications which means accelerating Autonomous Mobile Robots(AMRs), Collaborative Robots (Cobots), Industrial Arms etc.

References:

1. https://www.electronicsforu.com/technology-trends/unleashing-power-of-robotics-with-robotcore-framework
2. https://accelerationrobotics.com/robotcore.php

Ms. T Amy Prasanna

Assistant Professor
Department of ECE

Laying Foundation for Extended Reality in Metaverse

The extended collection of virtual worlds known as the metaverse, according to some observers, will develop from the existing online settings that people are already accustomed to, such as expanding the extended-reality (XR) experience utilised in online gaming. In the future they envision, individuals won't need to travel as much or engage in resource-intensive activities, which will speed up society's digital transformation and improve sustainability.

Others assert that the metaverse will usher in a decentralized economy that will enable individuals to produce digital assets of their choosing and participate in electronic trade. This version of the Internet is anticipated to democratize the Internet by making it visible, accessible, and interoperable to everyone since the architecture would be open, decentralized, and without gatekeepers.

One thing is for sure: The metaverse has the power to drastically alter the manner in which we work, study, play, and live. But, there will be challenges to overcome along the road.

Because of this, the IEEE Standards Society (IEEE SA) is striving to design, develop, and deploy the technologies, applications, and governance processes required to convert theoretical notions of the metaverse into concrete realities and to create new markets.

Social and Technical Difficulties

Designing and creating metaverse settings presents a number of technological and social issues, including:

1. Better interfaces for users.
2. System latency is reduced.
3. XR technologies that are more seamlessly integrated and operative.
4. Improved volumetric video rendering and 3D modelling.
5. Enhanced methods for collecting, displaying, storing, and protecting geographical data.
6. Reduced energy usage.
7. Using the Internet to interact.

To address the vast range of opinions on techno-social issues including user identification, credentialing, privacy, openness, ethics, accessibility, and user safety, consensus is required.

References:

1. https://flipboard.com/topic/ethics/laying-the-foundation-for-extended-reality/a-18dWxBA0S1qXyZUn7BLHrQ%3Aa%3A3064134-4d4134ee76%2Fieee.org
2. https://spectrum.ieee.org/laying-foundation-for-extended-reality

Mr. Saikumar Tara

Assistant Professor

Department of ECE

Energy Management Using Rule-based Approaches

Introduction

The energy management is used to effectively coordinate energy sharing among the different energy sources while supplying required amount of load in the system. In literature, there exists several energy management approaches based on different applications, operating modes, control structure, optimization problem formulation, optimization methods, uncertainty modelling, etc. The application can be for residential, industrial or commercial loads. The operating mode can be either grid-connected or islanded operation. The control structure can be centralized, decentralized or hierarchical. Further, the uncertainty can be modelled as deterministic or stochastic. Similarly, the optimization problem can be single objective or multi-objective. The energy management approaches involve an objective function such as minimizing the energy loss, minimizing the energy consumption cost, minimizing the peak power, minimizing the voltage deviation, minimizing the fuel consumption, maximizing the lifetime of different components of the system (e.g., converters, batteries), maximizing the environmental benefits, etc. These objectives have to be achieved while satisfying the various constraints of the system such as device ratings, bus voltage magnitudes constraints, thermal limits of the lines, etc.

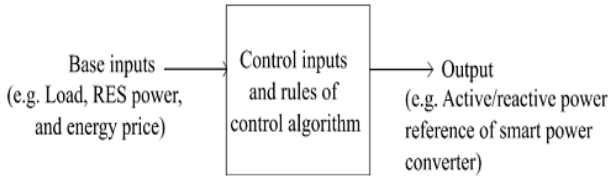


Fig. 1. Rule-based control approach with its inputs and output

Rule-based approaches for Energy Management:

The energy management approaches are mainly classified as rule-based approaches and optimization approaches. The optimization approaches are well-known approaches. The rule-based algorithms attempt to execute instructions from a starting set of data (control inputs) and if-then statement rules. These approaches are widely used in industry due to their simplicity and ease of application in real-time. Moreover, the rule-based approach is the suggested approach by IEEE Std 2030.7 for Microgrid control purpose due to their advantages like easy implementation, easy maintenance, clear meaning of the chosen rules, and low cost. The rule-based control approach with its inputs and output is shown in Fig. 1

References:

1. **Rampelli Manojkumar, "Optimal Rule-Based Energy Management and Voltage Control Using Battery Energy Storage and Smart Power Converters". PhD, IIT Guwahati, 2023.**

   http://gyan.iitg.ac.in/handle/123456789/2293

2. **"IEEE standard for the specification of microgrid controllers," IEEE Std 2030.7-2017, pp. 1–43, 2018**

Dr R. Manojkumar
Assistant Professor
EEE Department

Edge computing and Blockchain integration in Health Care

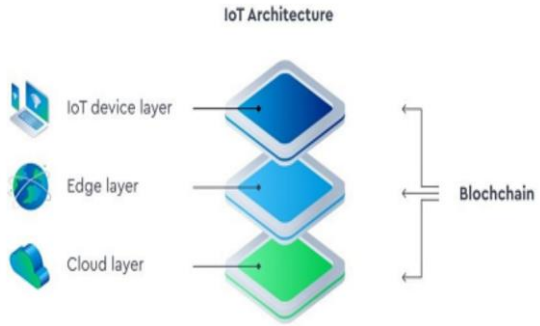
Edge computing and Blockchain work on Distributed computing. Resource utilization can be improved by integrating blockchain and edge computing in terms of storage, network, security and computation. Lower latency and faster response rate can be achieved as data travels over shorter distances.

Some of the examples of real-time advantages include:

1. Virtual circuit drones can be protected using Blockchain through cloud platform.
2. The complexity of communication can be reduced by signcryption for IoT devices.
3. Health information security can be provided through wearable IoT devices.

IoT devices might be updated with safe software via a smart contract, for instance. With that backdrop established, let's examine how edge computing and blockchain can be combined for practical applications.

IoT Architecture Depicting the Integration of Edge computing and Blockchain :

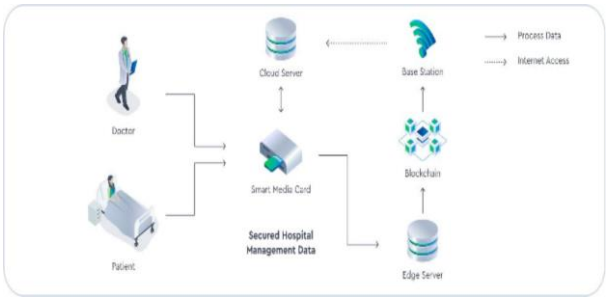


In IoT device layer, edge servers build their own local networks with the devices linked to them. After an IoT device accepts the CA (certificate authority) certificate that has been handed to it, the local edge server maintains and registers the device. The blockchain of the edge server stores transactions that represent the communication that takes place between edge servers, IoT devices, and devices and the edge server. Each edge server serves as a blockchain manager in charge of creating, confirming, and storing transactions.

Edge layer is home to the edge servers that manage the edge blockchain. The computing power, memory, and storage needed for the mining and consensus processes are not present in IoT devices. This processing burden is offloaded from IoT devices via the edge layer, which also archives all transactions between IoT devices and between IoT devices and edge servers on the blockchain.

In Cloud layer, Cloud servers with their own decentralized blockchain make up the layer. It keeps track of information that isn't latency-sensitive but can still need more in-depth investigation. For more in-depth insights, sensor data may be coupled with data from other sources.

Health Care Application: Bitcoin and Ethereum are the two cryptocurrencies most often associated with blockchain, that are applied to a wide range of applications. Healthcare, industrial IoT, smart cities, and smart home automation are some sectors that gain from blockchain's security characteristics and decentralised nature.



A patient's health information is taken from wearables and stored in an electronic medical

card. This data can be delivered to edge servers encrypted. For increased data security and secrecy, edge servers store this data on the edge blockchain.

Data from the edge can be accessed by patients and authorised hospital staff considerably more quickly than data from the cloud. Any data that is not necessary for real-time analysis is sent to the cloud by edge servers.

Conclusion:

We can create a distributed and secure edge computing architecture that can support the integrity and safety of IoT data throughout its lifetime by integrating edge computing with blockchain. The adoption of edge computing use cases based on blockchain technology will increase along with the number of applications and their demand for secure, real-time data access.

References:

https://www.sciencedirect.com/science/article/abs/pii/S0167739X22003521

B.Sunayana
Assistant Professor
Department of IT

4D Printing- An Advancement in Additive Manufacturing

The advancement in additive manufacturing opened the doors for the development of intricate multi-functional components which serves variety of fields in real time. The word 4D printing demonstrated the possibility in adding a dynamic behavior to a static element/member with the conjunction/involvement of external actuator and stimulus. A simple yet informative schematic representation of 4D printing is shown in Figure 1.

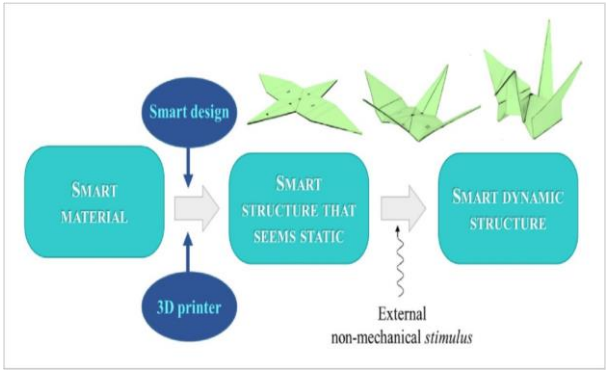


Figure 1: Static to Dynamic Structure with 4D printing [Gazzaniga et al., 2023]

The utilization of 4D printed parts has spread its wings into various fields such as aerospace, automobile, renewable energy, Heath care industry, Biomedical, Agriculture, Tissue engineering, Drug delivery, Neurosurgical, Bio-inspired materials, Biochemical, Architectural, Soft robotics. Some of the specific applications of 4D printing in health care industry are presented in Figure 2.

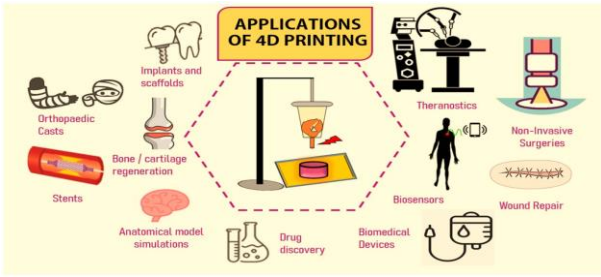


Figure 2: Applications of 4D printing [Pingale et al., 2023]

To add the time factor as a fourth dimension in existing 3D printers, various smart materials (shape-memory polymers, shape-memory alloys, shape-memory metals, shape-memory ceramic, hydrogel-responsive materials and liquid crystal elastomers), Manufacturing

methods (stereo lithography (SLA); selective laser sintering (SLS); fused deposition modeling (FDM); direct ink writing (DIW); digital light

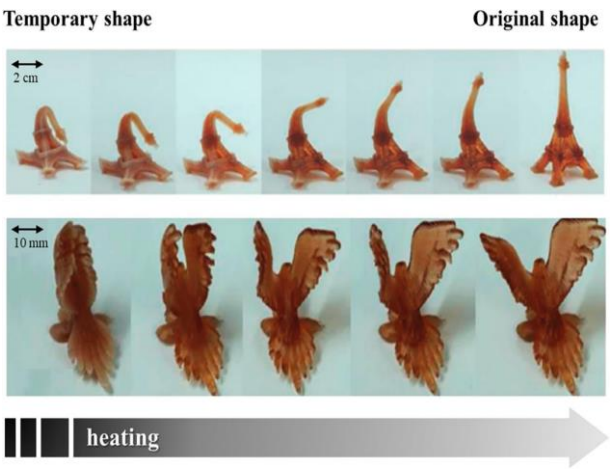


Figure 3: 4D printed parts during relevant shape recovery triggered by heating [Zarek et al., 2016]

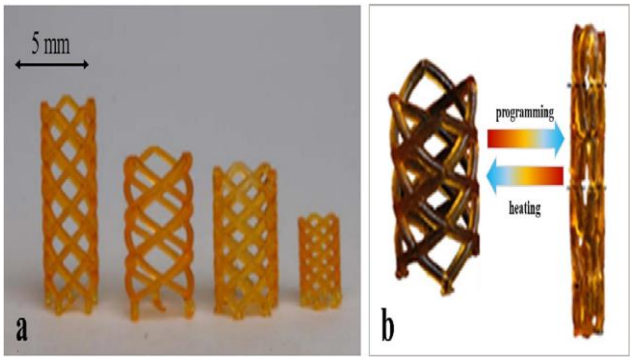


Figure 4: (a) 3D printed stents with different geometric parameters ; (b) 3D printed stent programmed into the temporary shape with a smaller diameter for minimally invasive surgery: after heating, the stent recovers the original shape with a larger diameter.[Sakhaei et al, 2016]

processing (DLP)) and Stimulus (electric, magnetic, thermal, light, water, pH, and humidity) are being in use by this technology.

The various influencing parameters for 4D printing are; type of manufacturing method, utilization of right smart materials, stimulus, the interaction between materials and stimuli, and programming model. The three basic principles of 4D printing are

1. Developing composite materials which could respond to the stimulus.
2. Providing a stimulus according to specific behaviour requirements of a printed part.
3. Time factor for required response should be well-known.

References:

1. **Aldawood, F. K. (2023, February). A Comprehensive Review of 4D Printing: State of the Arts, Opportunities, and Challenges. In Actuators (Vol. 12, No. 3, p. 101). MDPI.**
2. **Gazzaniga, A., Foppoli, A., Cerea, M., Palugan, L., Cirilli, M., Moutaharrik, S., ... & Maroni, A. (2023). Towards 4D printing in pharmaceutics. International Journal of Pharmaceutics: X, 100171.**

Dr Chitturi Sai Krishna
Assistant professor
Department of BS&H (Mechanical)

Hyper-heuristics for Combinatorial Optimization Problems

In the field of combinatorial optimization, to solve any N P-hard problem usually researchers tend to develop heuristic or metaheuristic methods that make use of the problem specific knowledge. Even for problems under the same domain, the heuristic or metaheuristic methods require significant changes depending on the nature of the problem under consideration to be able to generate solutions of good quality in viable computational times. It is also

demonstrated that the quality of solutions created by methods that properly combine different low-level heuristics outperforms those generated by each individual low-level heuristic [1, 2]. Hence, there is a need to develop approaches that can be used for solving problems across domains without incorporating deep problem specific knowledge to generate solutions of better quality by properly combining the low-level heuristics [3]. Hyper-heuristics are a suitable alternative solution method as compared to the heuristics or metaheuristics due to their ability to adapt to the specifics of the problem instance under consideration while combining several low-level heuristics.

A hyper-heuristic and a metaheuristic differ fundamentally. A hyper-heuristic works in the search space of heuristics, whereas a metaheuristic directly works in the search space of solutions to the problem under consideration. A hyper-heuristic tries to find the most appropriate heuristic to solve the problem under consideration in the search space of available heuristics, whereas a metaheuristic tries to find the best solution in the search space of solutions to the problem under consideration [4].

Given their generality in addressing problems, hyper-heuristics have received increased interest from the research community in the last ten years or so. For the first time, Denzinger et al. [5] introduced the term hyper-heuristic to describe a method that combines some artificial intelligence based approaches for automated theorem proving. Later in [6], hyper-heuristics were defined as heuristics that can select the most appropriate heuristics from a set of low-level heuristics for a given combinatorial optimization problem. While using the low-level heuristics, at each stage of the search operation the hyper-heuristics can either choose an existing heuristic or generate a new heuristic from the components of the already existing heuristics and thereby make use of the selected or newly generated heuristic.

Based on their purpose, hyper-heuristics can be of two types.

- Selective hyper-heuristics: methodologies for choosing/selecting from available low-level heuristics.
- Generative hyper-heuristics: methodologies for producing new heuristics using elements of available low-level heuristics.

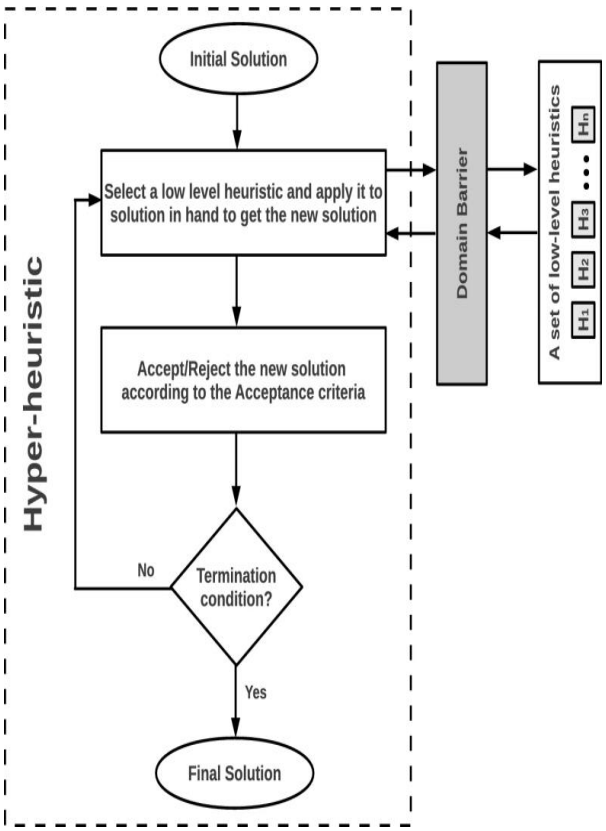


Figure 1: Hyper-heuristic framework

Within the selective hyper-heuristics, there are several selection methodologies that are proposed in the literature such as random selection, random gradient selection, random permutation, random permutation gradient, and greedy selection [3]. The random selection

method randomly selects one low-level heuristic at each step of the search process. Random gradient selection is an extension of the random selection technique which applies the randomly selected heuristic in a loop until there is no improvement. The random permutation method makes a random ordering of all the available low-level heuristics and in each step of the search, the operation applies one low-level heuristic in the newly generated order. Random permutation gradient selection is an extension of random permutation selection. Finally, the greedy selection is an exhaustive method that applies all the low-level heuristics and the heuristic that produces the best solution among all the low-level heuristics is considered as selected.

Figure 1 shows the framework of a selective hyper-heuristic that has two main components. The first component is a domain-independent high-level strategy and the second component has a repository of domain-specific low-level heuristics. The domain-independent high-level strategy is responsible for collecting and managing information such as the number of low-level heuristics, measuring the performance of the applied heuristics and keeping track of the selected heuristic and also deciding whether to accept or reject a new solution. The other component is responsible for applying the domain-specific low-level heuristics using the knowledge specific to the problem under consideration. The design of domain-specific low-level heuristics plays an important role in the performance of a hyper-heuristic. The domain barrier acts as an insulator between high-level search strategy and low-level heuristics. Further, a hyper-heuristic can be hybridized with a metaheuristic. Usually, this is done in one of two ways, i.e., either a metaheuristic is utilized as a low-level heuristic within a hyper-heuristic framework or a hyper-heuristic is employed for local search within a metaheuristic framework. The copious literature on hyper-heuristics proves their effectiveness in solving combinatorial optimization problems, particularly when dealing with problems involving multiple aspects as they raise the level of generality.

One may refer to [3] for a comprehensive survey on hyper-heuristics and their applications.

References:

1. **K. Chakhlevitch and P. Cowling, "Hyperheuristics: recent developments," in Adaptive and multilevel metaheuristics. Springer, 2008, pp. 3–29.**
2. **H. Fisher, "Probabilistic learning combinations of local job-shop scheduling rules," Industrial scheduling, pp. 225–251, 1963**
3. **E. K. Burke, M. Gendreau, M. Hyde, G. Kendall, G. Ochoa, E. Özcan, and R. Qu, "Hyper-heuristics: A survey of the state of the art," Journal of the Operational Research Society, vol. 64, no. 12, pp. 1695–1724, 2013.**

Mr.Ch.Edukondalu
Assistant professor
Department of CSE

TECHNICAL TRENDS – From Students

Building Digital Trust: A Vital Element for Today's Connected World

In today's hyper-connected age, trust has become a valuable commodity. Building and maintaining digital trust has become a top priority for businesses and individuals alike. Digital trust involves establishing credibility and reliability in the digital world. It is about creating an environment where people can trust the technology, people, and processes involved in digital interactions.

To build digital trust, businesses need to implement robust security measures such as encryption, access controls, and multi-factor authentication. They need to be transparent about their data collection and usage practices and provide users with clear and concise information about their privacy policies. This will help to establish trust with their customers and build brand loyalty.

Individuals can also take steps to ensure digital trust. They can use strong passwords, enable two-factor authentication, and be cautious about sharing personal information online. They should also verify the authenticity of websites and emails before clicking on any links or providing any sensitive information.

In conclusion, digital trust is critical for both businesses and individuals in the digital world. It is essential to establish credibility and reliability to build and maintain trust in digital interactions. By implementing robust security measures and being transparent about their data practices, businesses can establish trust with their customers. Similarly, individuals can take steps to protect their personal information and verify the authenticity of digital interactions. With digital trust, we can create a safer and more secure digital world.

Reference:

www2.deloitte.com/us/en/insights/topics/digital-transformation/digital-trust-for-future.html

P. Likhita Varma
CSE-B 2nd Year

Augmented Reality vs Virtual Reality

Augmented Reality (AR) and Virtual Reality (VR) are two different technologies that are becoming more popular in the world today.AR is when digital Information is overlaid onto the real world through devices like smartphones, tablets, and smart glasses. A common example of AR is social media filters that add digital content to a user's face or surroundings. VR, on the other hand, creates a completely immersive digital environment that can be interacted with using a VR headset.

AR has advantages such as allowing users to interact with digital objects while still being aware of their surroundings. It can be used for things like social media filters or displaying information about a machine in an industrial

setting. However, it also has limitations because it can be difficult to create an immersive experience since the digital content is overlaid on to the real world.

VR is very immersive and can be used to create new worlds and experiences. It's often used for gaming, training and therapy because it can simulate dangerous or complex situations in a safe environment. However, it requires specialized hardware like a VR headset and a powerful computer or gaming console.

Overall, both AR and VR have their advantages and limitations. AR is more practical and can be used in a wide range of applications, while VR is more immersive but requires specialized hardware. These technologies are evolving and will continue to shape the future of computing and human interaction with technology.

Reference:

https://www.pcmag.com/news/augmented-reality-ar-vs-virtual-reality-vr-whats-the-difference

Kathi Sarayu
IT-B 2nd Year

Robotic Process Automation (RPA): The Game-Changer of the Digital Age

Robotic process automation (RPA) is a transformative technology revolutionizing businesses in the digital age. In a world which increasingly values speed, efficiency and accuracy, RPA stands out as a cutting-edge solution that allows companies to improve productivity and reduce costs.The core of RPA consists of artificial intelligence and machine learning algorithms. This permits RPA bots to automate repetitive, time consuming, and mundane tasks with speed and precision. The RPA can handle a wide range of business processes such as data entry and even customer support. This frees up valuable time and resources for more strategic activities.

An exceptional aspect of RPA is its ease of implementation. While most other technologies require a significant overhaul of existing IT infrastructure, RPA can be integrated into existing workflow smoothly and with minimal disruption. This makes as ideal solution when immediate results are required, without a long ramp-up time.

Moreover, RPA is full of potential with regards to elevating the quality of work and reducing errors. With its ability to accurately follow strict rules and guidelines, RPA bots show a lower probability of making mistakes and provides greater consistency in its performance than humans.

To conclude, RPA is a game-changer which helps propel businesses into an era of innovation and growth. By harnessing the power of artificial intelligence and machine learning, companies can automate their workflow, increase efficiency, and thus increase profits. With the constant growth of technology, the possibilities for RPA are endless and we can expect to see even more exciting applications in the future. Additionally, RPA is highly scalable, meaning that companies can start small and gradually scale up as they see the benefits of technology. This allows businesses to test the waters with smaller projects and then expand

the scope of RPA as they grow comfortable and confident in its capabilities.

Reference:

https://www.grandviewresearch.com/industry-analysis/robotic-process-automation-rpa-market

Ch.Sri Vrinda
CSE-B 2nd Year

AR (Augmented Reality) - Holograms

Well! Many of us are interested in visualizing things in a 3-dimensional way, here comes holographic technology which is all about 3-dimensional living. Augmented reality (AR) holograms are a fascinating technology that is rapidly advancing and evolving. They are holographic 3D images that are created using laser technology and augmented reality(AR) software. Laser technology is used to record the interference pattern of two or more laser beams, creating a three-dimensional representation of the object being recorded. The resulting hologram can be viewed using AR technology, which superimposes the hologram onto the real world. The images can be seen through smartphones, AR glasses, or any other AR devices and the image appears to be floating in the air.

Holograms can be used in a variety of ways, from entertainment to learning and education. They can be used in marketing and advertising to convey a message in an eye-catching and interactive manner, and in medicine to aid doctors and surgeons in observing complicated operations. They can also be used in architecture and engineering to visualize buildings before they are constructed.

To conclude, AR holograms offer infinite possibilities as a profound technology that has the potential to revolutionize the way we interact with our world. We can look forward to seeing even more advanced and realistic AR holograms, providing us with a glimpse of the future.

Reference:

https://head-face-med.biomedcentral.com/

https://www.researchgate.net/publication/319561347_Augmented_reality_using_holographic_display

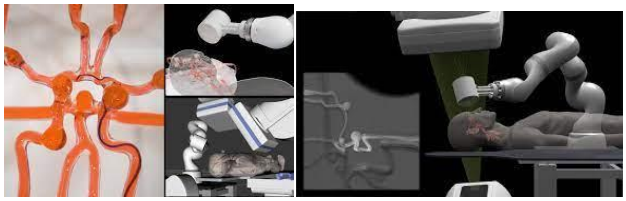
R. Manaswini
CSE-B 2nd Year

Joystick-controlled robotic surgeons

Robots controlled by joysticks are a fascinating and novel way to perform surgery. In order to treat patients suffering from strokes or aneurysms quickly and remotely, MIT engineers developed a tele-robotic system. A joystick allows the surgeon to control the robot arm from a distance, typically from another room or building. This allows them to perform complex procedures without ever physically touching or being near their patients.

Advantages

For patients seeking minimally invasive surgery, joystick-controlled robotic doctors are an excellent alternative. Because of their precision and flexibility, these robots can do more delicate procedures than ever before, perhaps resulting in less suffering and shorter recovery times. This means you'll be getting the best care possible from an expert who was trained by his or her own professors!



Challenges

While this technology is fascinating, numerous hurdles must be overcome before it can be broadly implemented. The first is cost: these surgical robots are costly, and they require substantial training to utilize efficiently. Furthermore, they are currently only offered in a few hospitals worldwide.

Conclusion

The future of surgery has arrived. Joystick-controlled robotic surgeons are changing the way we do surgery, boosting healthcare outcomes, and evolving. This technology has already been utilized in hundreds of treatments throughout the world, but there is still a long way to go before it becomes routine in hospitals globally.

Reference:

https://news.mit.edu/2022/robot-stroke-treatment-remote-0413

S.Bhavitha
IT 2nd Year

Graph Enhanced AI

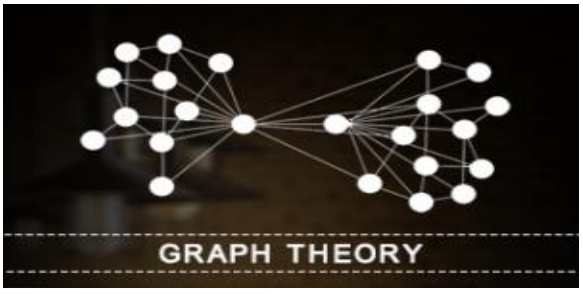
If there is any area in computer science that's worth the hype today, it is Artificial intelligence. But, how do we connect that to age-old graph theory...? The era of graphs began with Euler in early 18th century when he solved the well-known Konigsberg Bridge problem, maybe Euler never knew that, after centuries all these theorems and statements related to graph theory could be a foundation for writing an AI or ML program in order to draw conclusions and identify relations and similarities between anything.

And just like that one experiment can lead to unexpected answers to other problems. By converting or visualizing data, we can learn many aspects, the steps include:

- Split the data.
- Preprocess the raw data.
- Observe the similarities between samples.
- Convert into a graph.

By convincing everyone that graph theory is worth knowing something about, it is now time to focus on some examples. It is also encountered in NLP, where they convert text into adjacency matrices and then convert to graphs and find the similarities with specialized techniques. We can apply graph theory in various fields, for example:

- Social networking sites, Cybersecurity, Operation research



- Even the google page rank algorithm uses graph theory to provide search results for the user's based on weights of the graph.
- LinkedIn model their users as a graphs in which each vertex is a user and the edge between users is connection.
- Drug discovery, helping medical professionals to identify the linkage in drugs, allows them to create more personalized medicine.

Reference:

https://www.maths.ed.ac.uk/~v1ranick/papers/wilsongraph.pdf

https://neo4j.com/blog/graphs-for-artificial-intelligence-and-machine-learning/

S.Satwika
CSE-AIML 2nd Year

3D Food Printing

Imagine that you want to make pizza. At first, The dough needs to be made, kneaded, extruded, topped with cheese and all the vegetable toppings, and then baked. A prolonged procedure…Consider a situation where you can choose the flavors you want and then the various formats and sizes in which you want your plate to be customized. You then receive your stunning-looking platter in a matter of seconds. The only requirement is to simply put it in the microwave. Our work is done. It seems preposterous, yes? but it is accurate...It is known as 3D food printing.

The way these food printing works is that anything and everything, including vegetables, batters, dough, cheeses, and sweets like jellies, frostings, sugar decorations, chocolate, and mashed fruits, is turned into a paste or semi-liquid state in the printing machine. Next, we choose our meal's formatting, and then we use the lasers built into the printer to extrude the food into a syringe-like container and trace shapes onto our plate.

Finally, we put the food in the microwave, based on the type of our meal.3D food printing is transforming traditional restaurant kitchens across the globe. The revolutionary technology of food 3D printing is revolutionizing the way we view food production and usage. This technology is opening the door to novel and exciting food encounters because it can print complex shapes and designs. The advantages of this 3D printing involve Customizing meals, eating unconventionally, and reproductivity require less effort.

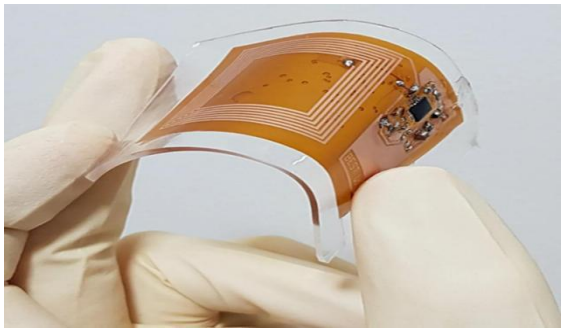
Reference:

https://all3dp.com/2/3d-printed-food-3d-printing-food/

G. Sravika
CSE 2nd Year

Smart Bandages

Smart bandages have the potential to transform wound healing by enabling patients to track their own healing progress and reducing the need for frequent doctor visits. The patch can apply pressure to wounds and monitor healing using a smartphone app.Smart bandages include respiratory monitoring and COVID-19 symptom detection. With the help of this cutting-edge technology, chronic wounds like bedsores and foot ulcers might be managed substantially better, allowing patients to recover more quickly.



The layers that make up smart bandages each have their own purpose. The sensing layer contains a number of sensors that monitor changes in the wound environment, including moisture, pH levels, and temperature. Graphene or carbon nanotubes, which can respond to changes in the wound environment and produce electrical signals that may be wireless relayed, are typically used to make these sensors.

In response to sensor changes, the drug delivery layer releases drugs or other therapies. This layer is made of materials such as hydro gels or micro spheres and can be programmed to release drugs at a predetermined rate or in response to predetermined triggers.

The benefits of smart bandages include continuous wound monitoring, targeted drug delivery, improved healing, and lower healthcare costs. The disadvantages are high costs, complexity, limited availability, and power source requirements.

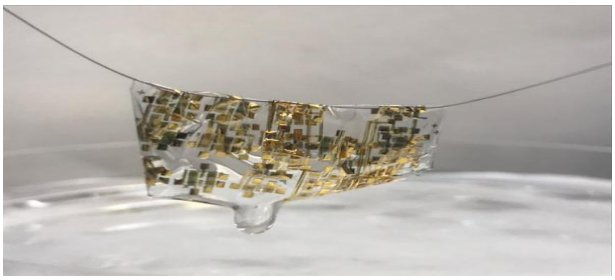
Reference:

https://medicine.arizona.edu/news/2023/new-smart-bandage-blends-flexible-electronics-and-wound-healing-science

S. Vaishnavi
IT 2nd Year

Biodegradable Electronics

Biodegradable electronics is an arising field that involves the development of electronic bias that can break down naturally over time. This technology has the ability to address the growing problem of electronic waste and reduce the environmental impact of electronic bias.



One of the most promising accessories for biodegradable electronics is silk. Silk is biocompatible and biodegradable, and can be reused into thin flicks that can be used as a substrate for electronic bias. Experimenters have used silk to produce a variety of electronic factors, including transistors, detectors, and energy storehouse bias.

Another approach to biodegradable electronics involves using accoutrements that are naturally biodegradable, similar as cellulose, bounce, and

chitin. These accoutrements can be reused into thin flicks or filaments and used as the substrate for electronic bias. Biodegradable electronics has a range of implicit operations, including medical implants, environmental monitoring, and consumer electronics. For illustration, biodegradable detectors could be used to cover soil humidity or water quality, while biodegradable medical implants could reduce the need for follow- up surgeries to remove the implant.

While the field of biodegradable electronics is still in its early stages, experimenters are auspicious about its eventuality to revise the electronics assiduity and reduce its environmental impact. By developing electronic bias that can break down naturally over time, we can produce a more sustainable and responsible approach to technology.

Reference:

https://www.cambridge.org/core/journals/mrs-bulletin/article/abs/biodegradable-and-stretchable-polymeric-materials-for-transient-electronicdevices/C9D014055CEE5C6FD7353308C5DCDDCF

P.Lakshmi Varshitha
IT 2nd Year

Sand Battery

That is an interesting fact! Sand batteries are a promising technology for storing thermal energy, which can be useful for heating applications and high-temperature processes. The use of sand as a storage medium has several advantages, including its abundance, low cost, and ability to retain heat for long periods without significant loss.

The key element in a sand battery is the sand or sand-like material, which is packed into a container and heated using excess renewable energy. The heat is stored in the sand, which can be used later to provide thermal energy for heating buildings or industrial processes. The sand battery operates based on the principle of sensible heat storage, which means that the heat is stored in the material itself rather than in a chemical reaction or phase change.

The commercial sand battery installed in Kankaanpää, Finland, is an excellent example of how this technology can be used in real-world applications. By connecting the sand battery to a district heating network, the stored thermal energy can be used to heat residential and commercial buildings, reducing reliance on fossil fuels and lowering carbon emissions. It's exciting to see this innovative technology being deployed in the field, and it could have a significant impact on the transition to a more sustainable energy system.

Reference:

https://polarnightenergy.fi/sand-battery

G.Pavitraa
CSE-AIML 2nd Year

Flight with Robotics

When you look up in the sky and find yourself admiring a bird, did it ever occur to you that it might be a robot? With the improvement in technology, now robot bird is an actual invention. The turn that robotics took enables us to create something like real birds. Robot birds, also known as bionic birds, are designed to mimic the behavior of real birds. The materials used in making sure to build it are lightweight, mainly consisting of carbon fiber, and use flapping wings to achieve lifelike flight. In the field of Military and Surveillance, these birds can be used to gather intelligence on opponents without putting human lives at risk. Additionally, they can study the behavior of real birds in the wild without disrupting their habitat, analyzing their migration patterns and feeding habits.

Robotic birds have the potential to revolutionize many industries due to their versatility, durability, efficiency, accessibility, and cost-effectiveness. However, they also have their drawbacks, including limited battery life, complexity in design and maintenance, vulnerability to machine failures and damages, and ethical concerns about privacy, security, and potential misuse. It's also important to consider the environmental impact of manufacturing and using mechanical birds, especially if they rely on non-renewable energy sources. As such, exploring eco-friendly materials and power sources is crucial.

It would be interesting to see how the future of technology will advance. Soon it wouldn't be a surprise if robotic birds would deliver us orders with great efficiency and accuracy, demonstrating the potential of technology in transforming our lives.

References:

https://www.popularmechanics.com/technology/robots/a33250795/robotic-birds-bionicswift-festo/

https://www.rswebsols.com/tutorials/technology/tech-inventions

P.Sri Devi
CSE 3rd Year

Wearable scent technology

Envision a world where your scent not only adds to your appearance, but also reflects your personality. Wearable scent technology brings a unique and individualized experience to life through the fusion of technology and aromas. It's a paradigm-shifting advancement that is changing our relationship with fragrances.

Wearable scent technology is one of the most recent breakthroughs within the Metaverse. By leveraging this technology with the Metaverse platform, users have the ability to express themselves in a personalized way through their choice of fragrance. It is a patented microtechnology that uses nanoparticles specifically designed to interact with the human body to deliver a unique scent experience.

ION is designed to be worn on clothing or directly on the skin. It is a thin, flexible film containing an odor-producing material, these devices can release any scent desired, and the intensity of that aroma can be adjusted. Once activated, the material warms up and emits fragrance. This discreet and convenient device uses a replaceable cartridge to deliver a burst of fragrance. By incorporating olfactory senses, virtual reality can be taken to the next level. Not only could it be used to create hyper realistic environments, but it could also offer an immersive experience.

The potential for wearable scent innovation is limitless, and it could revolutionize our interaction with the virtual and physical environment.

Reference:

https://blog.ovrtechnology.com/ovr-technology-announces-ion-3-wearable-scent-technology-for-xr-experiences-ubergizmo

https://itchronicles.com/ces/ovr-scent-technology-for-better-digital-experiences/

M. Sree Akshitha
IT 2nd Year

Smart Military Bases

A smart base is an integration of innovations that improve the performance of managed assets and services on the military installations. Improvements in efficiency and convenience are also taken care of. In other words they are being employed smart technologies, practices for energy, mobility and construction initiatives. A smart base integrates all of these things to provide a comprehensive set of solutions for the challenges associated with operating installations.

Goals and Results: At military installations the local base, nearby cities and communities are brought together, and academic, industry and non-profit partners to design, build and use smart technology research platform. This provides a set of cutting-edge tools and best practices. The testing and pilot projects enhance research and development in wireless technologies and critical research, also the development priority. It also enhances smart transportation and digital security.

Potential benefits of the smart base:

- Cost efficiencies: Sustained investment creates a new generation of smart bases to meet the bunch of global and domestic challenges that are being faced its vast infrastructure.
- Accommodating a surge: A smart military base can scale to the base's needs.
- Improved routine base activities: From facial recognition software to smart health centres, this helps speed up various base activities.

Conclusion: The smart base framework outlines the integration and cyber security considerations required during the implementation and operations of interconnected smart devices. The leadership of smart base gain increased situational awareness. The benefits also include informed investment strategies, improved command and control, and alignment with research innovation initiatives.

Reference:

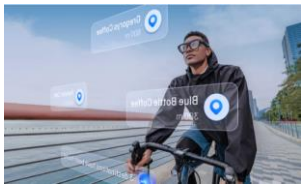
https://www2.deloitte.com/us/en/pages/public-sector/articles/byting-the-bullet-smart-military-bases.html

V.Indhu
CSE-AIML 2nd Year

Augmented Reality Glasses

TCL a company known for its affordable and smart display technologies unveiled a ground breaking new product at CES tech convention in 2023. They launched TCL Ray Neo X2, Augmented Reality Smart glasses. They provide a unique connection between users, their devices, and the real world.

These innovative glasses can enhance our reality by creating holographic projections and inducing augmented reality. They can provide us with smart navigation using Simultaneous Localization and Mapping, Gesture recognition, Interactive mapping of nearby landmarks and multi-language dialogue translation in real-time. It also includes modern photography and videography features with hands free integrated camera along with being an all-in-one smart assistant with functionalities like pushing calls & messages, playing music and a one of its kind Whisper Mode to protect our privacy.



Equipped with Qualcomm Snapdragon XR2 platform and Optical wave guide Micro-LED technology these ‘marvel’lous glasses are a revolutionary way to explore another dimension of reality. TCLRayNeo is kick starting a developer driven project in 2023 calling for enthusiastic and talented developers to join and build creative and user-friendly features for the AR glasses. These AR glasses have a massive scope in transformation by integrating existing and upcoming technologies into them, changing the world as we see and experience.

Reference:

https://www.rayneo.com/products/tcl-rayneo-x2

Pragnitha
IT 2nd Year

AuriNova by 3DBio Therapeutics: A replacement ear

Every year, around 1,500 children in the US are born without external ears or with undeveloped external ears. A novel 3D-printed ear transplant called AuriNovo offers a living alternative for this issue. The operation is less intrusive than transplanting tissue from a patient's ribcage. The implant is produced with proteins, hydrogel, and a patient's own cells, giving it much more flexibility than any made with synthetic materials.

Advantages: Patients may gain a huge benefit with the advancement in regenerative medicine. In order to provide a reconstructed ear with natural flexibility and the look and feel of a natural ear expected to last a lifetime, it is designed to:

Be a biocompatible implant that prevents implant rejection

• For reconstruction with an outpatient surgical procedure

• For use in even young children

• To avoid painful, difficult rib cartilage harvests—required for a current standard of care.

In conclusion, AuriNovaTM by 3DBio Therapeutics offers a promising solution for patients with microtia. The implant is made from a patient's own cells, making it biocompatible and less invasive than traditional tissue transplants. If approved, AuriNovaTM has the potential to improve the lives of thousands of patients and their families, providing a natural and long-lasting solution for ear reconstruction.

Reference:

https://www.popsci.com/technology/best-of-whats-new-2022/#health

B.V.S.Anjani Sukanya
IT 2nd Year

Improvising AI Generated content with Human Feedback

Artificial Intelligence (AI) has ominously impacted the content creation industry, making it possible to generate content at a scale that was previously unattainable. However, despite the impressive advancements in AI technology, it is still limited in its ability to generate content that is comparable to human-generated content. Therefore, this content creation process is essential. The integration of human feedback into the AI-generated content creation process is a three-step process. The first step is to train the AI algorithm with a dataset of human-generated content that is relevant to the target audience. The second step is to use the AI algorithm to generate content, which is then reviewed by a human editor who provides feedback on the quality of the content. The third step is to use the feedback provided by the human editor to train the AI algorithm to generate content that meets the desired quality standards.

Incorporating human feedback into AI-generated content can have a number of benefits, it reduces the risk of errors and inaccuracies in the content generated, which is crucial in industries such as healthcare and finance, where accuracy is paramount.

However, implementing this approach can be challenging, requiring coordination between humans and AI systems. Steering user research on AI-generated content can provide valuable

insights and help to identify and address any potential issues or problems with the content and can help to create more effective and useful AI systems.

Reference:

https://ied.eu/blog/technology-blog/improving-ai-generated-content-with-human-feedback/https://blog.aweber.com/learn/human-vs-ai-generated-content.htm

P. Girija
CSE-B 2nd Year

Google Bard? Is it competition to ChatGpt

Google has announced the development of a new language model called the Multitask Unified Model (MUM), which it refers to as 'Bard'. This model is expected to significantly advance natural language processing, enabling more complex and nuanced interactions with computers.

Bard is designed to handle multiple tasks simultaneously, including answering complex questions, making recommendations, and generating new content. It uses advanced techniques such as cross lingual understanding, multimodal input, and transfer learning to process and generate information across different languages and domains. One of Bard's key features is its ability to contextualize information across multiple domains, enabling it to provide more comprehensive answers to complex questions. For example, if a user asks a question about a particular city, Bard can take into account information from multiple sources, including text, images, and videos. Another major advantage of Bard is its ability to understand and process information across multiple languages and dialects. This makes it more accessible to users around the world. Although Bard has not yet been released to the public, it has many potential applications in various fields, such as education, healthcare, and customer. For instance, it could help doctors diagnose medical conditions more accurately or provide personalized educational content to students worldwide. In conclusion, Bard represents a significant breakthrough in natural language processing that has the potential to revolutionize the way we interact with computers. Its ability to handle multiple tasks simultaneously, understand information across different domains and languages, and provide more accurate results makes it an exciting development in the field of artificial intelligence.

Reference:

https://www.howtogeek.com/880598/what-is-google-bard/

Nikhila Akula
IT 2nd Year

Gene Writing

Gene writing, also known as gene synthesis, is a promising field in biotechnology that allows the creation of custom DNA sequences. This

technology has the potential to advance several scientific areas, including medicine and agriculture. Gene writing enables scientists to design DNA sequences that encode for particular traits or proteins. These sequences can be used to modify organisms or create new ones with desirable features. For instance, researchers can develop crops that are more resistant to pests or bacteria that produce useful compounds. One of the significant advantages of gene writing is that it enables scientists to overcome the limitations of traditional genetic engineering techniques. Conventional methods rely on existing DNA sequences that may have restricted functionality. In contrast, gene writing permits the creation of entirely new sequences that are optimized for specific tasks. Gene writing also allows for the design of more complex DNA sequences than traditional techniques.

This capability opens up new possibilities for creating organisms with intricate traits that involve multiple genes. Despite the benefits of gene writing, there are also potential risks to consider. The creation of entirely new DNA sequences may lead to new pathogens or other unintended consequences. Additionally, ethical concerns exist around the production of new organisms that may have unknown effects on the environment. In conclusion, gene writing is a potent tool that has enormous potential for scientific advancements. However, like any new technology, it is essential to consider carefully the potential risks and benefits and to ensure responsible and ethical use of the technology. sophisticated and designed for real-time simulations.

https://www.the-scientist.com/bio-business/can-gene-writing-deliver-what-gene-editing-can-t-70740

Chennaboyuna Mallika
CSE-B 2nd Year

Fulfily Robotic pillow

The Fufuly Robotic Pillow is a promising innovation that aims to help people maintain good physical and mental health in today's fast-paced world. Its unique approach to respiratory entrainment makes it stand out as a potential game-changer in the field of relaxation and mindfulness.

The Benefits: Although the cost of the Fufuly Robotic Pillow is not yet known, the fact that it is being crowd funded suggests that it may be priced affordably. It will be interesting to see how well the product is received by the public once it becomes available. Overall, the Fufuly Robotic Pillow appears to be a promising development that could help many people lead healthier and more relaxed lives.

As with any new technology or product, it's important to approach the Fufuly Robotic Pillow with a critical eye and consider the potential downsides as well as the benefits. For example, some people may not be comfortable with the idea of hugging a robot pillow, or may find that the entrainment method doesn't work for them.

Additionally, the pillow's effectiveness may depend on factors such as the user's body size and shape, as well as their breathing patterns. However, despite these potential limitations, the Fufuly Robotic Pillow represents an exciting development in the field of relaxation and mindfulness. It has the potential to help many people reduce their stress levels and achieve greater levels of calm and focus. As with any self-care practice, it's important to approach the use of the pillow with an open mind and a willingness to experiment in order to find what works best for you.

Conclusion

In conclusion, the Fufuly Robotic Pillow is a promising innovation that has the potential to help many people maintain good physical and mental health. Its unique approach to respiratory entrainment makes it stand out as a potential game-changer in the field of relaxation and mindfulness. While it may not be the right choice for everyone, those who are interested in exploring new methods of relaxation and self-care may find the Fufuly Robotic Pillow to be a valuable addition to their routine.

Reference :

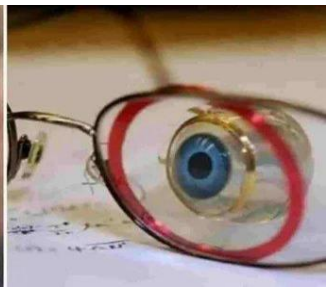
https://manofmany.com/lifestyle/fitness/yukai-fufuly-breathing-robotic-pillow

A.Samanvitha Narayani

IT 2nd Year

Bionic eyes: How era is replacing misplaced vision

I have been analyzing this information nowadays. It gained my interest that it can clear up blindness. Scientists international had been gaining knowledge to find a therapy for people



tormented by blindness. Diverse bionic answers located thus far have now not been capable of assisting blind people on a bigger scale. Researchers at Monash college in Melbourne, Australia have developed a bionic eye that promises an individual to bring back lost vision with the help of a brain implant. According to the team, it is World's first bionic eye. The gadget is easy to undergo in a simpler process. The user could have put on custom-designed headgear with a camera and a wireless transmitter. a set of nine-millimeter tiles implanted within the mind that gets the signals from the aforementioned receiver. With this gadget, there are a few mild on the quit of the tunnel for those who have misplaced their vision and they are probably able to view or revel in things thru the bionic eye. with this bionic eye, a person can able to visualize some light at the end of the tunnel for those who have lost their vision and experience new things in their life. Now, Researchers are looking for a better manufacturing process and development of this eye. I think this helps most blind people to gain their lost vision.

Reference link:

https://thelogicalindian.com/uplifting/australian-university-develops-worlds-first-bionic-eye-to-fully-restore-vision-in-blind-people-23861?infinitescroll=1

Y. Sai Ruthvika

ECE 2nd Year

A Baby Factory?

Yes, you are thinking right. Like product manufacturing factories, a new scientific advancement brought the Baby Factory as an existing reality. EctoLife is a cutting-edge technology that has brought about a groundbreaking advancement in reproductive technology- the Baby Factory. It provides infertile couples with the opportunity to conceive and have their own biological child through the use of an artificial womb that simulates the conditions of a mother's uterus.This innovative facility is powered by renewable energy, making it the world's first artificial womb facility.

The EctoLife facility features 75 well-equipped labs, each capable of accommodating up to 400 growth pods or artificial wombs.The pods are composed of materials that prevent adherence and replicate the exact conditions found inside a mother's uterus. Each pod is designed in such a way that the pod will be having sensors which monitor the vital signs as the heartbeat, temperature, blood pressure, breathing rate, and oxygen saturation**.**

Ectolife is a remarkable solution to the problem of population decline, and it addresses issues such as premature births, C-sections, miscarriage, and low sperm count. Biotechnologist and science communicator Hashem AI-Ghaili is the mastermind behind the Ectolife concept, which has the potential to revolutionize the field of reproductive technology. But the moral and ethic values of human are stopping the idea to implement in practical. If it proceeds, will the mothers be able to relieve the pain they suffer in the process of giving birth to a child? This is all the thought processing the officials are thinking about for now.

Reference:

https://www.firstpost.com/explainers/ectolife-the-worlds-first-artificial-womb-facility-11805801.html

Kunta Vyshnavi,

CSE-B 2nd Year

Quantum Computing

Computing is a quickly developing technology that uses quantum mechanics principles to solve problems that are too complex for traditional computers. Quantum computing is a branch of computer science that employs quantum theory concepts such as superposition and entanglement. Quantum theory describes how energy and matter behave at the atomic and subatomic levels.

Principles Of Quantum Computing

Entanglement is a key component of quantum computing for speedier calculations because it enables a quantum system to exist in multiple states at once. Entanglement is a basic idea in quantum physics. Superposition is a phenomenon where two or more quantum systems become so correlated that it is impossible to characterize the state of one system without knowing the state of the other.

Decoherence is the process by which a quantum system loses its coherence and entangles with its surroundings, causing the collapse of superposition and entanglement as well as the loss of quantum information. Compared to conventional computers, quantum computers have a simpler design. They lack a CPU and memory. A collection of superconducting qubits is all that a quantum computer needs. Information is processed differently by quantum computers and conventional computers. Qubits are used in quantum computers to perform multidimensional quantum algorithms. As qubits are added, their processing capacity grows exponentially. A traditional processor employs bits to execute different programmes. As more bits are added, their power rises linearly. Traditional computers have significantly less computing capacity.

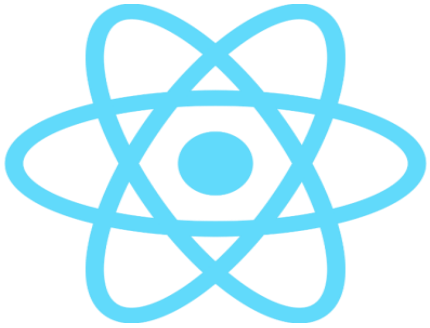
Reference:

https://www.ibm.com/topics/quantum-computing

M. Lahari
IT 2nd Year

React Native

React Native is a game-changing technology that has revolutionized mobile app development. One of the key benefits of React Native is its ability to provide a native user experience. Unlike traditional web applications that run in a browser, React Native applications run natively on mobile devices. This means that they can take advantage of the native capabilities of the device, such as the camera, accelerometer, and GPS. As a result, the user experience is more fluid and responsive.



React Native uses a common codebase for both iOS and Android, developers can write code once and deploy it to both platforms.

In addition to its ability to provide a native user experience and share code between platforms, React Native also offers fast and responsive performance. This is because it uses a virtual DOM to manage updates to the user interface, which can be more efficient than traditional mobile development approaches.

In conclusion, React Native is a popular framework for building mobile applications using JavaScript and React. It provides a native user experience, allows for code sharing between platforms, offers fast and responsive performance, and has a large and active community of developers. As a result, React Native is a popular choice for developers looking to build high-quality mobile applications for iOS and Android.

https://www.oreilly.com/library/view/learning-react-native/9781491929049/ch01.html

Varsha Burra
CSE 2nd Year

5G technology - Our commitment to the future

5G is the fifth generation of wireless technology that offers faster data transfer speeds, lower latency, and greater capacity than its predecessors.

With 5G, anyone can download large files or stream high-quality video content without buffering or lag. 5G technology can support more devices simultaneously than previous wireless technologies, making it possible to connect more devices to the internet of things (IoT). At its core, 5G technology uses high-frequency radio waves to transmit and receive data. The development of 5G technology has been a multi-year effort involving significant research and development involving many different organizations. The radio waves used by 5G technology are non-ionizing. They do not have enough energy to break apart atoms or

molecules in the body, and there has been no evidence to suggest that they cause harm to humans. One of the challenges of 5G technology is its coverage. 5G technology uses higher frequency bands. However, it also means that 5G networks require more base stations and infrastructure to provide coverage, which can be expensive to deploy. Some people worry that the high-frequency radio waves used by 5G could be dangerous, while there is no conclusive evidence of it being harmful to human health.

Despite the challenges, 5G technology has a range of new applications, including augmented and virtual reality, autonomous vehicles, and smart cities. And as more countries continue to roll out 5G networks and develop new use cases, we can expect significant changes in connecting to the internet and interacting with the world around us.

Reference:

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

Kadam Sowkya
IT 2nd Year

Capsula Mundi -Life after death

Capsula Mundi means “World’s Capsule”, is a project that aims to create eco-friendly egg-shaped burial pods, so that the body will be laid down in a fetal position in those large pods. This capsula will be buried as a seed in earth and a tree can be planted on the top of it. The person will remain as a memory in that tree.

It is made up of 100% biodegradable material like potato, corn starches and a kind of plastic that is derived from organic material and has low environmental impact. Over time, the mixture of microbes and nutrients from the decaying corpse would feed the tree, effectively sprouting a new organism.

How does Capsula Mundi work?

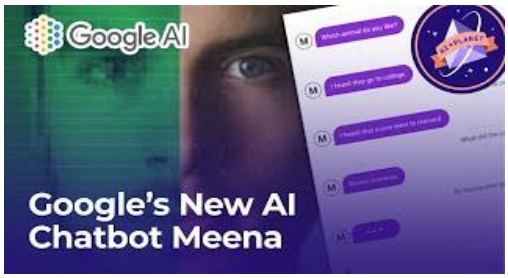
The deceased’s body is placed inside the pot as feal position after death, then the pot is buried in the ground. The Capsula is made to be buried vertically inside the soil at a depth of 78.74 inch and 39.37 inch wide. The pot consists of a hole at the top which is closed with screw after placing the pot into soil the screw is removed and a tree is placed in that hole. The entire plot is filled with soil to the ground level, the bacterium in the soil breaks down the body and pod. This process transforms organic matter into nutrients which help the tree to grow. It is eco-friendly and biodegradable. But Such methods may not be accepted by all the people.

Reference:https://www.scitechnol.com/peer-review/capsula-mundi-life-never-stops-g6ez.php?article_id=7919

B.Nikitha
CSE 2nd Year

Meet Google’s Meena….

Google recently announced the development of a new conversational AI named Meena, which is designed to be more human-like and engaging than previous chatbots. Meena is based on a neural network architecture called Transformer, which is also used in other advanced AI language models such as GPT-3. The firm says that ‘Meena’ was trained with 40 billion words and 341GB of text data including Social media conversations. It is based on Google’s Seq2seq model , a neural network that reads words placed next to each other in a paragraph and checks if relation between those two make sense. According to Google, Meena has a "sensibleness" score of 79.8% on a benchmark evaluation, which measures how well a chatbot can produce responses that are appropriate and reasonable given the context of the conversation. This is significantly higher than previous chatbots, which typically score around 56% on the same benchmark.



One of the key challenges in developing conversational AI is to make it sound natural and engaging, so that users feel like they are talking to a real person rather than a machine.

Meena is designed to address this challenge by using a new method of response generation called "latent variable modeling". One of the unique features of Meena is its ability to understand the nuances of human conversation, including sarcasm, humor, and cultural references.For example, if you ask Meena what the weather is like, it will be able to provide a response based on your location.

Reference:

https://tech.hindustantimes.com/tech/news/google-announces-chatbot-meena-key-things-to-know-story-Htya2ONMuSYy2VTeC0xg4K.html

Dikonda Pavani Kalyani
CSE 2nd Year

CRYOPRESERVATION

Cryonics means freezing someone who is dead for a period of time and using medical science to bring them back. And this process is known as “Cryopreservation”. Cryopreservation is a process that preserves organelles, cells, tissues, or any other biological structures by cooling the samples to very low temperatures i.e. below -130°c by using liquid nitrogen or a similar cryogenic fluid, to maintain them for research, medical, or industrial purposes. Cryopreservation has many applications, including the preservation of sperm and eggs for fertility treatments, the preservation of tissues for transplantation, and the preservation of cells and tissues for research purposes. Around 250 corpses have been collected till now in the USA, whereas 15,000 people have signed to preserve their corpses for the future. With the help of this technological advancement we can still get our loved ones back. This technology also has both pros and cons.

Pros :

- Cryopreservation is an effective way to preserve the germplasms of endangered plant species and helps to maintain their fertility.
- The best way for storing disease-free biological samples for a longer period.
- In the countries where population is less we can use this technique to maintain or to increase the population.

Cons :

- One of the major disadvantages of this technique is that ice crystals can form inside the cells thereby causing cell damage, and also affects the growth of the cells.
- This technique is not suitable for the highly populated countries for increasing the population.

References :

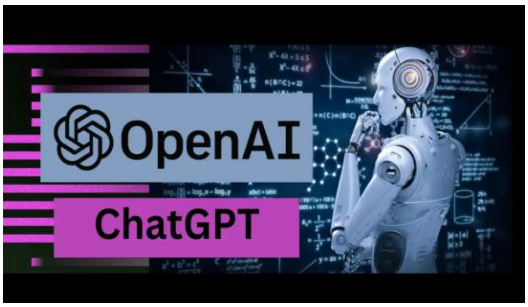
https://steemit.com/technology/@mehdikh19/cryonics-the-practice-or-technique-of-deep-freezing-the-bodies-of-people-who-have-just-died-in-the-hope-that-scientific-advances

K. Sai Sindhu
CSE 2nd Year

ChatGPT

Chat Generative Pre- trained Transformer is an AI model developed by AI research and deployment company, Open AI. It was built as a large language model which has been trained

and educated using both supervised and reinforcement learning techniques. It can generate human-like text which includes language translation, language modeling and generating text for applications such as chatbots. ChatGPT can explain Quantum Physics and can write a poem, song too, which shows the multi-capabilities of it.



The model has many other abilities like it can answer historic questions, can generate 90% code for any problem statement, able to write news articles, information summaries. It is a model which is trained that is provided and reinforced to mimic writing styles and to avoid certain conversations. Then it keeps that knowledge to answer others. People can use GPT-3 to create the automatic Quizzes for the courses where Chat GPT serves as *Virtual Teaching Assistant*. The model is capable of reference of approximately 3000 words from the present conversation. This application can be incredibly useful for delivering Information and engaging with users in a manner that closely resembles a natural conversation. This is possible thanks to the application's integration with artificial intelligence and machine learning technologies, which allow it to learn and adapt based on user interactions.

Some of the cons of it are: Furthermore, as it becomes increasingly sophisticated, there is a risk that it could undermine human intelligence and creativity overtime. Although the AI model is capable of answering a wide range of questions, there are still certain situations where it may not be able to provide a suitable solution.

Reference:

https://www.businessinsider.in/tech/news/if-you-still-arent-sure-what-chatgpt-is-this-is-your-guide-to-the-viral-chatbot-that-everyone-is-talking-about/articleshow/96990537.cms

Yengalreddy Srilaxmi
CSE 2nd Year

Solar Scheffler Reflectors

Solar Scheffler Reflectors help generate solar energy for people and businesses, eliminating the need to generate thermal energy. "TRINYSOL" came up with this concept to help people to use solar concentrated energy as the best option to generate their own process energy for their enterprises.

Solar scheffler reflectors are used to reduce the

usage of costly fossil fuels. As we are using a lot of fossil fuels lately for more energy, this usage is affecting the climate really badly. For example, global warming is increasing rapidly nowadays.

The scheffler reflectors are made out of steel and highly reflective aluminium. These devices are powered by a sensor-controlled motor that helps them to turn automatically towards the

sun, which focuses their light on one specific place.

The generated energy is then used for cooking purposes or it can be stored in the form of steam. These reflectors can be used in rural areas too. It has a low cost and affordable even for small businesses.

In 2021, the Trinysol, with 20 scheffler reflectors generated the first and biggest solar steam generating plant in America. The main target group for this technology is Enterprises for food processing.

References:https://empowering-people-network.siemens-stiftung.org/solutions/solar-scheffler-reflectors/

CH. Keerthi
EEE 2nd Year

DATAFICATION

Datafication has become a ubiquitous term in the modern world, with vast amounts of data being generated every day. The process of datafication involves the conversion of analog activities into digital data, which can be analyzed to gain insights into various aspects of human behavior. The rise of the internet and the proliferation of digital devices has led to an exponential increase in data generation and has made datafication a crucial process for businesses, healthcare, education, and other fields. The impact of datafication has been significant in various aspects of our lives. In the business world, datafication has enabled companies to make data-driven decisions and optimize their functions to improve efficiency and make them profitable. However, datafication has also raised concerns about privacy. The collection and analysis of personal data can be used to build detailed profiles of individuals, which can be used to target them with personalized marketing or influence their behavior. Therefore, it is essential to have stronger privacy regulations to protect individuals from the misuse of their data.

In conclusion, datafication has become an essential process in the modern world, enabling businesses, healthcare, education, and other fields to gain insights and improve outcomes. However, the potential misuse of personal data raises concerns about privacy, highlighting the need for stronger regulations. It is important for individuals and reputed organizations to be well aware of these risks and challenges and take steps to protect their data and privacy.

Reference:
https://www.datasciencecentral.com/the-concept-of-datafication-definition-amp-examples/

Sanvisri Botla
CSE 2nd Year

NLP-Chat bots

Today's most trending AI tool is chatGPT. Let us see how this was built and what the technology behind this powerful AI tool is.

NLP chat bots are powered by a new technology called Natural Processing Language; it is a branch of artificial intelligence which can understand human language.

NLP can perform Language translation, Text summarization, Sentiment analysis, Question-answering, Text generation. To process and understand this natural language LLMs are designed.

What is LLM?

Large Language Model (LLM) is a machine learning model, can perform variety of NLP tasks. This model is trained over a large number of text data so that it can be more knowledgeable, understand easily and produce fast and accurate responses to humans. LLM trained models are more capable than other AI models as they are trained on large data as mentioned earlier. ChatGPT is an LLM application. This became a game changer as it responds to text-based inputs almost like a human. The user can ask for what they need, and it gives a simple, understandable and quick response to the user.

And the interesting part about chat GPT is it keeps on learning and improving with time, as users interact with it and learn from the users' input.

This Technology is user-friendly as it provides human-like conversation based on user-placed queries or commands. It is quick and accurate answers to a variety of inquiries. It becomes smarter with more data from multiple users and provides improved responses.

Main disadvantage of this technology is that it reduces jobs opportunities such as service representatives, translators etc. Due to this many employes will lose their jobs. It may have limited knowledge on recent events and facts because it uses datasets that are not updated. Another disadvantage is about ethical issues and concerns as it's outputs are based on human-generated texts.

Reference:

https://www.forbes.com/sites/forbestechcouncil/2023/03/20/beyond-chatbots-the-rise-of-large-language-models/?sh=61959d982319

KTS.Hasini
CSE 2nd year

Genetic Fortune Telling

One day, babies will get DNA report cards at birth. These reports will offer forecasts around their chances of enduring a heart assault or cancer, of getting snared on tobacco, and of being more intelligent than normal. The science making these report cards conceivable has abruptly arrived, much appreciated to tremendous hereditary studies-some including more than a million individuals.

In spite of the fact that the unused DNA tests offer probabilities, not analyze, they may enormously advantage medication. For case, in case ladies at tall chance for breast cancer got more mammograms and those at moo hazard got less, those exams might capture more genuine cancers and set off less untrue alerts.

Pharmaceutical companies can moreover utilize the scores in clinical trials of preventive drugs for such sicknesses as Alzheimer's or heart malady. By picking volunteers who are more likely to urge wiped out, they can more precisely test how well the drugs work.

The inconvenience is, the expectations are distant from culminate. Who needs to know they might create Alzheimer's? What in the event that someone with a moo chance score for cancer puts off being screened, and after that creates cancer besides?

Polygenic scores are too questionable since they can anticipate any characteristic, not as it were maladies. For occurrence, they can presently estimate almost 10 percent of a person's execution on IQ tests. As the scores progress, it's likely that DNA IQ forecasts will ended up routinely accessible. But how will guardians and teachers utilize that data? Researchers can presently utilize your genome to anticipate your chances of getting heart infection or breast cancer, and indeed your IQ.

Reference:

https://www.careerguidancejpgandhi.com/genetic-fortune-telling.php

B. Yukthakshary
EEE 2nd Year

AI Image Generation

AI has as of now appeared off the capability to form photorealistic pictures of cats, pooches, and people's faces that never existed some time recently. More as of late, analysts have been examining how to prepare AI models to make more complex pictures that seem incorporate numerous distinctive objects orchestrated totally different postures and arrangements.

The challenge includes figuring out how to urge AI models—in this case ordinarily a course of profound learning calculations known as generative antagonistic systems (GANs)—to produce more controlled images based on certain conditions instead of essentially spitting out any irregular picture. A group at North Carolina State College has created a way for GANs to make such conditional pictures more dependably by utilizing reconfigurable picture formats as the beginning point.

The comes about from the Lost GANs approach are still not precisely photorealistic—such AI-

generated pictures can now and then take after impressionistic depictions with unusually misshaped extents and postures. But LostGANs can synthesize pictures at a determination of up to 512 x 512 pixels compared to earlier layout-to-image AI models that ordinarily produced lower-resolution pictures.

The inquire about seem inevitably offer assistance robots and AI specialists to way better imagine the comes about of future intuitive with objects inside their quick environment. Such picture era based on reconfigurable formats may too possibly offer assistance create diverse visual scenarios that seem offer assistance prepare independent vehicles.

References :

Harnessing the Wild Power of AI Image Generation - IEEE Spectrum

K.Tina Sai Sree
EEE 2nd Year

Why is data leaking prevention critical?

In today's society, individuals are less concerned with purchasing computers with high storage capacities; instead, performance is the most important factor to consider when selecting a decent computer. Because of cloud computing, a one Terabyte (1TB) storage computer has become an unpopular consumer choice.

Think of cloud computing as a virtual computer that is used for running activities such as software over the internet, and cloud storage as a virtual hard drive for storing files on servers and making them available via the internet. This is only one of the numerous reasons why cyber security and data protection should be priority.

Some of our most personal information is maintained on websites such as Google, Facebook, and Twitter. For many, they serve as archives for the videos and photos they once shared on social media; and these sites have stored information containing email addresses, phone numbers, and a lot more about their users in their servers. While all of this has become the standard, the unauthorized transmission of information from within an organization to a location outside its secure network has also become the usual.

Data Leakage Protection Solution Types

Control of Access: Through authentication and authorization, this security feature restricts who has access to and uses company information.

Authentication: PIN numbers, passwords, security cards, and biometrics are all access control mechanisms that are used to precisely authenticate the identity of a user or process.

Encryption: Encryption occurs when plain material, such as a text message or email, is scrambled into an unreadable format.

Masking Data: Information masking software can be used to conceal sensitive information. Only when an authorized user receives the text does it revert to its original form.

B. Nakshitha

ECE 2nd Year


VISHNU
UNIVERSAL LEARNING
BVRIT H
Dr. K.V.N. SUNITHA
PRINCIPAL


BVRIT HYDERABAD
COLLEGE OF ENGINEERING FOR WOMEN

Contact us:

BVRIT HYDERABAD College of Engineering for Women

Plot no, 8-5/4, Rajiv Gandhi Nagar Colony, Nizampet Road, Bachupally, Hyderabad- 500090

Phone: 040-42427773

info@bvrithyderabad.edu.in

principal@bvrithyderabad.edu.in

Technical Magazine: newsletter@bvrithyderabad.edu.in