Shri Vile Parle Kelavani Mandal's

Dwarkadas Jivanlal Sanghvi College of Engineering

(Autonomous College Affiliated to the University of Mumbai)

DJCSI

PROTOCOL

2023 ISSUE

DJCSI DJCSI djcsi.co.in

PROTOCOL 2023

The Annual Magazine of DJCSI,
the official student chapter of
The Computer Society of India

DJCSI

Testimonials

The CSI student chapter of our college has been working diligently to help the students gain exposure to the various technological advancements along with their regular academic curriculum. The success and the magnitude of these events highlight the tremendous growth of DJCSI has undergone year after year. This is further highlighted by the fact that the committee was awarded the best CSI student Chapter of India. I wish the DJCSI committee all the very best for their future endeavours.

Dr. Hari Vasudevan

Principal, DJSCE

Dear students, I am delighted to present the 16th edition of Protocol. Every year DJCSI committee gears up with new development in the activities that not only benefits students in the technological advancements but also provides an opportunity to explore the outside world with confidence. This year Protocol magazine throws light on various events organized under DJCSI, the insightful technical articles and the outstanding research projects that will definitely enhance the technical knowledge and inspire the students to a great extent. I would also like to take this opportunity to thank our Principal, Dr. Hari Vasudevan, as well as the faculty of IT Department for their constant support and encouragement.

Dr. Vinaya Sawant

Branch Counsellor, DJCSI

Head of Department, IT

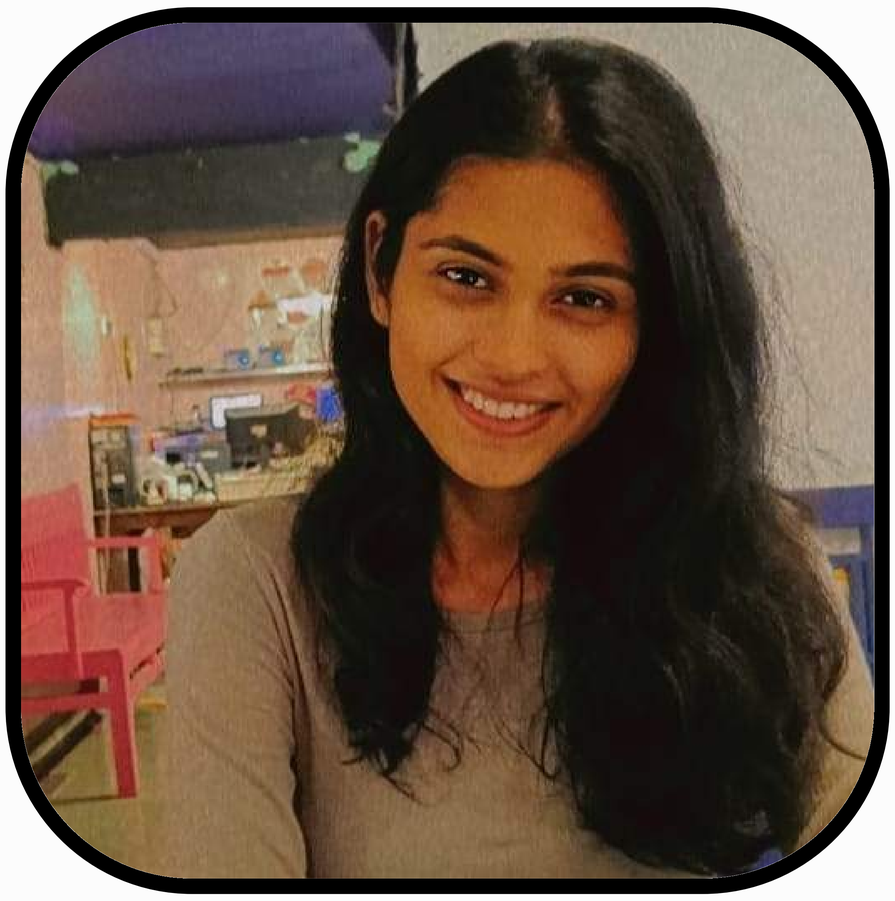
Testimonials

Prof. Richa Sharma

Faculty Advisor, DJCSI

With each passing year, we have witnessed the dynamic evolution of the technological landscape, and DJCSI has consistently strived to stay at the forefront of these advancements. From cutting-edge technical workshops to thought-provoking seminars by industry experts, the goal of DJCSI is not only to enhance your technical prowess but also to nurture student's ability to adapt, innovate, and contribute meaningfully to the ever-changing landscape of technology. As we delve into the 16th edition of our magazine Protocol, we are excited to share all activities conducted by the committee and showcase outstanding research projects that promise to be both enlightening and enriching. I would also like to extend my heartfelt gratitude to our Principal Dr. Hari Vasudevan, and the entire DJCSI student committee for their tireless efforts in curating this remarkable journey.

Technical advancements and innovations serve as the link between imagination and reality. The world is continually changing, and DJCSI wants to help with this shift through advancing research and information transfer. As the Chairperson of DJCSI, I have the honour of contributing to this mission and representing DJCSI at the national level. I will always be grateful to the HOD of IT and Branch Counsellor, Dr. Vinaya Sawant. The unending encouragement, direction, and inspiration has helped us achieve outstanding achievements. Despite all of the difficulties throughout, DJCSI persevered, and the team deserves praise. I want to congratulate my wonderful team for working so well together. I was constantly encouraged and inspired by the team to go beyond my comfort zone and accomplish DJCSI's objectives. I hope that DJCSI will continue to stoke the enthusiasm for technology!



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CONTENT

Lessons from the Hindenburg-Adani saga, "Shook and Stirred"

AUTHOR: SARA KORE (SY – IT)

In 2017, Nathan Anderson founded Hindenburg analysis, a firm with a track record of revealing corporate wrongdoing and betting against the firms. Hindenburg Research conducts forensic financial analysis on stock, credit, and derivatives. The former richest man in Asia, Gautam Adani, is a school dropout who built a $220 billion conglomerate that includes ports, power generation, airports, mining, edible oils, renewable energy, media, and cement. In the past three years, he has made more than $100 billion, largely thanks to increases in the stock prices of the seven largest publicly traded companies in the group.

On January 24th, 2023, Hindenburg Research published a report with the subtitle "How The World's Third Richest Man Is Committing The Biggest Con In

Corporate History" accusing the Adani Group of accounting fraud, stock manipulation, and money laundering. It claimed that the group had engaged in dubious practices and posed 88 inquiries about the group's funding sources, offshore entities, and other topics. In performing the Hindenburg investigation, dozens of people including former Adani Group senior executives were interviewed, hundreds of documents were examined, and site visits were made in close to a dozen different nations. Furthermore, it claimed that

important Adani listed companies had incurred significant debt as well, placing the entire group on shaky financial ground by guaranteeing loans with shares of their inflated stock.

As soon as the study was made public, Adani's shares started to decline, with Adani Green Energy dropping 0.7%, Adani Ports dropping 1%, and Adani Transmission dropping 0.8% from their previous day's closing prices. The Adani Group quickly issued a 413-page report in response to the report. The Adani Group strenuously disagreed with all of Hindenburg's conclusions and the 88 questions, claiming that none of them were "based on independent or journalistic fact-finding". After receiving Adani Group's response, Hindenburg Research retaliated by claiming that just roughly 26 of the 88 questions they asked were answered, and many more went unanswered. Additionally, Hindenburg had publicly acknowledged that it has short positions in a number of the Adani group's companies. The catastrophe at Adani doesn't appear to be slowing down any time soon. Regulators, legislators, courts, the Adani-Hindenburg controversy never fails to make headlines and take centre stage in conversations in the stock market and among business professionals.

What does the Adani story actually mean for the corporate sector, markets, and investors in India? It has to be clarified amongst the clamour nearly months after the Hindenburg iceberg hit the Adani Group. Let's start with the dramatic increase in stock price that the group experienced for the most of 2022. The group's collective market capitalization increased by more than 100%, becoming the inspiring story that all investors were watching. The group's stock valuations had skyrocketed, but the increase persisted unabatedly, catapulting Gautam Adani to the lofty position of third-richest person in the world.

Adani is currently ranked No.18 on the Bloomberg Billionaires Index, and the index estimates that he has lost a remarkable $74.5 billion in fortune so far this year. In contrast, Mukesh Ambani, who is frequently compared to Adani in the wealth rankings, is currently at No. 13, despite briefly trailing Adani in the rankings last year.

For investors, businesses, and even regulators, the Adani scandal teaches several important lessons. Before investing money in the equities markets at a time when millions of new investors have done so, investors must perform their due diligence. Investors shouldn't base their decisions on hype or trends, says former executive director of the Securities & Exchange Board of India (Sebi) J.N. Gupta. He makes the case that equity carries risk and that those who are patient gain from the activities of the impatient.

THURSDAY, 26 JANUARY 2023
24 pages in 2 sections
NEW DELHI
₹12.00
VOLUME XXIX NUMBER 204

www.business-standard.com

Business Standard

THE MARKETS ON WEDNESDAY

		chg#
Sensex	60,205.1 ▼	773.7
Nifty	17,891.9 ▼	226.4
Nifty Futures*	17,985.9 ▲	94.0
Dollar	₹81.6	₹81.7**
Euro	₹88.8	₹88.8**
Brent crude ($/bbl)	84.98##	85.7**
Gold (10 gm)###	₹56,909.0 ▲	₹183.0

*(January) Premium on Nifty Spot; **Previous close; # Over previous close; ## At 9 pm IST; ### Market rate exclusive of VAT; Source: IBJA

COMPANIES P2
WOMEN'S IPL HITS A SIX WITH BIDS WORTH ₹4,670 CRORE

COMPANIES PII,2
AIR INDIA UNDER TATAS' WING: ONE YEAR ON

PUBLISHED SIMULTANEOUSLY FROM AHMEDABAD, BENGALURU, BHUBANESWAR, CHANDIGARH, CHENNAI, HYDERABAD, KOCHI, KOLKATA, LUCKNOW, MUMBAI (ALSO PRINTED IN BHOPAL), NEW DELHI AND PUNE

PSBs, INSURERS DRIVE INDIA'S FIRST GREEN BOND AUCTION

The government's maiden sale of green bonds was greeted with strong demand by investors on Wednesday, with the securities being issued at lower yields than those prevailing on regular sovereign bonds of comparable maturity. Dealers said that according to expectations by traders ahead of the auction, the sale saw robust demand from state-owned banks. Insurance firms were also said to have participated strongly at the debt sale.

BACK P18

Google starts complying with CCI directive

Manufacturers will be able to license individual Google apps for pre-installation on smartphones, and Android users will now have the option to pick a default search engine on their devices, the tech giant said on Wednesday. This follows the Supreme Court's refusal to grant Google any interim relief against an NCLAT order that had upheld a Competition Commission of India (CCI) antitrust ruling.

HAPPY REPUBLIC DAY
Business Standard wishes its readers on the occasion of Republic Day

US firm accuses Adani of share rigging, fraud

Adani group questions report's timing, calls it malicious; shares sink

DEV CHATTERJEE & AGENCIES
Mumbai, 25 January

A US-based investment research firm, Hindenburg Research, alleged on Wednesday that the Adani group had engaged in "a brazen stock manipulation and accounting fraud scheme". It also accused the conglomerate of improper use of offshore tax havens, and flagged concerns about the group's high debt.

Shares of Adani group companies lost ₹85,761 crore in market value after Hindenburg issued the report and said it had taken short positions in the group's stocks.

The Adani group dismissed the report, calling it a "malicious combination of selective misinformation and stale, baseless and discredited allegations that have been tested and rejected by India's highest courts".

"The timing of the report's publication clearly betrays a brazen, mala fide intention to undermine the Adani group's reputation with the principal objective of damaging the upcoming follow-on public offering from Adani Enterprises," Jugeshinder Singh, chief financial officer of the Adani group, said in a statement.

The allegations by Hindenburg Research came just two days before the launch of the ₹20,000-crore FPO. The anchor investors' book, which opened on Wednesday, received demand worth ₹9,000 crore from leading financial institutions, as against the allocation of ₹6,000 crore worth of shares.

Turn to Page 6

KEY ALLEGATIONS

- Dozens of shell firms controlled by Gautam Adani's elder brother Vinod Adani or close associates in tax havens
- These firms seem to serve several functions, including stock manipulation and laundering money
- Independent auditor for Adani Enterprises and Adani Gas is a 'virtually unknown firm'
- Adani firms have taken on substantial debt, putting entire group on precarious financial footing

ADANI GROUP'S RESPONSE
"THE REPORT IS A MALICIOUS COMBINATION OF SELECTIVE MISINFORMATION AND STALE, BASELESS AND DISCREDITED ALLEGATIONS THAT HAVE BEEN TESTED AND REJECTED BY INDIA'S HIGHEST COURTS"
JUGESHINDER SINGH, Group CFO

PAGE II,1

Adani Group's m-cap erodes by ₹86K crore

The seven listed firms of Gautam Adani Group saw their market value erode by a cumulative ₹85,761 crore ($10.5 billion) after Hindenburg Research published findings of its two-year investigation, presenting evidence that the $218-billion conglomerate had "engaged in brazen stock manipulation and accounting fraud scheme over the course of decades".

Stocks slide in run-up to Fed meet, Budget

The markets declined more than 1 per cent amid nervousness around the Union Budget 2023-24 (FY24) and the US Federal Reserve's (Fed's) rate decision lined up for next week. The expiry of the derivatives contracts, a shift to a faster T+1 cycle, and Hindenburg's short-sell call shaving $12 billion off Adani stocks also weighed on investor sentiment.

Tata Motors turns profitable after 7 quarters in Q3

DEEPAK PATEL
New Delhi, 25 January

After clocking losses for seven straight quarters, Tata Motors on Wednesday posted a consolidated net profit of ₹3,043 crore in the third quarter (Q3) of 2022-23. This came on the back of a strong order book, better semiconductor chip supply, tempered commodity prices, and a better product mix.

"We remain cautiously optimistic about the demand situation, notwithstanding the global uncertainty. The chip supply is expected to improve further. Volumes will continue to ramp up steadily, particularly for Jaguar Land Rover (JLR)," Tata Motors Group Chief Financial Officer (CFO) P Balaji told reporters in a conference call.

About 67 per cent of Tata Motors' total revenue comes from JLR.

Tata Motors' total income jumped 22.9 per cent year-on-year (YoY) to ₹89,618 crore in Q3.

Turn to Page 6

BACK IN THE BLACK
Consolidated figures (in ₹ cr)

	Q3 FY22	Q3 FY23	(%) chg YoY
Total income	72,931	89,618	22.88
Total expenses	73,630	86,415	17.36
Net profit	-1,451	3043	NA

Source: Company

PAGE 2

BAJAJ AUTO SEES MARGINAL UPTICK IN DEC QTR PROFITS

CIPLA'S PROFIT UP 10%; US SEES BEST QUARTERLY SALES

G20 Presidency an opportunity to promote democracy: Murmu

In her first address as President, ahead of the Republic Day, President Droupadi Murmu felicitated the government for its timely interventions in a variety of areas. Murmu said that such initiatives have made the world look at India with new respect. She mentioned the G20 presidency in this regard as an opportunity "to promote democracy and multilateralism".

7

The Adani Group was not the only party harmed by Hindenburg Research's analysis; many of its important institutional investors also suffered. The Life Insurance Corporation of India (LIC) is one of the biggest institutional investors in the Adani Group. The large, publicly traded insurance company is well recognised for investing the premiums it receives in a variety of stocks. The slaughter that the Adani stock market saw managed to deplete LIC's holdings by more than $2 billion. It is reported that five Adani

Group companies have received loans totalling considerably more than $9.9 billion from public sector banking institutions. The Reserve Bank of India has asked financial institutions to give details of their exposure to Adani businesses as a result of the high levels of exposure that have also thrown banking equities into a tailspin.

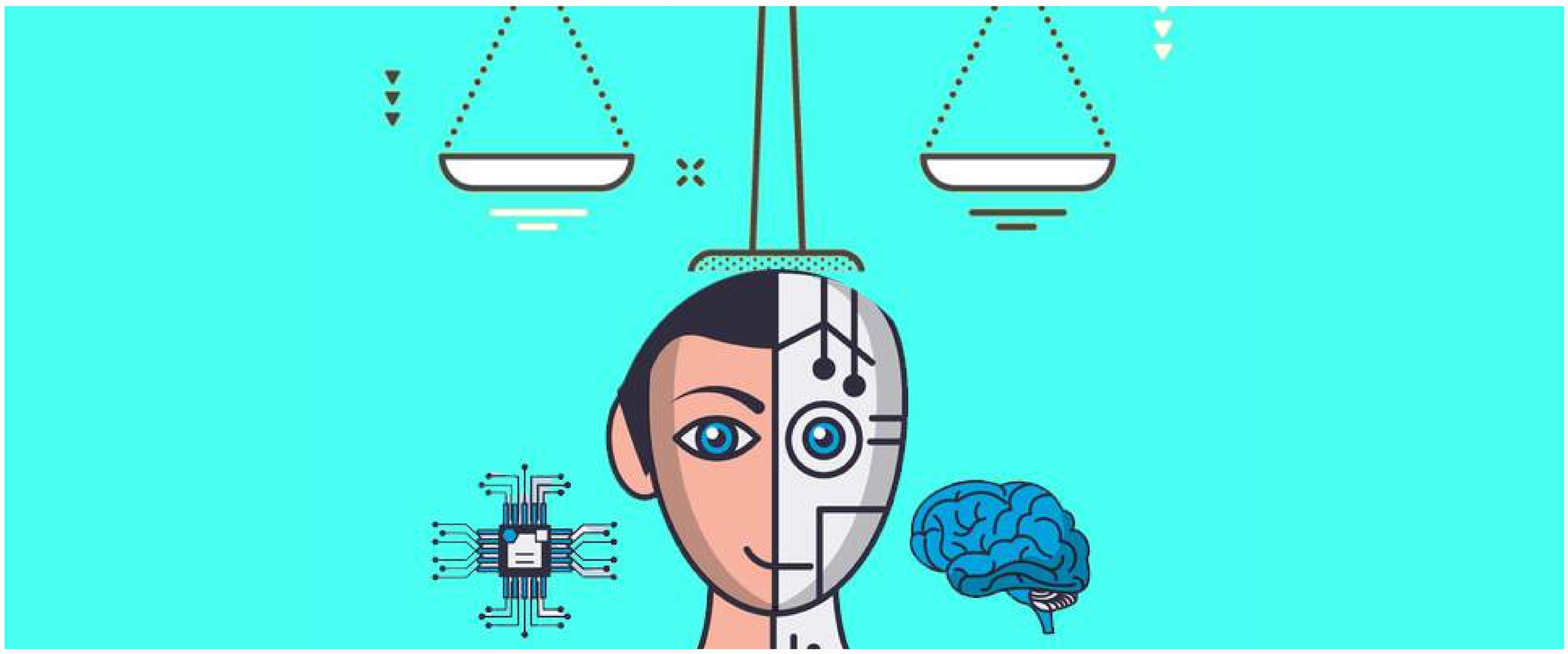
There are several business lessons as well like there is truly no such thing as too much transparency. The Adani group may be realising this as numerous stories appear in Indian and international media and its media managers scramble to defend their position. An organisation of the size, scope, and influence of the Adani's must not only follow rules but also establish excellent standards of governance. Maintain continuous communication with shareholders and keep them informed of any changes involving borrowing, share pledges, or investments. Be sensible when it comes to your growth and investment ambitions. The biggest mistake the Adani Group may have made was to become overly ambitious in their growth plans, which was compounded worse by the inflated market values. Result? Already, the $107 billion growth plan is being cut, and takeover plans have been abandoned.

And now for the good news. The very strong checks and balances that currently exist at the level of the stock markets make it improbable that incidents like the Adani-Hindenburg confrontation will upset the very underpinnings of the Indian market, no matter how vicious the attack. The modern Indian markets are robust and automated, and if stock exchange regulators are on guard, the remainder of the market will largely be unaffected by developments like Adani.

However, both large and small businesses need to keep in mind that effective governance is the key to success. That is the most important lesson that Hindenburg's charges, a little-known short seller from the United States who admits to taking short positions in Adani Group firms using derivatives traded outside of India, might have taught Corporate India as a whole.

The AI Paradox: Embracing Progress, Preserving Humanity

AUTHOR: PRIYAL DONDA (SY – IT)



In recent years, artificial intelligence (AI) has become one of the most revolutionary technologies. Although AI has many advantages and advances in many fields, there is rising worry about its potential to endanger mankind. This article offers thorough evaluation of the dangers posed by AI and to identify the major spheres in which such dangers could materialise. We can better comprehend the topic and seek to harness the power of AI while minimising any potential harm by looking at both the potential advantages and concerns.

Prior to exploring the potential risks, it is crucial to recognise the enormous positive effects AI has on society. Healthcare, transportation, finance, and entertainment are just a few of the industries where AI systems have the potential to increase productivity. We can automate repetitive operations, analyse enormous volumes of data, and make wise judgements in real time thanks to AI-powered technologies. Among other developments, they have the ability to improve medical diagnosis, optimise energy use, and transform transportation networks. With such power, though, comes the requirement for ethical development and use.

Through examination of patient data and spotting trends that human doctors might not immediately notice, artificial intelligence (AI) in healthcare has the

potential to revolutionise medical diagnosis and treatment. This may result in more precise diagnosis and individualised treatment programmes. AI makes it possible to create autonomous vehicles, which can increase road safety, lessen traffic, and increase productivity.AI algorithms in finance can examine a huge amount of financial data to spot fraud and determine the best investments. This can aid in deterring financial crimes and improving investment plans. AI-powered recommendation systems in the entertainment sector tailor content recommendations for customers, improving their overall pleasure.

Additionally, AI has the potential to solve societal problems. Real-time data analysis can help in disaster response and management by giving emergency services insightful information. By maximising energy usage and resource allocation, AI can also support environmental sustainability.

We can understand AI's potential to spur innovation, increase efficiency, and improve both the quality of life for people and society at large by recognising its positive effects across a variety of industries. To minimise potential hazards and protect human welfare, it is essential to ensure responsible and moral development and application of AI systems.

Potential Threats of Artificial Intelligence:

One major concern is the impact of AI-driven automation on employment and economic inequality. As AI technologies advance, there is a growing risk of widespread job displacement, as machines can automate tasks previously performed by humans. Significant unemployment rates, increased economic disparity, and perhaps even societal upheaval could result from this. It is essential to put proactive measures into place, such as reskilling and upskilling programmes, to provide the workforce the skills it

needs to adapt to the changing nature of the labour market. The creation of autonomous weapons that are fueled by AI is another area of worry. Significant ethical and security concerns are raised by the possible risks posed by machines making life-or-death choices without human participation. To prevent such technologies from being abused or falling into the wrong hands, it is essential to create strict rules and ethical standards to guide their development, deployment, and use. Privacy and surveillance are also significant concerns in the context of AI. Massive volumes of data may be gathered, analysed, and processed by AI systems. If misused, this data could be exploited for monitoring, endangering people's civil liberties and right to privacy. It is essential to establish robust data protection measures, transparent governance frameworks, and stringent regulations to address these concerns and ensure the responsible and ethical use of AI.

Ethical implications are a crucial consideration in the development and deployment of AI. Risks linked with

AI systems include biased decision-making, the reinforcing of societal stereotypes, and a lack of accountability. It is crucial to create and enact thorough ethical standards that support accountability, transparency, and justice in AI systems. This entails dealing with prejudices, encouraging diverse and inclusive datasets, and making sure that human values are upheld. Additionally, the concept of super-intelligent AI poses an existential risk to humanity. The potential development of AI systems that surpass human intelligence raises concerns about the control and intentions of such systems. It is important to conduct further research and explore safety measures to mitigate the potential risks associated with super-intelligent AI and ensure that AI systems align with human interests. While AI offers immense potential, it is crucial to address the potential threats it poses to humanity. By understanding and proactively mitigating these risks through ethical guidelines, regulations, and responsible development practices, we can strive to harness the power of AI for the benefit of humanity while ensuring our safety and well-being.

Geoffrey Hinton, also known as the godfather of AI, has highlighted several key concerns regarding the potential harms of AI. Dr Hinton claimed that he left Google, where he had worked for more than ten years and had established himself as one of the most eminent experts in the industry, in order to speak openly about the dangers of artificial intelligence. He claimed that he now regrets some of his life's work.

He asserted that, unlike nuclear weapons, it is impossible to tell whether businesses or nations are secretly developing the technology. The best chance is for the top scientists in the world to work together on approaches to managing the technology. "I don't think they should scale this up more until they have understood whether they can control it," he remarked.

Super-intelligent AI also raises concerns. Hilton underscores the importance of research and exploration of safety measures and ethical guidelines to mitigate the potential risks associated with AI systems surpassing human intelligence.

In conclusion, the risks that Artificial Intelligence (AI) poses to humans are complex and need to be carefully considered. The issues brought up by authorities like Geoffrey Hilton underline the potential dangers connected to the creation and use of AI. Responsible development, thorough regulations, and proactive actions are crucial to reducing these hazards. It's critical to strike a balance between utilising AI's advantages and safeguarding human safety and welfare. By solving these issues, we can increase AI's beneficial effects while reducing its possible drawbacks, assuring a bright and sustainable future for everybody.

How Decentralised Exchanges have Doomed Crypto

AUTHOR: MANAS PATIL (SY – CSE: IOT & CYBERSEC)

In recent years, cryptocurrency has taken the financial world by storm. With people disillusioned with traditional economics, cryptocurrencies are being seen as a rescue from inflationary and recessionary spirals. This is made possible by decentralised exchanges. Decentralised exchanges (DEXs) operate on a peer-to-peer basis, allowing users to trade cryptocurrencies directly with one another without the need for a central authority. How is this possible? Self-executing Smart Contracts.

When a user wants to trade on a DEX, they simply connect their cryptocurrency wallet to the exchange and initiate a trade using a smart contract. The smart contract automatically executes the trade, transferring the relevant cryptocurrencies between the two parties. This decentralised nature of DEXs eliminates the need for intermediaries and reduces the risk of fraud or manipulation. Additionally, since DEXs do not rely on a central authority, they often offer greater privacy and security for users compared to traditional centralised exchanges.

Early examples of DEXs include EtherDelta and IDEX. EtherDelta was launched in 2017 and was one of the first DEXs to gain widespread adoption. It operated on the Ethereum blockchain and allowed users to trade ERC-20 tokens directly with one another. However,

EtherDelta suffered from a number of issues, including a lack of liquidity and a poor user experience. IDEX was launched in 2018 and aimed to address some of the issues faced by EtherDelta. It introduced a number of features, such as market orders and limit orders, that made trading on the platform more intuitive. Additionally, IDEX introduced a hybrid model that combined centralised and decentralised elements, allowing for greater liquidity while still maintaining the decentralised nature of the exchange.

Overall, DEXs offer a number of advantages over centralised exchanges, including greater security and transparency. While early examples like EtherDelta suffered from a number of issues, newer DEXs like IDEX are working to address these issues and make decentralised trading more accessible to a wider audience.

However, as the popularity of decentralised exchanges has grown, so have the risks associated with using them. From collusion between major players to man-in-the-middle attacks, decentralised exchanges are facing several challenges that threaten to undermine their very existence.

One of the most high-profile examples of this is the recent collusion between Binance and SBF. Binance is one of the largest centralised exchanges in the world, while SBF is the CEO of FTX, a major player in the decentralised exchange space. In March 2021, it was revealed that Binance, one of the largest centralised cryptocurrency exchanges in the world, had been blocking access to the website of FTX, a major player in the decentralised exchange space led by Sam Bankman-Fried (SBF). This effectively gave Binance's own decentralised exchange platform a competitive advantage over FTX. This collusion between two major players in the crypto space highlights the growing power struggles between centralised and decentralised exchanges. Binance's actions were seen as anti-competitive and raised concerns about the potential for centralised exchanges to exert undue influence over the decentralised exchange space. These concerns further emphasise the need for regulatory oversight and measures to ensure fair competition within the cryptocurrency industry. The incident also underscores the importance of maintaining a level playing field between centralised and decentralised exchanges to foster innovation and protect the interests of all market participants.

While the crypto community as a whole values decentralisation and transparency, the reality is that centralised exchanges still play a major role in the industry, and their actions can have significant impacts on the wider ecosystem. But it's not just centralised exchanges that pose a threat to decentralised exchanges. In June 2020, Coinbase suffered a man-in-the-middle attack that saw hackers intercept and change the receiver wallet address in the packets of communication between the user and the Coinbase servers. This resulted in users unwittingly sending their funds to the hacker's address, effectively losing their investment. The attack highlights the vulnerabilities of decentralised exchanges, which rely heavily on the security of their networks to ensure the safe transfer of funds.

Despite these risks, many in the crypto community oppose regulation of decentralised exchanges. This is in part due to the belief that regulation would stifle innovation and limit the potential of blockchain technology. However, as the Binance and SBF collusion shows, decentralised exchanges are not trusted to act in the best interests of their users. SBF himself has even led the charge for regulation, arguing that it is necessary to prevent scams and other fraudulent activities in the space.

Many exchanges are heavily dependent on trading volumes, which can lead to favouritism towards certain chains over others. This has resulted in a number of controversies, such as the recent delisting of XRP from major exchanges following a lawsuit by the SEC against Ripple Labs.

Despite these challenges, decentralised exchanges remain a popular choice for many in the crypto community. However, their heavily technical nature means that they can be difficult for the average user to navigate. Even the most stylish CSS can't hide the complexities of blockchain transactions, making decentralised exchanges less accessible to the general public.

In conclusion, the changing hands of failure in the decentralised exchange space highlights the growing challenges facing the crypto community. From collusion and man-in-the-middle attacks to philosophical differences and technical complexities, decentralised exchanges are facing a number of threats that threaten to undermine their very existence. However, despite these challenges, the potential of blockchain technology means that decentralised exchanges will continue to play an important role in the financial landscape of the future. It is up to the crypto community to address these challenges and work towards creating a fair and transparent ecosystem that benefits everyone involved.

One of the major threats to decentralised exchanges is the lack of regulatory oversight, which can lead to issues such as money laundering and fraud. Additionally, the scalability limitations of blockchain technology pose a challenge for decentralised exchanges to handle large volumes of transactions efficiently. Nevertheless, with proper regulations and advancements in technology, decentralised exchanges have the potential to revolutionise the financial industry by providing greater accessibility and security to users worldwide.

AI in the Workplace: A New Era of Work

AUTHOR: NISHTHA CHITALIA (SY – IT)

Artificial Intelligence (AI) is a technology that enables machines to perform tasks that normally require human intelligence. From self-driving cars to fraud detection, AI has applications in fields ranging from transport and communication to national security and criminal justice. Over the past decade, AI has made headway into every aspect of society.

While AI has been transforming every field of work for many years now, until recently, many people were unaware of the technology and its benefits. That has changed now due to the democratisation of AI. AI is now more accessible and user-friendly than ever. A variety of AI tools are now available to everyone at their fingertips, regardless of their technical skills. Language models like ChatGPT have helped turn AI into a household name and a heated topic of discussion. Businesses are mass-adopting AI across all industries. A survey by Forbes shows that AI adoption in business has more than doubled since 2018. The average number of AI capabilities that organisations use has also doubled since 2018.

This has made AI increasingly prevalent in the workplace. AI in the workplace offers various benefits, such as improving efficiency and quality, automating repetitive and time-consuming tasks and so on. However, the adoption of AI in the workplace also poses various challenges and ethical concerns that must be mitigated.

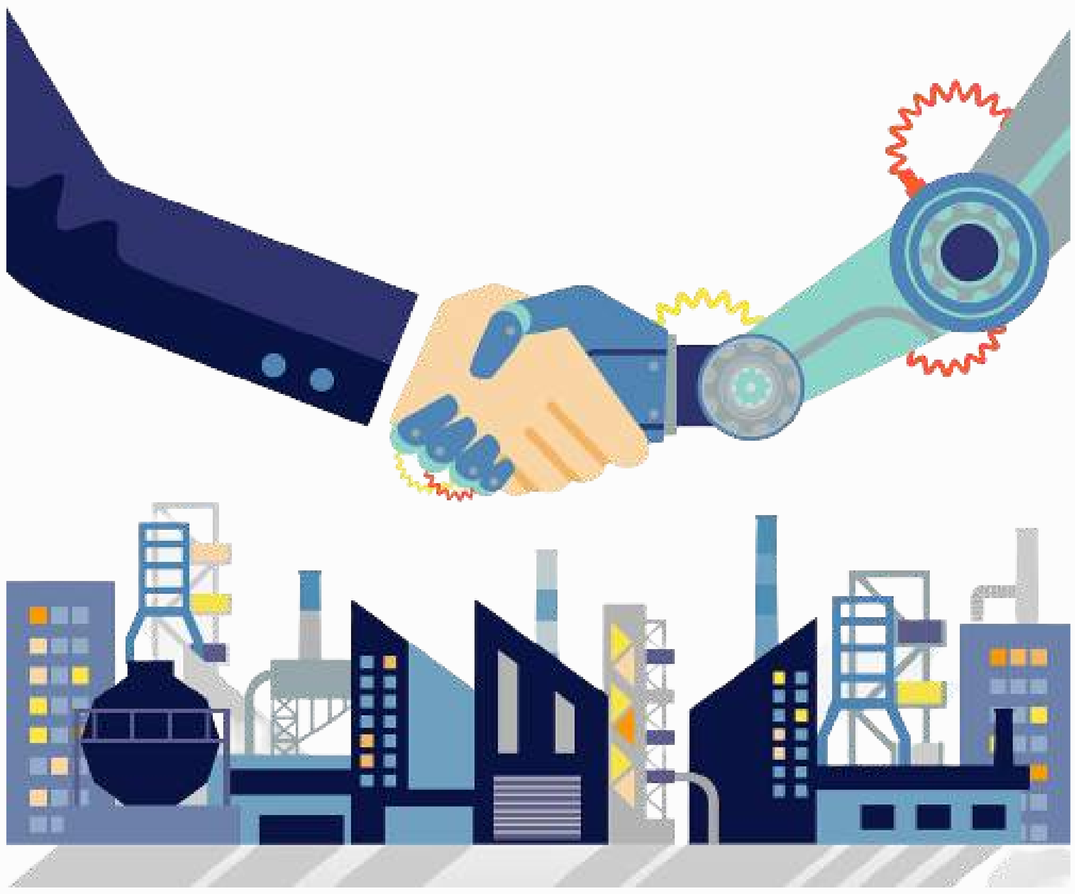
The reasons behind the surge in AI adoption include recent advances in Deep Learning and increased investment in the field. Deep learning is a branch of

machine learning that uses neural networks to learn from large amounts of data and perform complex tasks. Breakthroughs in Deep Learning models, along with increased availability of data, have allowed AI to make major strides in fields such as marketing and healthcare.

AI can be used in the workplace to automate repetitive tasks. It helps workers save time and effort by automating low-value tasks, such as data entry, scheduling, or customer service. This can help workers to focus more on creative or complex tasks that require human judgement or skills. AI can help workers make better decisions by providing insights based on data analysis. It can also help workers improve their skills by providing training and assistance.

While the benefits of AI can't be denied, the question arises, what is the cost of leveraging AI in the workplace?

The first and obvious answer is financial costs. AI requires significant investment in infrastructure and maintenance. The cost of creating AI services or buying external AI services can be high. Moreover, there might be hidden costs like data cleaning and integration with existing services. Another cost of using AI is the ethical and legal cost. AI poses a legal challenge as businesses must ensure the privacy of users and comply with changing government regulations regarding AI. Last but not least, using AI in the workplace has social and human costs. As the nature of work changes, new roles will be created while existing ones might become redundant. Businesses must deal with this by reskilling, upskilling or compensating workers whose roles have been affected by AI. This might affect the culture and values of the organisation and the well-being of the employees.



AI replacing jobs is believed by many to be a great crisis of the decade. As AI becomes cheaper and more advanced by the day, the answer to the question of whether AI will replace jobs is a big fat yes.

Technological advancement causing jobs to become redundant is nothing new. Many manufacturing jobs like hand-weaving got replaced by machines during the industrial revolution. AI has already taken many industries by storm. Proof-readers and copywriters are already being replaced by grammar-checking AI services. Content writers and authors are competing with AI-generated stories and articles. Graphic designers and artists fear that AI-powered digital art and logo generating services mean an end to their careers. Even programmers are worried about AI replacing their jobs ever since ChatGPT successfully cleared the technical interviews of major tech companies.

The displacement of jobs at such a rapid pace will have destructive effects on society. However, while AI is certainly capable of destroying jobs, it is also capable of creating new ones. As worker productivity increases due to AI, the excess revenue will be reinvested into the economy, leading to growing demand, which in

turn increases jobs. While the future isn't so bleak, AI is bound to cause disruptions in the economy and society in the short term. Those who reskill themselves for the AI age will find themselves with new opportunities, but what would happen to those who don't?

This brings us back to the dilemmas of adopting AI in the workplace. Mass unemployment is a possible drawback of AI in the workplace, along with a myriad of ethical concerns. While machines are generally considered unbiased and effective, AI models make decisions based on data analysis, and this data might be biased, incomplete or flawed. A biased AI will make discriminatory decisions. If this AI is used in the workplace for purposes like hiring or analysing employee performance, it might favour certain individuals over others. It will risk human rights such as fairness and equality.

When an AI makes an incorrect decision, who will be held accountable? Will workers have the power to challenge or appeal decisions made by an AI? The answers to these questions are still debatable.

AI lacks transparency. We cannot ask an AI to explain its decision. There is no human connection or empathy between AI and workers. On the other hand, if workers blindly follow decisions made by AI, it will cause complacency and conformity.

Further, there are ethical concerns about the data collected and used by AI. If AI collects data about employees or trains on copyrighted content, it is an infringement of rights.

In conclusion, using AI in the workplace offers many benefits yet poses various challenges. In the near future, we can expect public debate and more government regulations regarding AI. Nonetheless, it is clear that AI will transform the way we work.

Therefore it is important to understand the role of AI in the future of work and prepare ourselves for an AI-driven economy.

Education ‘23: Classic Lectures Meet Modern Lectures

AUTHOR: ADITYA THATTE (SY – IT)

Education has undergone a transformative shift in this quickly evolving digital age. Online tutorials on platforms like Coursera, Udemy, UpGrad, Unacademy, YouTube, etc. are becoming increasingly popular as learning resources alongside traditional college professors. This transition was majorly influenced by the coronavirus pandemic, which caused a seismic upheaval in the field of education. It left an indelible mark on how we learn. As schools and universities were forced to close, educators and students alike turned to online platforms and resources to continue the learning process. The pandemic hastened the introduction and inclusion of digital resources, such as YouTube tutorials, as a necessary component of the educational landscape. As the borders of learning continue to expand, the integration of YouTube videos and college lecturers provides a more comprehensive and enriched approach to education.

Before continuing, a clarification on my part. This article is focusing on the differences between college lecturers and online courses, specifically YouTube tutorials. By no means do I wish to disrespect any professor.

College professors have traditionally been at the forefront of education, passing on specialised knowledge while also facilitating interactions with students. Years of hard work and research ensure that

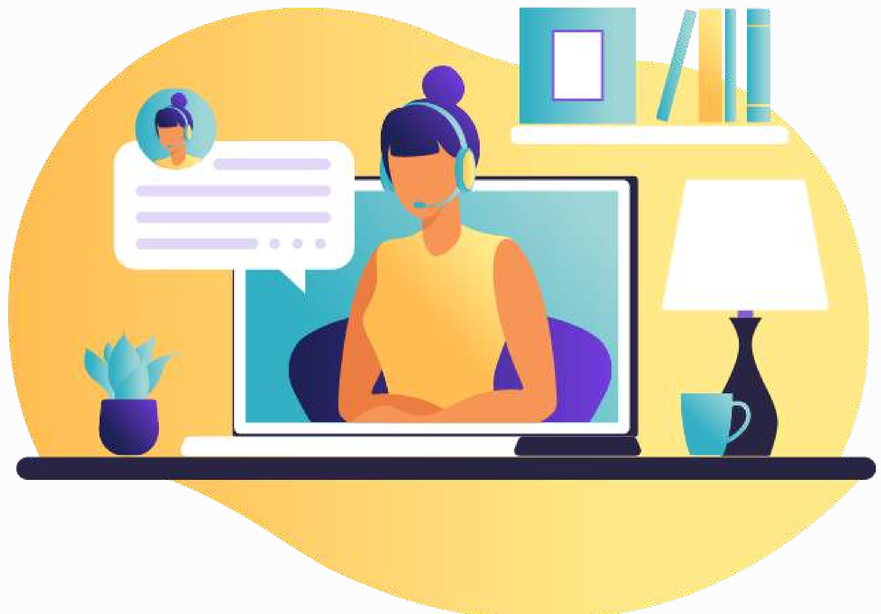
students receive great education from subject matter specialists. Professors provide clear objectives, milestones, and assessments through painstakingly constructed courses, guiding students through a well-organised development of topics. Direct interaction is one of the key benefits of learning from college lecturers. Students can participate actively in discussions, request clarification, and receive feedback. Face-to-face engagement promotes an enhanced understanding of the subject matter and allows for more personalised coaching. Professors also provide vital views on assignments, papers, and tests, allowing students to recognise their strengths and shortcomings, nurture critical thinking, and develop essential skills. The experience these professors possess is truly irreplaceable.

However, college professors can have a few constraints. Fixed scheduling and limited availability make it difficult to seek guidance or clarification on complex topics. Some students may feel overwhelmed or under-challenged because of the standardised method. This hinders effective comprehension, retention, and overall learning outcomes. Moreover, while they are experts in their fields, their knowledge may be limited to a few areas, limiting exposure to other perspectives and alternative teaching approaches.

Another aspect which is out of their hands is the ability to update the syllabus quickly. The process of updating college syllabi to include the most recent technologies is a complex and time-consuming task that can take years to complete. While professors play a vital part in recommending changes, academic departments and administrative bodies within the college or university have final decision-making authority. As technology advances at a rapid pace, educational institutions have to ensure that their curricula remain relevant and aligned with industry trends. Furthermore, the approval process within academic institutions can be time-consuming, with multiple levels of review and assessment.

Conversely, YouTube tutorials have revolutionised the learning landscape by offering easily accessible and diversified educational information. They are available 24/7 and allow students to learn at their own pace and convenience. This flexibility suits various styles of learning, allowing students to allocate time depending on their preferences and schedules. YouTube has a vast archive of tutorials encompassing a wide range of subjects ranging from language learning to sophisticated mathematics ideas and coding skills. This makes it useful for the research of varied themes as well as in-depth exploration of specific areas of interest.

To improve comprehension and engagement, many videos include visual aids and demos. These visual and interactive features make complex concepts more approachable and relatable, resulting in better understanding and retention. Furthermore, YouTube provides tutorials from a wide range of educators, each with their own distinct teaching style.



These tutorials are frequently created by experienced professionals in the field. This means that the tutorials are based on real-world experience and knowledge, and they are often times more up-to-date than many college curricula. They are typically more practical in nature than college courses. This means that you are

more likely to learn a specific skill that you can apply in your career rather than learning about a broad topic.

Nevertheless, critical judgement is key as the quality of lessons can range from factual and well-produced content to inaccurate, erroneous, or outdated videos. Students need to verify the reliability of the content and the creator's competence to ensure they are using high-quality resources. While such videos do not provide the formal accreditation, they can be used to supplement college lectures. Pre-learning allows students to grasp fundamental topics prior to attending a college lecture, enabling deeper involvement and meaningful dialogues. Furthermore, if a concept is still unclear after a college lecture, these tutorials might provide alternative explanations. The wide range of explanations given can bring fresh perspectives, aid comprehension, and accommodate various learning styles and preferences. Furthermore, they are invaluable for reviewing and revising concepts learned in class. Students can access playlists that are tailored to their learning styles and revisit certain topics at their own speed. The visual and interactive element helps to reinforce knowledge, facilitating memory during tests or real-world application of concepts.

In conclusion, with the rise of YouTube tutorials as a valuable learning resource alongside traditional college teachers, the educational environment has expanded. College instructors provide expertise, structured curricula, and personalised feedback, whereas YouTube courses provide accessibility, diversity, and flexibility. Students can improve their learning experience by combining the qualities of both mediums, gaining access to a wide selection of resources, engaging in interactive learning, and receiving personalised advice.

To leverage the power of YouTube tutorials alongside college professors, students can adopt key strategies like pre-learning, reviewing, etc. Students need to seek the best of both worlds in order to embark on a complete educational path armed with the information, skills, and adaptability required in the modern world. Students can improve academically, widen their horizons, and prepare for success in their chosen industries by combining varied perspectives, interactive learning, and personalised assistance. Integrating YouTube lectures with college professors maximises the possibilities of a comprehensive and enriching learning experience, guaranteeing students to thrive in the digital era of education.to thrive in the digital era of education.

Propelling Space Exploration to New Heights

AUTHOR: GAJ JOSHI (SY – CE)

Space technology, a testament to humanity's innate curiosity and ingenuity, stands as a beacon of our unyielding desire to explore the unknown and unravel the secrets of the universe. It is a journey that has taken us from the awe-inspiring launch of Sputnik 1 on October 4, 1957, by the Soviet Union, a tiny artificial satellite that forever altered the trajectory of human history, to the ambitious plans for interplanetary colonization and asteroid mining in the 21st century. This evolutionary odyssey in space technology, akin to a celestial symphony, has composed a magnificent opus of human achievement, punctuated by resounding crescendos of scientific discovery and innovation.

The story of space technology begins with the launch of Sputnik 1, a 58-centimeter metal sphere with four long antennas, which emitted radio pulses that could be received on Earth. This historic moment marked the dawn of the space age and ignited a fervent space race between superpowers, the United States and the Soviet Union. In response to the Soviet achievement, the United States launched Explorer 1 in 1958, its first artificial satellite. These early forays into space laid the foundation for the technological advancements that would soon follow.

The 1960s emerged as a pivotal decade in the history of space exploration. In 1961, Yuri Gagarin, a Soviet

cosmonaut, became the first human to journey into space, a monumental achievement that captured the world's attention and elevated him to international hero status. The United States swiftly followed suit by sending its first astronaut, Alan Shepard, into space later that year.

The defining moment of the 1960s came in 1969 when NASA's Apollo 11 mission achieved what was once considered an impossible dream – landing humans on the Moon. Neil Armstrong's historic first steps on the lunar surface, accompanied by his iconic words, "That's one small step for man, one giant leap for mankind," resonated deeply with people across the globe. This milestone was not only a testament to human achievement but also a testament to the incredible potential of space technology.

The subsequent decades witnessed the evolution of space exploration, as missions ventured beyond Earth's orbit. The development of space shuttles in the 1980s ushered in a new era of space travel, enabling astronauts to conduct extended missions in low Earth orbit. The Hubble Space Telescope, launched in 1990, became one of the most iconic space instruments. Positioned above Earth's atmosphere, it provided breathtaking views of distant galaxies, nebulae, and other celestial wonders, expanding our understanding of the universe.

As we entered the 21st century, space technology continued to progress, opening up new possibilities and redefining our relationship with the cosmos. The International Space Station (ISS) became a symbol of international cooperation, hosting scientists and astronauts from different countries to conduct research, technological demonstrations, and foster partnerships. The ISS also represented a continuous human presence in space, paving the way for longer-duration missions and scientific breakthroughs.

Advancements in propulsion systems have been pivotal in the ever-expanding realm of space exploration. Among these breakthroughs, ion propulsion stands out as a transformative technology. Unlike conventional chemical propulsion systems that rely on expelling propellant gases, ion propulsion utilizes electrically charged particles, often xenon ions, to generate thrust. This innovative approach offers several distinct advantages. By continuously accelerating these ions, spacecraft can achieve higher speeds with unprecedented fuel efficiency. This efficiency has significantly reduced travel times for missions to distant celestial bodies, such as planets and asteroids. Consequently, ion propulsion has facilitated more ambitious and extended missions, revolutionizing our capacity to explore and understand the cosmos. Its potential impact on future crewed missions underscores the profound significance of ion propulsion in the evolution of space technology.

Materials science has assumed a paramount role in the realm of space technology, orchestrating advancements that bolster our capacity to explore the cosmos. Pioneering researchers have unveiled materials uniquely suited to endure the unforgiving conditions of space, including extreme temperatures and relentless radiation. These ground-breaking innovations have yielded an array of materials tailored to distinct spacefaring needs. Heat-resistant materials have been harnessed to protect spacecraft during the fiery ordeal of re-entry into Earth's atmosphere, ensuring safe returns from orbit. Simultaneously, lightweight materials have revolutionized spacecraft construction, rendering vessels more agile and economical. Furthermore, radiation-resistant materials have been crucial for prolonged deep-space missions, shielding against the hazardous cosmic radiation that pervades interstellar space. This triumphant synergy of materials science and space

technology has propelled our exploration of the cosmos to unprecedented heights.

Robotic emissaries, exemplified by NASA's Mars rovers such as Opportunity and Curiosity, have become indispensable ambassadors of human curiosity beyond our terrestrial boundaries. These mechanized pioneers, equipped with an arsenal of scientific instruments, have undertaken intrepid journeys across the Martian landscape, unravelling enigmas of geology and history. Their tireless expeditions have spanned vast distances, conducting experiments, capturing breathtaking imagery, and relaying a trove of invaluable data back to Earth. Through their lens, we've gained profound insights, unearthing tantalizing hints of ancient water and the potential habitability of Mars in epochs long past. Robotic space exploration epitomizes human ingenuity, extending our reach and sating our insatiable appetite for cosmic comprehension.

As we gaze into the boundless possibilities of the future, space technology seems poised to profoundly revolutionize our existence. At the forefront of this transformation are reusable rocket systems, pioneered by private companies like SpaceX, which are reshaping the economics of space travel. These innovations have significantly reduced the historically exorbitant costs of launching payloads into space, democratizing access and opening the cosmic frontier to a diverse range of organizations, including commercial enterprises.

Additionally, this shift has heralded the emergence of space tourism, inviting civilians to embark on a captivating journey into the cosmos. Beyond Earth's confines, adventurous individuals can envision a future where they experience the marvels of space first-hand, from weightlessness and the ethereal beauty of our planet from orbit to the cosmic wonders of the universe. This burgeoning era of space tourism holds the promise of transforming space into more than just an arena for exploration; it aims to make it an accessible destination, where the dream of experiencing the cosmos becomes a reality for all.

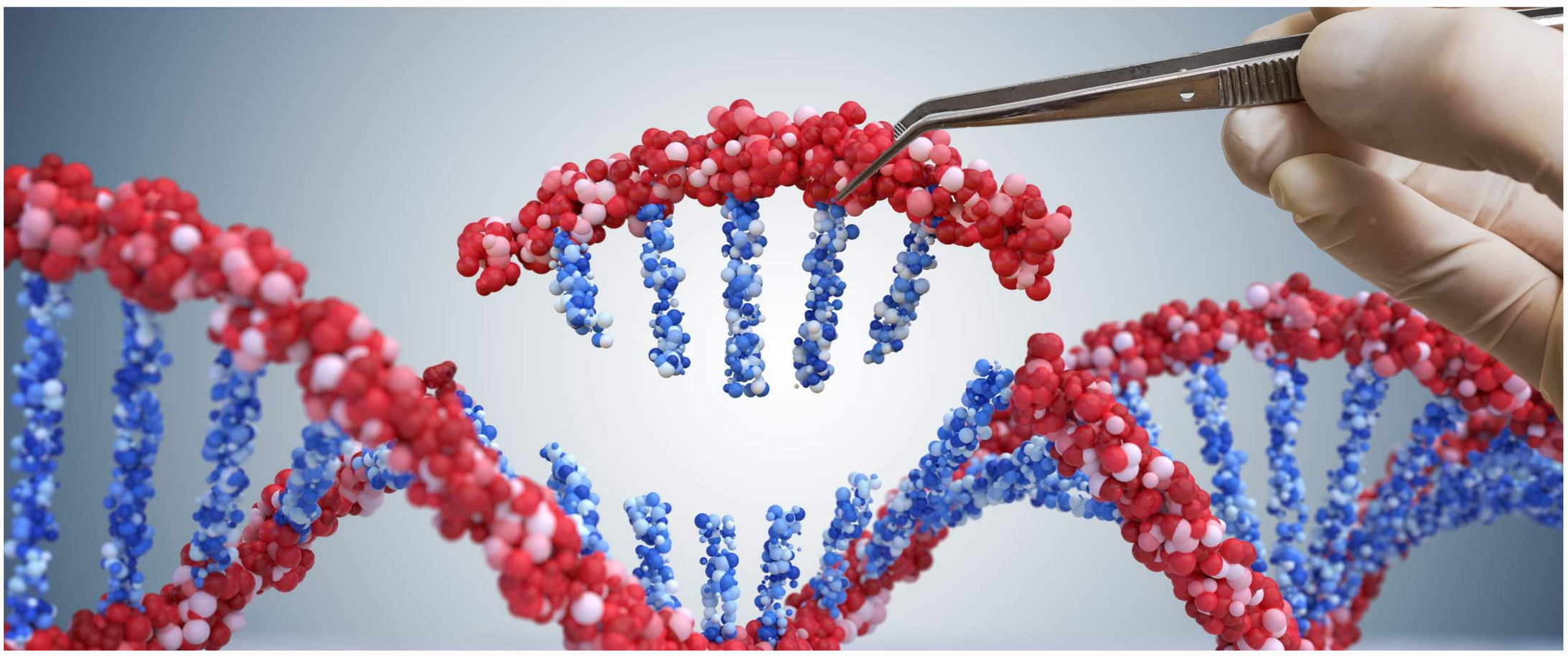
Another captivating prospect on the horizon is asteroid mining. As Earth's resources become increasingly scarce, mining asteroids for valuable minerals and resources offers a sustainable solution to meet our future needs. Companies like Planetary Resources and Deep Space Industries are actively researching and developing technologies to identify, capture, and extract valuable resources from near-Earth asteroids.

The dream of human colonization of other planets, particularly Mars, is also inching closer to reality. While numerous challenges remain, such as the development of life support systems and radiation protection, the notion of humans becoming a multiplanetary species is no longer confined to the realms of science fiction.

In conclusion, space technology has been an extraordinary force driving our exploration of the cosmos and our comprehension of the universe. From the inception of the space race to the current era of private space exploration, it has consistently propelled us forward, expanding the boundaries of what is possible. As we gaze toward the future, the potential for space technology to revolutionize our lives on Earth and beyond is boundless. Whether through scientific discoveries, space tourism, resource utilization, or interplanetary colonization, space technology will continue to shape the course of human history and inspire generations to reach for the stars. The final frontier beckons, and space technology is the key to unlocking its mysteries and fulfilling humanity's destiny among the stars.

CRISPR: A Magic Around Genetic Engineering

AUTHOR: SIDDHI SHETTY (SY – AI / DS)



Clustered Regularly Interspaced Short Palindromic Repeats, or CRISPR, is the name of a bacterial defence mechanism that serves as the basis for CRISPR-Cas9 genome editing technology. They were first discovered in archaea by Francisco Mojica, a scientist at the University of Alicante in Spain. He proposed that CRISPRs function as a component of the bacterial defence system that protects it from invading viruses.

Working of CRISPR:

The CRISPR-Cas9 system is a powerful tool used to modify DNA in cells. It consists of a molecule called gRNA, which helps to guide an enzyme called Cas9 to a specific part of the DNA. Cas9 then cuts the DNA at that location. This allows scientists to add, remove, or modify genes in the cells. Once the DNA is cut, the cell's natural repair machinery can be used to fix the break. There are two ways that the cell can repair the break:

- Nonhomologous end joining (NHEJ) is a quick and dirty way to repair the break. It doesn't require any special instructions, so it's often used when the cell doesn't have a repair template. However, NHEJ can sometimes lead to random mutations in the DNA.

- Homology-directed repair (HDR) is a more precise way to repair the break. It requires a repair template, which is a piece of DNA that contains the correct sequence to replace the broken piece. HDR can be used to introduce specific changes into the DNA, such as correcting mutations or inserting new genes.

The CRISPR-Cas9 system has many potential applications that include the following.

Role in Gene Therapy:

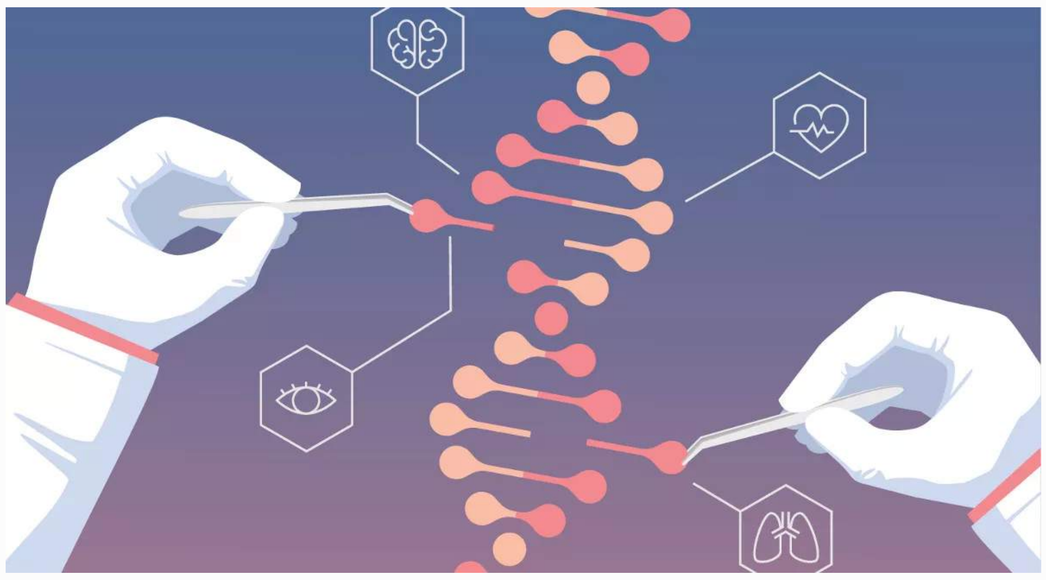
Gene therapy is a way to treat diseases by replacing defective genes with healthy genes. It can also be used to edit genes that are already working properly. CRISPR-Cas9 is a new gene editing technology that is very precise and can be used to target specific genes. It works by using a guide RNA to recognize a specific DNA sequence. The guide RNA then binds to the DNA sequence and cuts it. This cut in the DNA allows scientists to insert new genes or make changes to existing genes.

CRISPR-Cas9 has been used to treat a variety of genetic diseases, including sickle cell disease, cystic fibrosis, and muscular dystrophy. Scientists are also developing other gene editing technologies. One such technology is called prime editing. Prime editing is similar to CRISPR-Cas9, but it can make more precise changes to DNA. Prime editing does not produce double-strand breaks in DNA, which reduces the risk of unintended mutations. Gene therapy is a promising new treatment for genetic diseases.

In the ever-evolving landscape of genetic medicine, the future holds even more possibilities. Researchers continue to refine existing technologies and develop new approaches to address a wider array of genetic disorders, ensuring a brighter outlook for patients and healthcare.

Therapeutic Role:

In a ground-breaking human trial, CRISPR-Cas9 gene-editing technology was used to treat refractory lung cancer. This revolutionary approach began by extracting T cells, crucial white blood cells, from the patient's bloodstream. Researchers employed CRISPR-Cas9 to delete three specific genes within these T cells that hindered their ability to combat cancer. Modified T cells were then reintroduced into the patient, where they demonstrated an exceptional ability to target and destroy cancer cells. Remarkably, no adverse side effects were observed, and these engineered T cells persisted in the patient's bloodstream for up to nine months, potentially offering long-term protection. Beyond lung cancer, the implications of this technology are profound. It opens the door to personalized gene-based treatments for a wide range of diseases, including conditions with genetic components like HIV. CRISPR's precision gene editing holds the promise of transforming the landscape of medicine, ushering in a new era of tailored, effective therapies and raising hope for patients battling complex, genetic-based illnesses.



Role in Agriculture:

The possibility of agricultural resource scarcity is there as the global population rises. CRISPR-Cas9 is an established advancement in the sector since it has been used to genetically alter foods to enhance their disease resistance, make them drought-tolerant, and improve their nutritional content and shelf life. Typically, CRISPR addresses the global food crisis in three ways. The health of the plants as a whole may also be improved. It can replenish food sources and help plants endure harsh environments. Additionally, CRISPR technology offers a sustainable solution to

reduce the need for chemical pesticides and fertilizers in agriculture, contributing to environmental conservation. Furthermore, it facilitates the development of crops with optimized growth and yield, which can alleviate the pressure on agricultural resources and support the nourishment of a growing global population.

Role in Gene Activation and Silencing:

CRISPR-Cas9 can also be used to artificially regulate (activate or repress) a certain target of a gene through advanced modification of the Cas-9 protein. This is done by using a modified version of the Cas9 protein called dCas9. dCas9 cannot cut DNA but can still bind to specific DNA sequences. To regulate gene expression, dCas9 can be fused to a protein that either activates or represses gene transcription. For example, dCas9 can be fused to a protein called a transcriptional activator, which will bind to the DNA and turn on the expression of the gene. Or, dCas9 can be fused to a protein called a transcriptional repressor, which will bind to the DNA and turn off the expression of the gene. This allows scientists to artificially control the expression of genes without changing the DNA sequence. This could be used to treat diseases caused by gene mutations or to create new crops with improved traits. In addition to regulating gene expression, dCas9 can also be used to visualize the location of genes inside cells. This is done by fusing dCas9 to a protein that fluoresces, such as green fluorescent protein (GFP). This allows scientists to see where specific genes are located in the cell, which can help them to understand how these genes function.

Biofuels and Industrial Products:

CRISPR can be used to increase biofuel production efficiency, produce new kinds of biofuels, and lessen the impact of biofuel production on the environment.

In addition to producing minerals and chemicals, CRISPR can also be used to enhance the efficiency of industrial operations and develop novel treatments and diagnostics. It can be used to alter the bacteria that are utilized to make the ethanol and biodiesel that are used as alternative fuels. It is used to modify bacteria so that they create novel biofuels like butanol original methane. In industrial processes like wastewater treatment or food production, CRISPR can potentially be employed to alter bacteria. This can be accomplished by improving the microorganisms' capacity to break down contaminants or create desirable outcomes. Furthermore, CRISPR technology plays a pivotal role in reducing the environmental footprint of various industrial processes. By fine-tuning the genetic makeup of microorganisms, it can optimize their ability to break down pollutants in wastewater treatment, promoting cleaner and more sustainable water management practices. In the realm of food production, CRISPR can be employed to enhance the characteristics of microorganisms used in fermentation processes, improving the production of various food and beverage products. This results in more efficient and eco-friendly production methods.

Overall, CRISPR-Cas9 is a powerful tool that can be used to edit DNA, regulate gene expression, and visualize gene location. These capabilities have the potential to revolutionize the way we treat diseases, develop new crops, and understand how cells work. As science continues to advance, the possibilities for CRISPR technology seem limitless, offering hope for transformative breakthroughs in various fields and shaping the future of biotechnology and medicine.

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CDAC Projects 10

Rural Health Tracker

The "Rural Health Tracker for India" project addresses the critical issue of limited healthcare access in rural India. Despite the slow expansion of health facilities in these regions, approximately 86% of the rural population hesitates to leave their jobs, impacting their wages and exacerbating health problems. This solution leverages technology to bridge the healthcare gap. The project's mobile app boasts an admin module for system management, disease-specific patient data visualization on a map, and disease detection models for cataract, DR, dental caries, and oral cancer. It significantly improves healthcare access in remote areas, empowers administrators with data-driven resource allocation and intervention decisions, and enables early disease identification for improved patient outcomes. Its modular design and technology-driven approach allow scalability, potentially benefitting urban areas as well. Social workers can access patient information and disease detection models, facilitating informed decision-making and enhanced patient care. The app's data collection and analysis capabilities support healthcare interventions and resource allocation.

In a recent test, the project excelled in cataract detection, achieving a 96% accuracy rate using Convolutional Neural Networks (CNN). This success surpasses advanced cataract detection techniques. Overall, the project's robust functionality promises significant benefits in the field of medical diagnostics. Its potential for partnerships with government agencies, NGOs, and healthcare organizations highlights its innovative approach to healthcare access and early disease detection in rural India.

IMPLEMENTED BY:

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SkyVue: Satellite Insights for Resilient Crisis Management

Utilizing cutting-edge deep learning technology and satellite analysis, the proposed catastrophe management system represents a paradigm shift in disaster response. It delivers real-time contextual awareness, optimizing resource allocation and empowering data-driven decision-making. This system exemplifies a commitment to continuous enhancement, employing Convolutional Neural Networks (CNNs) with UNet architecture for precise image processing and Siamese architecture for flood detection. Strategic initiatives include the development of a mobile app for real-time updates, mitigating overfitting with diverse datasets, and expanding its applicability to a spectrum of calamities.

In practical scenarios, it expeditiously identifies safe havens during floods, guides first responders during seismic events, aids in wildfire containment, and provides storm preparedness updates, elevating disaster resilience and response capabilities.

In conclusion, this ground-breaking strategy holds the potential to revolutionize disaster management not only in India but globally, resulting in lives saved and a substantial reduction in economic losses.

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Skeleton Game

The Centre for Development of Advanced Computing (CDAC) introduces an innovative educational game for students in grades 6 to 9, focusing on the human skeletal system.

It consists of three distinct levels, the first level, "Match the Bone," challenges students to correctly place bones within the human body.

In the "Name the Bone" level, students must identify and label bones based on their shape and placement.

The final level, "Spell the Bone," prompts students to spell out bone names. Interactive hints and a timed practice mode are provided to assist students in their learning journey.

Another intriguing feature is the introduction of a virtual bot companion, "Haddi", who guides and supports students throughout their educational adventure. The game also incorporates captivating visuals, to enhance engagement and facilitate knowledge retention.

It utilizes OpenCV technology, connecting an OpenCV Python server with the Unity game. The augmented reality (AR) feature allows students to superimpose the skeletal system onto their own bodies, creating a unique and memorable learning experience.

In summary, this innovative approach holds the potential to transform how students engage with complex subjects, offering a promising future for educational gaming.

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DataViz

Augmented analytics is among the latest innovations in the field of data analytics, which aims to improve data-driven decision-making by automating data analysis and delivering comprehensive insights.

DataViz employs Large Language Models (LLMs) to decipher natural language queries and generate code for visualizations and SQL queries. It showcases the potential of prompt engineering, an approach for extracting essential code from LLMs, to create precise and reliable augmented analytics systems, ensuring accurate results.

It is an effective technique for generating visualizations and SQL queries from natural language input, making it cost-effective and applicable across industries like manufacturing, retail, healthcare, and finance.

The users can input natural language queries, which the system converts into SQL queries or visualizations. They can also evaluate the results, make informed decisions, and store SQL statements and related queries in a database for future reference.

In summary, DataViz is a promising system that underscores the value of LLMs and prompt engineering in creating accurate, reliable, and cost-effective augmented analytics systems. It offers an efficient means of developing augmented analytics tools, empowering organizations to make faster and more effective decisions by harnessing the strengths of LLMs.

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Detecting Anomalies From Surveillance Videos

Utilizing digital video emphasizes anomaly detection's vital role in surveillance. Video analytics automates event detection Object, Anomaly, Video Annotation. Balancing effectiveness and efficiency is crucial, given dataset issues and model complexity. Extracting key-frames without hindering object detection adds to the challenge.

Highlighting real-time anomaly detection benefits efficiency. The Literature Review offers insights & addresses concerns. The proposed anomaly detection approach defines the problem, scope, system features for a comprehensive understanding. Project Management Strategies focus on estimation & feasibility. Design Diagrams visually represent the proposed system & architecture.

Implementation details encompass datasets, pre-processing, algorithms, and tools, crucial for understanding technical aspects. In conclusion, video analytics aids object recognition by identifying key-frames, reducing system complexity & saving computing time. Automated anomaly detection benefits authorities and citizens by enabling rapid responses. Model choices depend on specific application needs, highlighting efficient key-frame detection for real-time applications.

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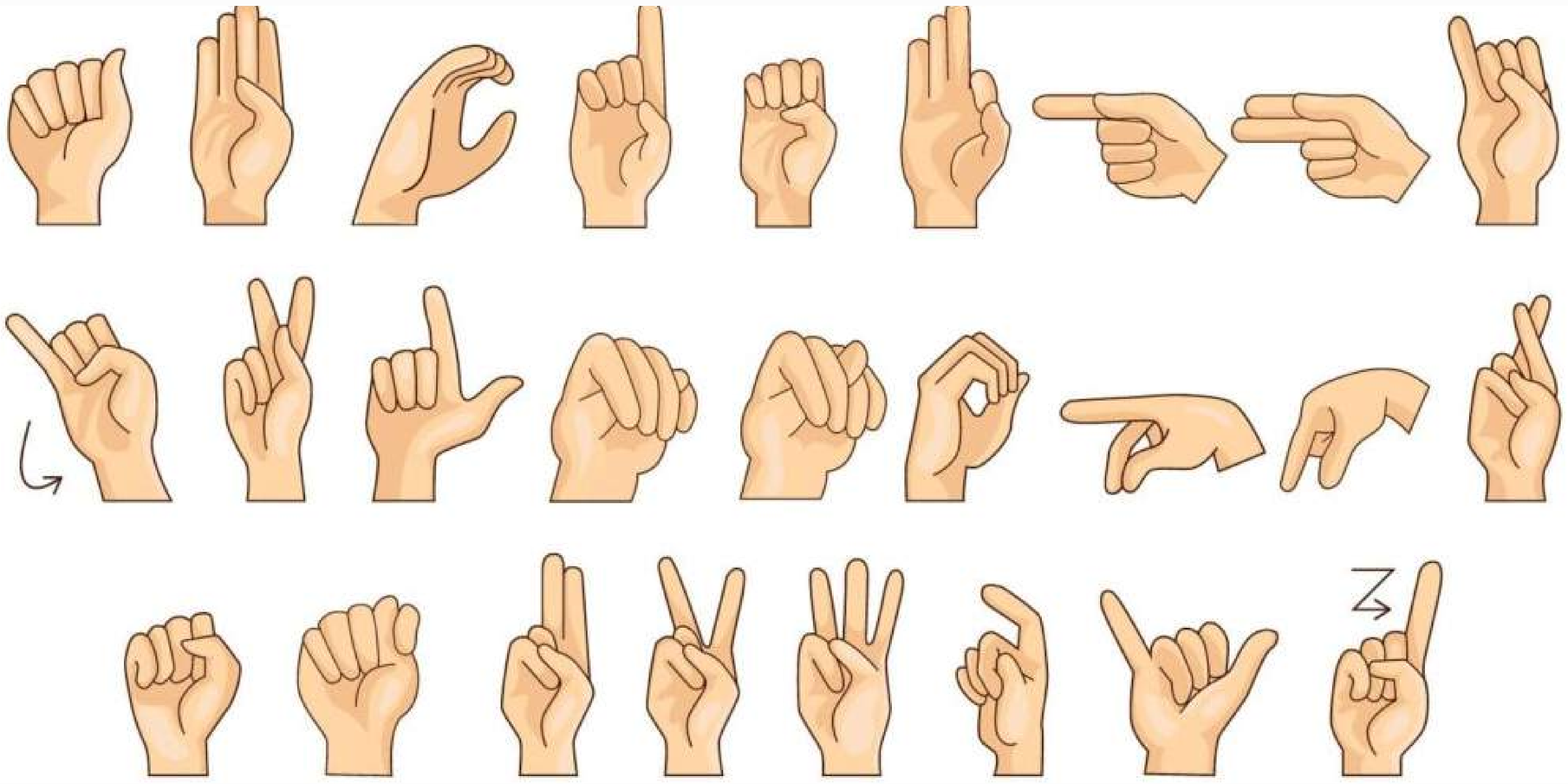
Message Mate



The proposed system revolutionizes communication between sign language proficient individuals and those who aren't, using cutting-edge tech like computer vision and machine learning. It consists of two main parts: Sign Language to Text Translation and Audio/ Text to Sign Language Translation in Real Time. The former analyses sign language gestures via Convolutional Neural Networks (CNNs) to convert them to text or audio. The latter translates text or audio into sign language gestures for enhanced accessibility.

To ensure accuracy, the system employs machine learning algorithms such as CNNs, Hidden Markov Models (HMMs), and Support Vector Machines (SVMs) for gesture recognition and system performance enhancement. The system's inclusivity, catering to various disabilities with a user-friendly interface, shines through. Users only need a camera-equipped device, good lighting, and a stable internet connection for real-time communication. The translation accuracy, a standout feature, is achieved through intelligent integration of machine learning and computer vision, facilitating seamless communication between individuals with diverse abilities. This ground-breaking system fosters real-time communication between sign language and non-sign language users, driven by advanced technologies and a commitment to inclusivity, breaking communication barriers and promoting meaningful interactions in our diverse society.

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Smart Agriculture

Smart agriculture monitoring systems, powered by IoT technology, are transforming the agricultural landscape. These systems deploy a network of strategically placed sensors and devices across farmlands to gather real-time data on crucial factors like temperature, humidity, soil moisture, and nutrient levels. This data is then transmitted to the cloud for analysis, equipping farmers with valuable insights for informed decision-making.

IoT-driven smart agriculture monitoring offers farmers the ability to closely monitor crop conditions, enabling them to take timely actions to optimize growth and maximize yields. It enhances their comprehension of the environmental factors influencing crop health, facilitating adjustments in irrigation, fertilization, and other farming practices. This proactive approach, supported by data analytics, enhances efficiency, productivity, and sustainability by minimizing resource wastage.

One notable advantage of IoT in agriculture is its potential to establish efficient and sustainable farming ecosystem. Real-time monitoring empowers farmers to implement precise interventions that optimize crop yields while minimizing resource usage. Additionally, automation capabilities streamline farming operations like irrigation, fertilization, lead to more efficient resource allocation and reduced operational costs.

In essence, IoT technology empowers farmers with real-time insights into crop health and growth conditions, enabling data-driven decisions that significantly increase yields, improve sustainability, and reduce operational costs.

IMPLEMENTED BY:

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Mihir Desai

Question Generation

The project aims to develop a cutting-edge NLP-powered system for generating high-quality multiple-choice questions (MCQs) from input text. Its primary goal is to identify key concepts in the text and create diverse MCQs that assess students' understanding. Questions encompass recall, analytical, with plausible incorrect options for authenticity and comprehensive assessment coverage.

The system employs multi-level NLP techniques, including syntactic and semantic analysis, to analyse text deeply. Deep NLP system for text analysis generates distractors, supports customization, automates evaluation, and scales for extensive educational assessments and integration. Benefits of this NLP-based MCQ system are transformative: it drastically reduces MCQ creation time, offers comprehensive topic coverage, and enables rapid generation of MCQs.

The system's operational flow includes data loading, pre-processing, model fine-tuning, and validation using metrics like BLEU and ROUGE. After training, it generates, evaluates, delivers expertly crafted questions to users.

In summary, this project aims to create an advanced NLP-based MCQ generation system known for precision, adaptability, scalability, and user-friendliness. It has the potential to revolutionize educational assessments, offering time savings, customization, improved evaluation, and adaptability to diverse educational settings.

IMPLEMENTED BY:

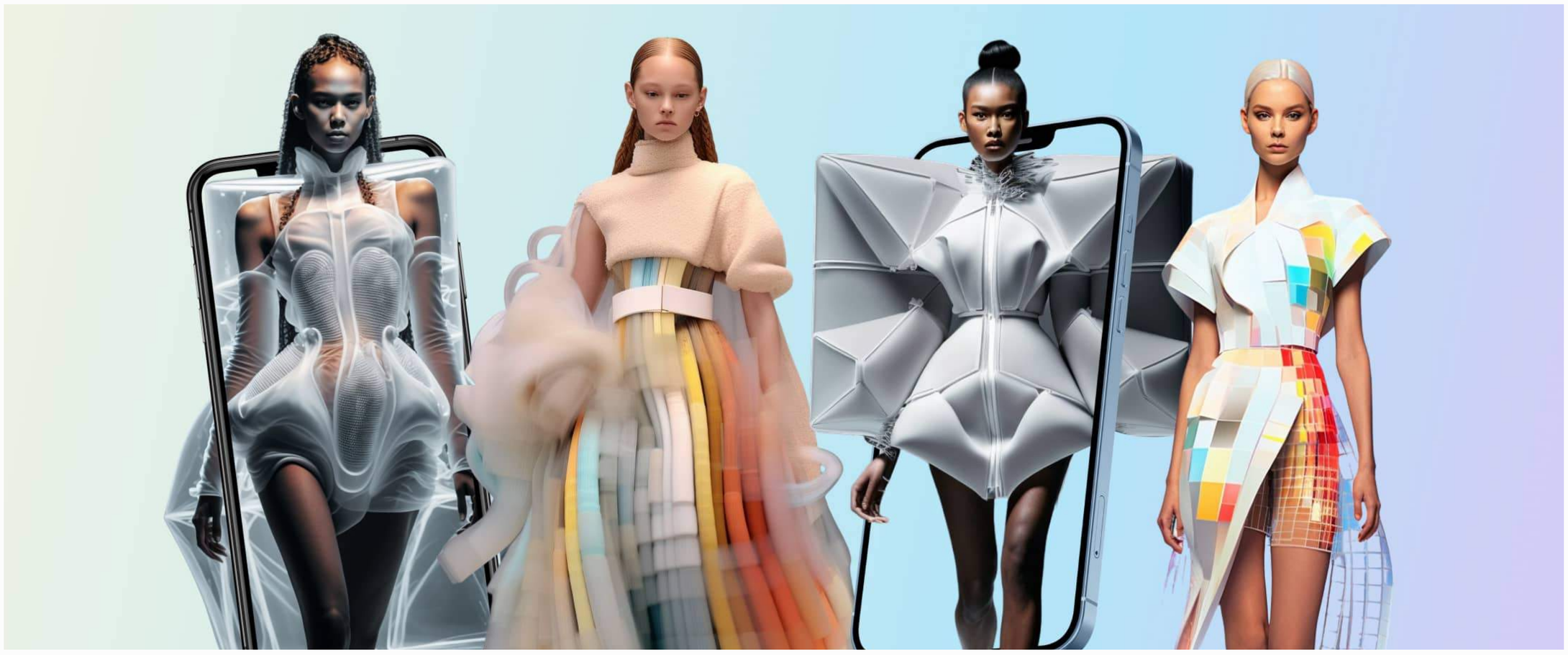
Dr. Abhijit Joshi

Devraj Anchan

Jemish Patel

Gautam Malpani

AI Fashion-Based Designer



This paper introduces an innovative approach to simplify the creation of 3D clothing for characters in games or movies. Traditional methods being time-consuming and costly, we integrate artificial intelligence and advanced 3D tech to collaborate with artists, allowing them to customize 3D avatars using plain text. The method produces efficient, low-density 3D meshes suitable for real-time rendering in video games, offering a cost-effective solution. The model excels in texture and mesh accuracy, effectively interpreting provided prompts, hinting at broad applications in the 3D fashion industry. Key technologies include 3D modelling, virtual characters, gaming, fashion modelling, BERT, CNN, mesh, vertex displacements, real-time rendering, caption, optimized mesh, Text-Driven Generation, and 3D Avatar Generation. Creating 3D outfits presents challenges due to technical complexities, design requirements, time constraints, and costs. This software aims to aid designers in crafting unique attire for virtual characters in gaming and fashion. Traditional 3D modelling is expensive and time-intensive, making it vital to generate less dense meshes for real-time rendering. Our method involves providing a textual prompt to create optimized 3D clothing, with options for further adjustments. This encoder-based approach generates cost-effective, high-quality 3D meshes, offering a swift solution for fashion designers. This innovation holds potential to transform the fashion industry, empowering designers to craft customizable clothing efficiently and creatively.

IMPLEMENTED BY:

Prof. Stevina Correia

Hetvi Solanki

Prerana Achar

Pooja Nambiar

CDAC PROJECTS

Virtual Lab: More than Type Cumulative Frequency Analysis Tool

This CDAC project aims to simplify data analysis by allowing users to input data directly, visualize it through charts, and generate cumulative frequency tables. It is a web-based application developed using React.js, Tailwind CSS, and Recharts. Users can input data, visualize it through various chart types, and generate frequency and cumulative frequency tables. The application includes an educational game feature to enhance learning and to understand data distribution. This lab delivers a comprehensive data analysis tool that enables students to learn and understand more than type cumulative frequency distributions.

Virtual Lab: Probability using Dice Simulation

This Virtual Lab enables students to grasp the core concept of probability using a Dice Simulator. The session begins with a brief theory section, after which it permits students to engage with dice, and each real-time observation is plotted in a graph. A test section follows the experiment wherein students implement their learnings of the topic. The simulator is built using Tech Stacks like MUI, React.js, HTML, and CSS. Hence the theory assisted by experiment makes the subject simple.

Virtual Lab: Section Formula

This Virtual Lab aims to educate the students about the complexities of the Section Formula and its Verification using user-friendly interfaces. It revolves around the development of a website using libraries like React.js, Chart.js, and MathJax. The project combines graph plotting and application of the Section formula using user-based input and visually representing them as per changes. This simulation hence aids students with graphical knowledge of the topic in an interactive manner.

Virtual Lab: Square Root Spiral

This CDAC project enhances the learning experience of students by providing an online laboratory which relates to the curation of comprehensive theoretical content to explain the intricacies of the square root spiral concept. To make learning both interactive and enjoyable, there is incorporation of virtual simulations using Tech Stacks like HTML, CSS, and React.js that allow students to visualize and experiment with the topic. Additionally, the content is amplified by interactive quizzes to test and reinforce their understanding. This project hence improves theoretical as well as visual representation of the topic.

Educational Game on Conic Sections

This CDAC project gamifies the concept of Conic Sections using an interactive interface. This game is developed using Tech Stacks like Unity and React.js. The game involves two inverted cones placed on top of each other and allows the user to input an angle of choice which cuts the solid structure. The impressions formed are visually represented to the user by queuing animations. Hence, the concept assists students in the representation of Conic sections and is visually appealing to them.

Virtual Lab: Thale's Theorem

This CDAC project is an innovative endeavour to learn complex mathematical concepts by infusing elements of fun and learning. It provides freedom to students to design a triangle on a graph by specifying points and proving Thale's theorem using inbuilt scales. The triangle is divided into equal ratios and sides are measured using the scale to calculate the ratios and thus prove Thale's theorem. The program is developed using Tech Stacks like React, JavaScript, HTML, and CSS. This interactive and engaging program makes learning accessible and enjoyable for students.

Virtual Lab: Visualising 3D Planes and Normals

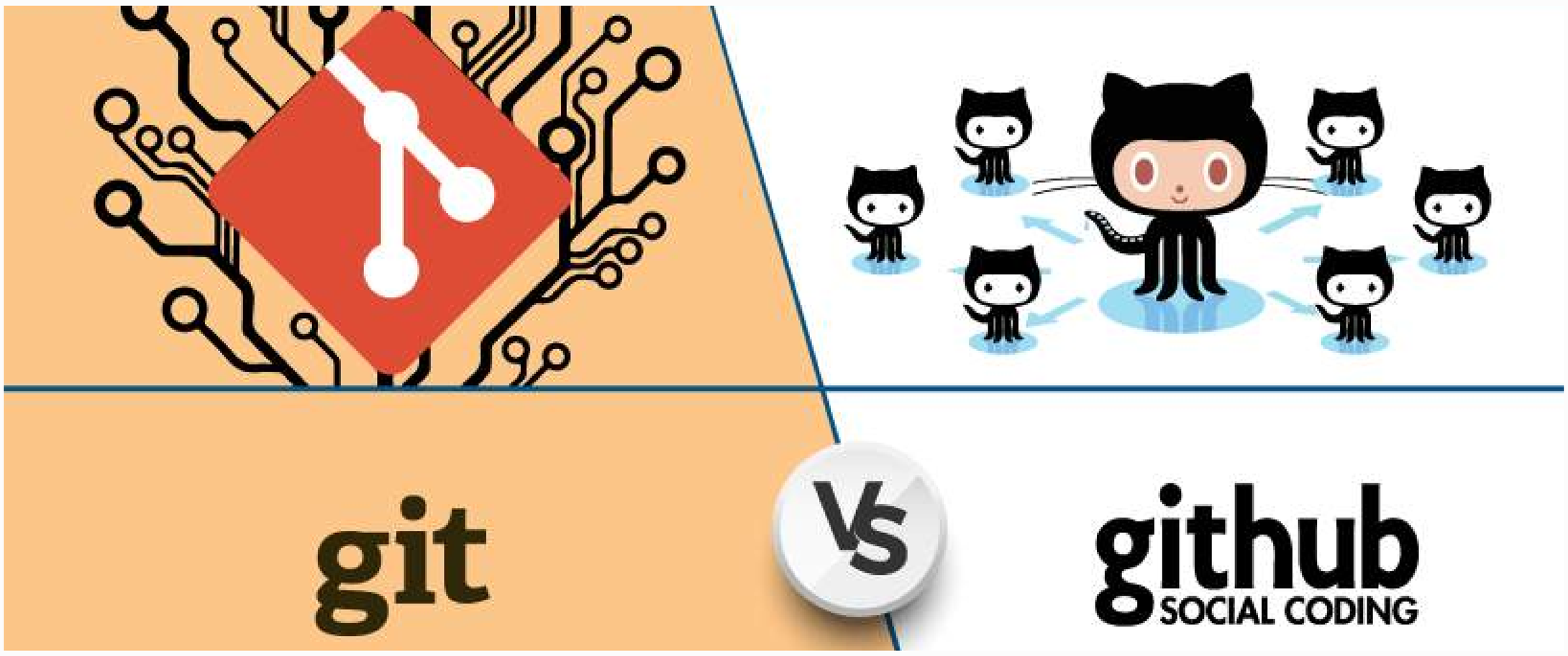
This CDAC project aims to simplify 3D mathematical concepts like relationships between planes and their Normals. A 3D graph calculator is built using Tech Stacks like Plotly and React.js. It is an interactive tool to input plane equations in a 3D graph, which provides a visual understanding of these equations and angles between planes and Normals. The concept is gamified by challenging users to calculate and plot Normals to planes. In conclusion, this project aims to make learning 3D mathematical concepts more accessible and engaging for students.

Our EVENTS


1
GIT FOR GEEKS
Second Commit
THE WEEKEND
2
3
CODESHASTRA 9.0
IF MENTORING SESSIONS
4

Git For Geeks : Second Commit

02 NOVEMBER 2022



DJCSI kicked off the academic year 2022-23 with Git for Geeks: Second Commit, a hands-on, offline workshop focused on Git and GitHub. The workshop was set in motion by Divya Patel, Chairperson of DJCSI, who introduced CSI, the speakers, the event and Dr. Vinaya Sawant, Head of the Department of Information Technology at DJSCE, who spoke about the student chapter of DJCSI and gave her best wishes to the organisers.

Ayush Shah took the stage to explain version control systems and Git with a practical demonstration of creating a Git repository and various git commands. After the conclusion of the session on Git, a fun-packed educational quiz was conducted by our Vice-Chairperson, Saurav Shah. The quiz winners were Rachit and Darsh.

Jinish Shah started the session on GitHub. He gave insights into its applications, advantages, types of repositories, and their respective uses, and taught how to transfer the code written in the previous part of the workshop from the local machine to a remote repository such that the code is accessible from GitHub. This session ended with a quiz on GitHub. The winners of the second quiz were Ansh and Prasanna Prasad Nadkarni.

Our speaker for the final session, Shiv Bhonde, introduced open-source development with an example of the popular app VLC media player. The attendees were given a task to add their names to a website created by DJCSI by using the knowledge of Git and GitHub they had acquired. The event concluded with a final round of quizzing on open-source development, which was won by Mithil and Manas Patil.

Working with some of our partners was an honour and a source of pride for DJCSI.

This session provided attendees with hands-on knowledge of various aspects of open-source programming.

The Weekend

10 – 11 FEBRUARY 2023

DJCSI partnered with DJSCE Trinity for "The Weekend" event. A two-day event which did not only help our participants enhance their skills but also provided them with the platform to network with other like-minded individuals and companies in the industry.

Day 1: Power BI Seminar

As a part of "The Weekend", a hands-on Power BI Seminar on 10th February 2023 was the first of many events. The Seminar Hall on the third floor of the college served as the venue. The guest speaker invited was Mr. Alihasan Sabuwala, a data engineer working at JP Morgan Chase, and an alumnus of DJ Sanghvi College of Engineering.

The event commenced with a felicitation ceremony during which Dr. Vinaya Sawant, the Head of the IT Department, presented Mr. Sabuwala with a bouquet of flowers as a token of appreciation. This was followed by a short speech introducing the guest to the audience, emphasising his achievements and extensive experience as a seasoned professional in the field of data engineering.

Mr. Sabuwala then took to the stage and graciously thanked the management for inviting him as a guest speaker. He began by explaining the fundamentals of data science and business intelligence, emphasising its significance in today's world. The fundamentals included the four steps to be followed while handling any type of data which he later illustrated in the hands-on session. He then moved on to Power BI and its numerous features. With the help of a sample dataset, he gave the audience a complete walkthrough of Power BI going through the aforementioned steps. He ensured that the session was an interactive one by

asking questions, solving any queries and encouraging the audience members to ask questions.

This was followed by a Q&A session. Mr Sabuwala answered various questions including but not limited to the following – advantages and disadvantages of Power BI, differences between Power BI and Tableau, steps to becoming a master in Power BI, and starting a journey in Data Science as a novice. Following the Q&A session, the closing speech was delivered, and the audience dispersed.

The session was instructive and served as an excellent starting point in the domain of data science for most of the audience members. It introduced them to the world of business intelligence, providing valuable insights on how to transform raw data into meaningful and actionable information.

Day 1: Relay Coding

The excitement and adrenaline rush of coding was palpable at "The Weekend" event. Relay Coding was one of the most hotly contested games, with 43 teams vying for the top spot. Participants had the opportunity to showcase their coding skills and put their knowledge to the test.

The relay coding competition was designed to test the speed and accuracy of the participants, with time playing a major role. The round-wise progression was rigorous and demanding. Each team had a size of 4 members. The first member of each team started the competition. 22 participants were present in the AI Lab and 21 participants in the NS Lab of the IT Department. In the lobby, the second member of each team was kept waiting for their turn, while the third and fourth members of the team were kept waiting in Room 66.

The questions in each round were a mix of pattern-based and output-based, and the difficulty level increased with each round. The order of participants was pre-decided, and only after one question was solved and the output was verified by our volunteers, were the participants allowed to run to call their next teammate. The next question would then be given to the next teammate.

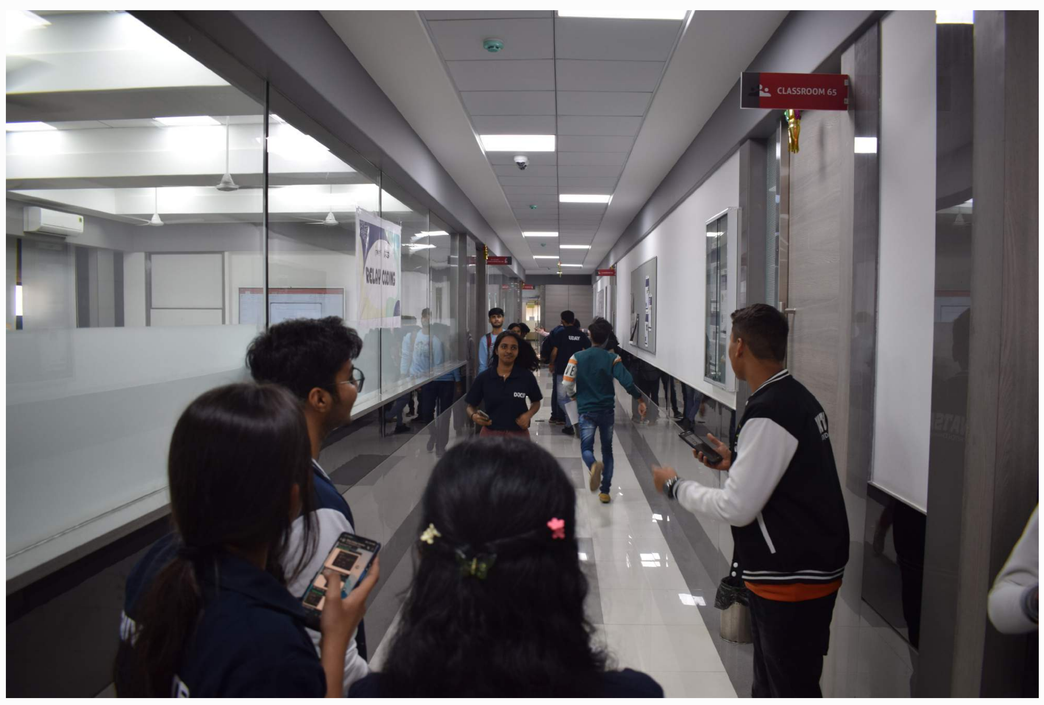
To add to the excitement, power cards were included to aid them in the competition. The first member of each team was asked to pick up two chits randomly, which had the power cards they were provided. In total, the chits had four types of power cards – browser search for 20 seconds, Phone-a-Friend (the ability to call a teammate for 1 minute), Teammate Swap, and

Overall, the event was a resounding success, providing a fun and challenging environment for participants to

Change the Question. Each team had two lives, and a life was lost if a wrong answer was given.

Each team had a volunteer assigned who managed all the questions, kept track of the power cards used, and prevented the usage of unfair means to solve the questions.

The competition was fierce, with only 6 teams qualifying for the second round. In the end, there was only one winning team and they were awarded prizes and goodies to celebrate their victory. test their coding skills. It was well-organised and provided an exciting atmosphere that encouraged participants to push themselves to their limits. The organisers thanked all the participants for their enthusiastic participation and look forward to conducting more thrilling and challenging events in the future.



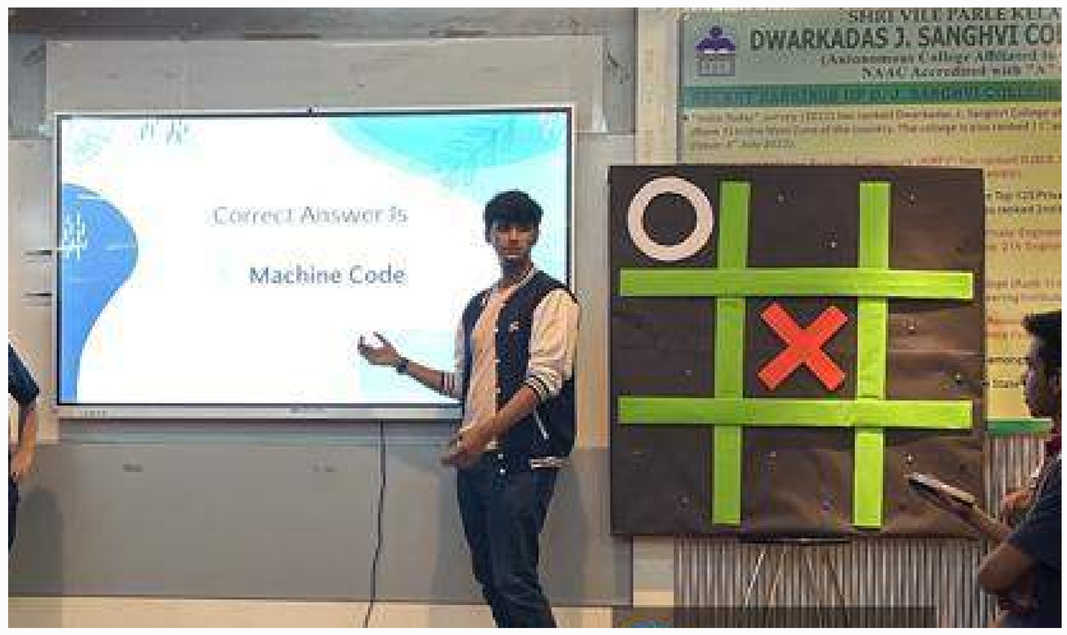
Day 1: Tech Tac Toe

"Tech Tac Toe" was an exhilarating quiz competition among tech as well as non-tech enthusiasts. It was a head-on competition between two teams consisting of two or three members each.

The individual teams were allotted an 'X' or a 'O' which would later be used to place on the grid. Placing their respective symbols on the grid required the teams to answer the quiz question correctly. In order to answer a question, and to increase the adrenaline among the players, the team was provided with a buzzer. The quickest team to press the buzzer would be given a chance to answer the question. Golden Questions were also prepared in case of a tie.

The excitement and euphoria increased after every question as the winner was decided based on which team would get 3 consecutive X's or O's vertically, horizontally or diagonally. A minor twist included was that each team got only 3 lives. Incorrect answers to a question led to the loss of one life.

In conclusion, the event was a major success full of twists, turns and triumphs. Every team was thrilled to be a part of this event and gained tech as well as non-tech knowledge.



Day 1: Non-Tech Games

Mini Golf: Mini Golf was set up on the 6th Floor, in the IT Department. It proved to be a fun and entertaining activity that combined elements of traditional golf with a more light-hearted and playful approach. Players used a small club to hit the ball into the hole in as few strokes as possible. Depending on the difficulty of hitting a hole, score denominations were set as 10, 30, 50.

Nerf Gun: The Nerf gun game was set up inside the

Conference Room on the 1st Floor. It was a fun and energetic way to engage in friendly competition with friends. In this particular game, each player is equipped with a Nerf gun and a supply of soft foam darts. The can is placed on a flat surface, and the ball is placed on top of it. The players take turns trying to hit the ball with their Nerf darts, trying to knock it off the can without hitting the can itself.

Flip the Cup: A fun game was set up at the ground floor which could be played with 2-4 players. A timer of 45 seconds was set up, within which one of the players had to win, else nobody received any prize. Each player was given a cup and the aim was to constantly try to flip the plastic cup onto its top, by flicking the cup from the edge of the table with one hand.The player who successfully flips the cup takes the can one step closer towards him/her on the board. The first one to reach the end of the board wins the game.

Basketball Pong: A fun and competitive game set up inside the Conference Room on the 1st Floor that combined elements of traditional beer pong with the sport of basketball. In this game, players attempt to shoot a ping-pong ball into cups placed on a wall, with each cup being worth a different number of points. Each cup is assigned a specific point value (10, 20, 50), with the cup at the center being worth the most points and the cups at the bottom worth the least. When a player successfully shoots the ball into a cup, they are awarded the corresponding number of points.

Day 2: Open Canvas Study Abroad Seminar

Day 2 of DJCSI X Trinity's "The Weekend" started off with a session by OpenCanvas Education on "Financing Your Study Abroad: Scholarships & Aid". Their Founder, Mrs. Grishma Nanavaty answered queries and delineated how students can begin their journey towards their dream postgraduate college.

The seminar began with a detailed overview of the benefits of studying abroad, including language skills, career opportunities, and personal growth, the types of study abroad programs, the application process including information on deadlines, requirements, and what to expect during the selection process. She was also enlightened about financing options like scholarships, grants, loans, and other aids.

After a detailed exegesis of the process of application and other aspects, the students attending the seminar were given an opportunity to ask their queries. There were questions of wide depth from the attendees and all of them were interactively answered.

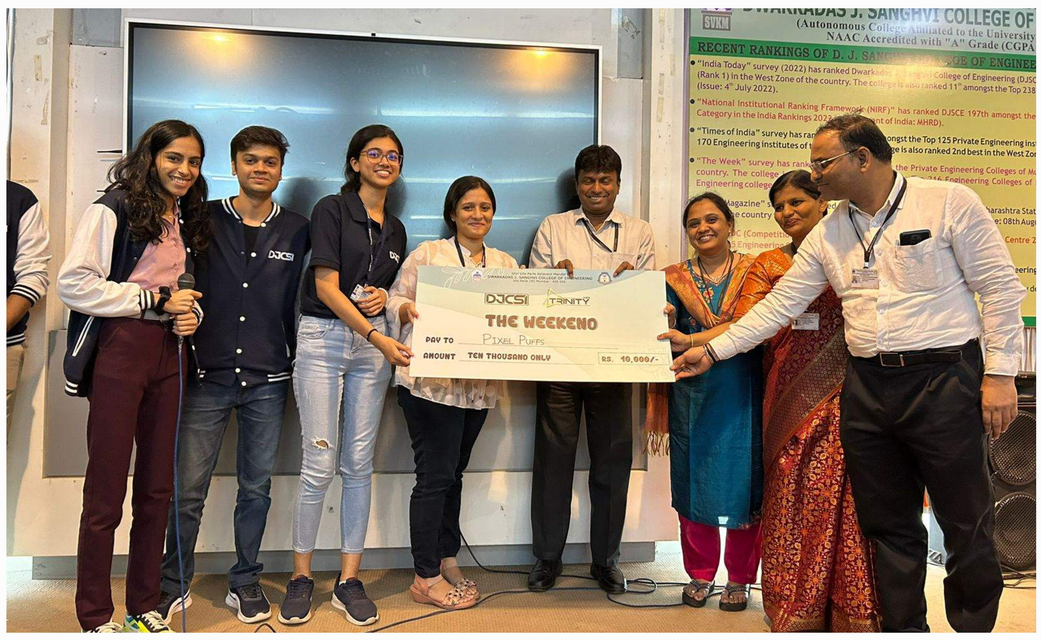
The seminar was a houseful. Students were extremely absorbed and grinned in understanding the process for their future pathways. It provided them with valuable information and resources to help them make an informed decision about studying abroad and prepare for their overseas experience.

Day 2: Pixel Paranoia

The flagship event of The Weekend was "Pixel Paranoia" on February 11, 2023 commencing at 10:00 am. A total of 50 teams (38 offline + 12 online)

participated in this UI/UX event with great anticipation. It was a hybrid event with 12 teams participating online while the others were seated in the labs of the IT and CS Departments, working an extra mile for this 6-hour hackathon. Each team consisted of 1 to 2 members. All participants were assigned problem statements given by corporates that specialize in this industry. Highly experienced mentors were present that guided the participants during the two mentoring sessions. All the teams were given time to work vigorously till 04:00 pm, after which the solution had to be submitted in order to be considered for the final shortlist. Students from various colleges were a part of this hackathon as well. The atmosphere in the various labs was filled with zest and healthy competition all around. New things were assimilated as the information got passed on from the mentors to the participants. The first judging round began in the respective labs at 05:00 pm and the participants presented their respective projects to be evaluated in front of our judges. After a great turmoil the judges were finally able to select the top 10 teams that qualified for the final judging round in the Seminar Hall. Further, the scores of all judges were added to get the winning top-3 teams. The team that won received a cash prize of ₹10,000. The runner ups were awarded ₹5,000 and the third place bagged ₹3,000 and exciting goodies as well. The event successfully ended at 08:00 pm with the closing ceremony and a speech given by the Principal, Dr. Hari Vasudevan. All in all, it was a great learning experience for every candidate, whether a beginner or expert.

Position	Team Name	Team Members
First Place	Pixel Puffs	Araish Shaikh
		Sanjal Ghate
Second Place	Creativelux	Kashish Gandhi
		Meet Patel
Third Place	NoCode	Yuvraj Thakur
		Deshna Gandhi



CodeShastra 9.0

08 – 09 APRIL 2023

CodeShastra is DJCSI's flagship event and this year it was bigger than ever. Fresh off the success of Pixel Paranoia (a UI/UX hackathon), DJCSI worked seamlessly to publicise and organise this event.

The ninth edition of CodeShastra garnered 1100+ registrations, out of which a total of 55 teams were shortlisted with a total of 291 participants.

There were 6 Problem Statements for 5 Domains - Web/App, Blockchain, Cloud, AI/ML and Open Innovation, out of which the participants had to fill in their preference.

Day 01: Saturday, 08 April 2023

DJCSI - the official student chapter of the Computer Society of India of Dwarkadas Jivanlal Sanghvi College of Engineering, hosted the 9th edition of the iconic 'CodeShastra'. The 24- hour hackathon, held on the 8th and 9th of April, was a thrilling event that tested the mettle of some of the most innovative minds in Mumbai. CodeShastra, which has gained a reputation as the largest and longest-running hackathon in the city, proved once again why it holds such a prestigious position in the world of hackathons. The theme for this year was "Among Us", and the event's tagline was "Unmasking Innovation".

The event kicked off early in the morning with the DJCSI committee members reaching the college premises for the preparations at 06:30 am. The reporting time for the participants was 07:30 am, where they were welcomed by the event organisers and taken through the security check-in process. After receiving their IDs and an official CodeShastra 9.0 T-Shirt, the team leaders assembled in the Seminar Hall, while the other team members were escorted to the labs on the 6th level.

The inauguration ceremony began at 09:15 am in the Seminar Hall on the 3rd floor with speeches by the Honourable Principal Dr. Hari Vasudevan, Vice-Principal Dr. Manali Godse, Training & Placement Officer Dr. Rajendra Khavekar, Branch Counsellor Dr. Vinaya Sawant, and one of our most honourable senior faculty Dr. Abhijit Joshi. They highlighted the importance of hackathons and how they foster innovation and creativity by providing an environment for experimentation, collaboration, problem-solving, time management, and networking.

The rules and regulations along with the food plan were briefly explained, following which the problem statements were allotted to the teams at 10:30 am. At 11:00 am, the hacking began, and participants discussed the features, user interface, tech stacks, timelines, and the unique selling points for their project. The first round of mentoring began at 01:30 p.m., with experienced industry professionals offering guidance to the teams and answering their questions. The attendees were served a delicious meal during the lunch break, which lasted from 02:30 pm to 03:30 pm. The Round 1 of Mentoring ended at 03:30 pm, and the teams continued working on their solutions. At 05:30 pm, the organisers provided high tea to participants to keep them energised for the long haul.

As the day progressed, the teams worked hard to come up with innovative solutions to the given problem statements. The organisers served dinner to the participants at 09:30 pm while streaming the live IPL match of MI vs CSK for everyone to watch. After dinner, participants had the option to take a nap on comfortable beds provided in 2 classrooms or play FIFA and F1 22 on PlayStation 4 which had been set up in Classroom 64.

Day 02: Saturday, 09 April 2023

The second round of mentoring began at 12:00 am. The mentors (final-year students of the IT Department) offered advice and ideas to the teams, assisting them in refining their projects. The participants were then offered waffles between 01:00 am and 02:00 am, refuelling them for the remaining hours of the hackathon. The second round of mentoring concluded at around 02:00 am, and the participants were provided with snacks and energy drinks to help the participants power through the night. The participants continued to work diligently

on their projects. At 08:00 am, the participants were served a nutritious breakfast to prepare them for the final stages of the hackathon.

The coding period came to an end at 11:00 am sharp as the teams made their final commits on GitHub and consequently the final submission on Devfolio. The teams were then organised in different classrooms according to their problem statements for the judging round. At 11:45 am, the teams began presenting their projects to a panel of judges who were specialists in their respective domains. The judges evaluated the projects based on the features offered, innovation, technical skills, creativity and practicality.

Judging Round 1 concluded at 02:30 pm, and the Top 12 teams were announced at 03:00 pm. The Top 12 teams were then treated to a special lunch. The teams had an opportunity to unwind and take a break from the frenetic pace of the hackathon.

At 04:00 pm, Judging Round 2 began in the 3rd Floor Seminar Hall. The Top 12 teams presented their projects to a panel of judges, who assessed the projects based on various parameters such as impact, feasibility, scalability, and implementation. Judging Round 2 concluded at 07:30 pm, and the final results were announced during the Closing Ceremony.

Before announcing the winners, all our judges were presented with hampers and a trophy as a token of

appreciation. The event concluded with the Prize Distribution ceremony, where the winners were awarded cash prizes, certificates and round-trip tickets to Singapore.

The event was a resounding success. Each department did its job flawlessly while assisting in all other tasks without hesitation, irrespective of their department.

– Our Secretaries managed to get all the permissions and allowances sorted well in advance.

– The Treasurers did all they could to keep the finances up-to-date and transparent. Our Vice-

Chairpersons and Chairperson managed communication with our faculty members.

– The Technical team created the highly praised website for CodeShastra, drafted the problem statements, managed the submissions on Devfolio, assisted with technical difficulties, and were in charge of the candidates' Round Zero and General Round shortlisting.

– The Creatives team designed beautiful decorations which embellished the corridors and the lobby of the 6th floor.

– The Marketing team was successful in obtaining sponsors to support the whole event, which included an unprecedented prize pool of ₹1.5 lacs.

– Publicising within the college and physically visiting other colleges in Mumbai to promote the event, the Publicity team ensured that the event was widely known and recognised by a large audience.

– The Events team were in charge of maintaining the flow of the event along with inviting the judges and mentors.

– From relocating the benches to lugging the mattresses, the Logistics team handled all of the heavy liftings.

– The Editorial team drafted numerous speeches, promotional messages, invitation emails, social media content, and reports.

– The Social Media team kept the audience up to date by uploading Instagram stories and reels and LinkedIn updates

CodeShastra 9.0 Winners:

Position	Cash Prize	Team Name	Team Members
First Place	₹70,000	Enemies of Syntax	Dishant Zaveri (TE CS)
			Mihir Shinde (TE CS)
			Vismay Vora (TE CS)
			Kartik Jolapura (TE CS)
Second Place	₹50,000	Lambda Coders	Jay Patel (TE CS)
			Kunal Joshi (TE CS)
			Jharana Solanki (TE CS)
			Rudra Trivedi (TE CS)
Third Place	₹30,000	CORS Warriors	Khushi Mehta (TE CS)
			Kush Maniar (TE CS)
			Pratham Bhoir (TE CS)
			Urmi Dedhia (TE CS)

CodeShastra 9.0 Sponsors:

Sponsor Name	Type of Sponsorship
Ettara	Title Sponsor
Pixel Free Studios	Associate Sponsor
Devfolio	Platinum Sponsor
Polygon	
Solana	Gold Sponsor
Filecoin	
Replit	
BeReal	Social Media Partner
Aara Education Consultancy	Knowledge Partner
BOUNCE Inc	Fun Partner
Orelo	Energy Drink Partner
NuCash	Finance Partner
Taskade	Tech Partner
KodeKloud	
Axure	
Beeceptor	
Learning While Travelling	Ecosystem Partner

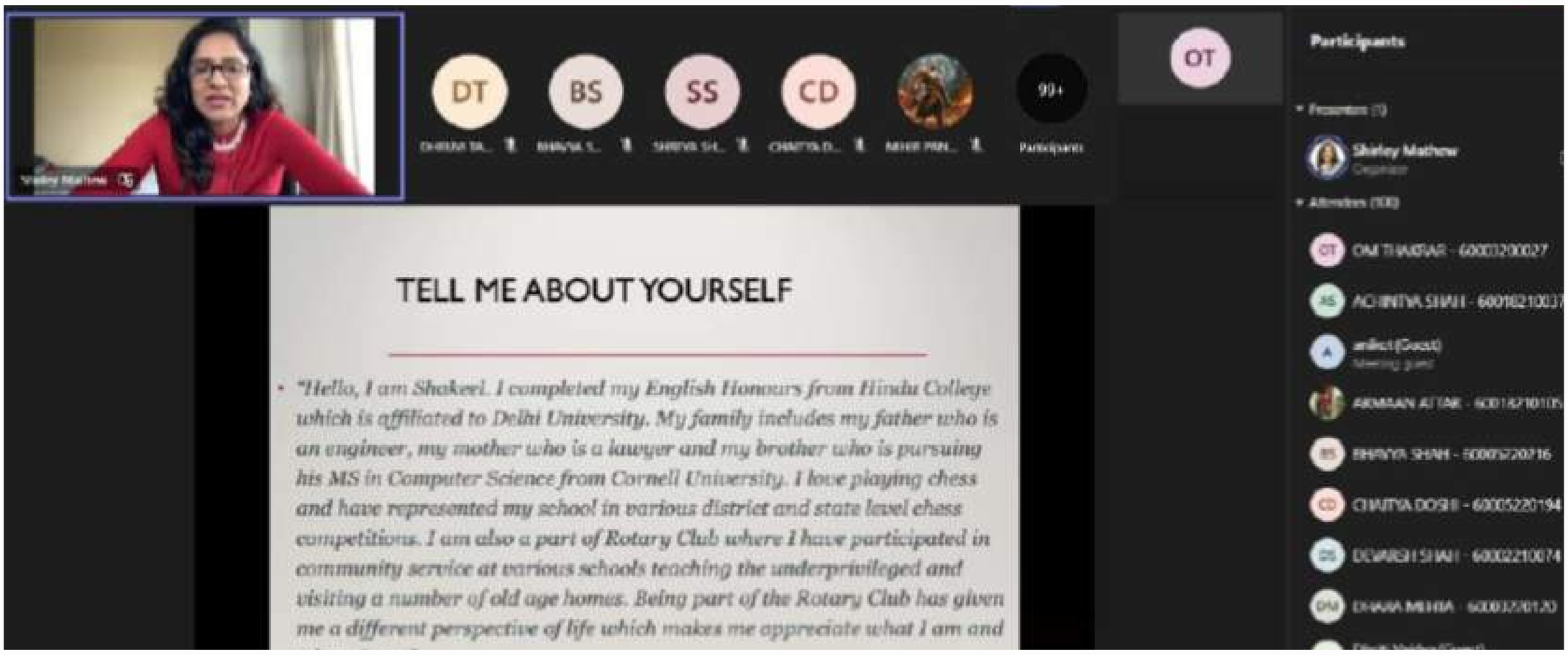
It was the first time that a hackathon at DJS received praise of this magnitude from all participants and guests. Our hackathon's quality and management garnered praise even from those who weren't shortlisted. The positive response we received bolstered our committee's belief in its ability to successfully plan future mega-events.

Throughout the hackathon, every member of the organising team worked diligently to ensure that there were no hiccups. Any problems that arose were easily resolved. Everyone worked together as a team and helped each other. The fact that they took turns taking naps really highlighted their commitment towards the event. Their attention to detail was truly remarkable.

This event gave participants the opportunity to showcase their coding talents, learn from experts in the field, and network with other like-minded individuals. The overwhelmingly positive feedback from participants and sponsors illustrates the enormous potential of such events to drive creativity and technical growth. The hackathon concluded with inspired minds, ignited brains and an experience of a lifetime for the participants as well as the organisers. Overall, CodeShastra 9.0 set a high standard for future events, and we can expect even greater success in the coming years. DJCSI will continue bringing excellence to the community – onwards and upwards.

IF Mentoring Sessions

13 – 14 APRIL 2023



DJCSI, in collaboration with the Training and Placement Cell, hosted a one-of-a-kind mentoring session to help the students prepare for corporate interviews.

Day 01: Tuesday, 13 April 2023

one-on-one mentoring session in preparation of the official Internship Fair conducted at DJSCE (15 – 16 April, 2023) with a total footfall of over 300 participants. This session was held exclusively for CSI members, to provide them an edge over other students at acing internship and placement interviews.

The goal of this session was to mentor students on how to structure their resumés and present themselves for interviews, in order to guarantee optimal results.

The event commenced at 10:00 AM on 13th April, 2023. The mentoring was provided by Prof. Shirley Mathew, who is an author, educator and an expert in Communication and Soft Skills, along with a team of final-year IT students.

A preference form had been floated earlier, asking participants if they were aiming for Tech-based jobs or Non-Tech jobs. On this basis, they were classified into two groups. 38 students had chosen non-tech, while 90 had chosen Tech. The participants who selected non-tech were led to the Library Conference Room on the first floor, where Prof. Mathew guided them with respect to their resumes and gave them tips for acing interviews. The participants with Tech preferences were given one-on-one guidance by the final year students, their super seniors, in room 65. Room 64 served as a waiting room. In both groups, every individual student's resume was reviewed and inputs were given to them on how to improve it and land jobs or internships of their liking. Participants who

requested a mock interview went through the interview procedure as well, conducted by Prof. Mathew and the experienced senior students.

02:00 pm to 06:00 pm Slot

The second slot started at 2:00 PM, after a lunch break. The mentors for this slot were Mr. Rocky Jagtiani, Head of Training and Development at Suven Consultants and Technology Pvt Ltd, and Mrs. Simran Jagtiani, Managing Director at Suven Consultants and Technology Pvt Ltd. Our industry experts arrived at 2:00 PM and started off by giving a brief introduction of themselves. Then they proceeded with the individual resume screening and mentoring session, which went on till 6:00 PM. They gave invaluable feedback and tips for each student's resume, and guided them on how they could crack even the toughest of interviews. Their advice was immensely helpful to the students, who left with a sense of confidence and satisfaction.

The event was declared over at 6:00 PM, after the final mentoring session.

This was a first-of-its-kind event conducted by DJCSI. The need to train students to build their resumes and ace interviews was recognized and acted upon. Students who had purchased the CSI membership were able to reap this benefit that would prepare them for the consequent internship fair, and all other internship / job opportunities they might encounter. Each and every member of the DJCSI team worked seamlessly to ensure the success of this event, even staying back after college hours to guarantee the smooth flow of the session.

The participants were extremely satisfied with this mentoring session, as indicated by the overwhelming feedback. The response in the morning session was so great and the publicity gained by word-of-mouth was so widespread that even people who had not registered for the mentoring requested us to allow them to sit with our mentors. In the future, DJCSI hopes to conduct more such events to provide the students with whatever guidance they require and highlighting the importance of a good resume and soft skills required to ace interviews. DJCSI will continue bringing excellence to the community – onwards and upwards.

Day 02: Wednesday, 14 April 2023

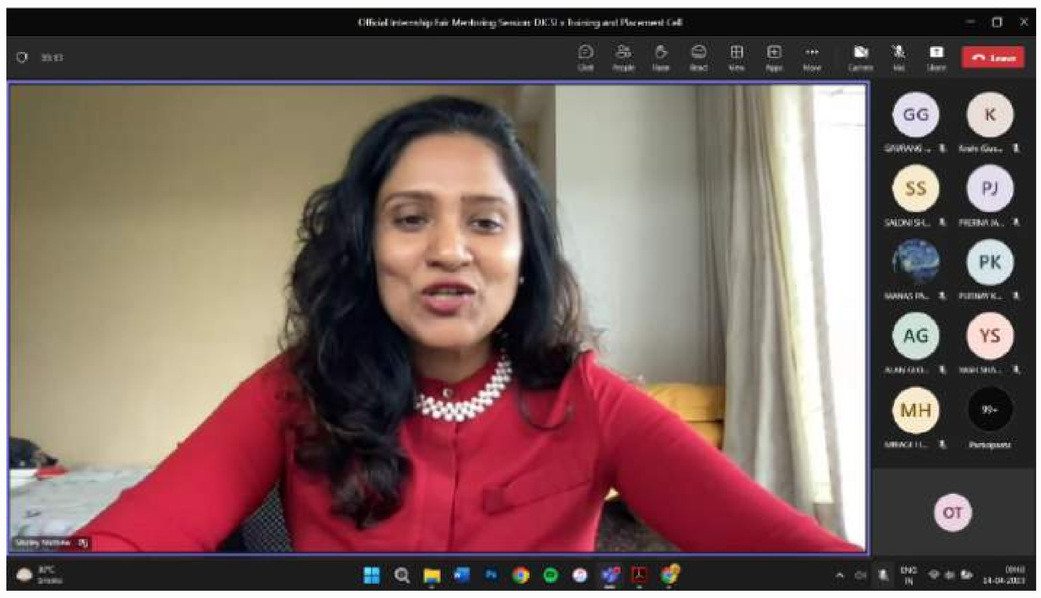
DJCSI – the official student chapter of the Computer Society of India of Dwarkadas Jivanlal Sanghvi College of Engineering, in collaboration with the Training and Placement Cell of DJSCE, hosted a Mentoring Session for the Internship Fair conducted by the Training and Placement Cell on 15th and 16th April, 2023 with 154

attendees. This session was conducted by Prof, Shirley Mathew, an author, educator and expert in the field of Communication and Soft Skills online via MS Teams.

The purpose of this session was to prepare students for the upcoming Internship Fair, to provide participants with practical advice and guidance on how to prepare a strong resume and perform well in interviews. For most students attending, it was their first time giving

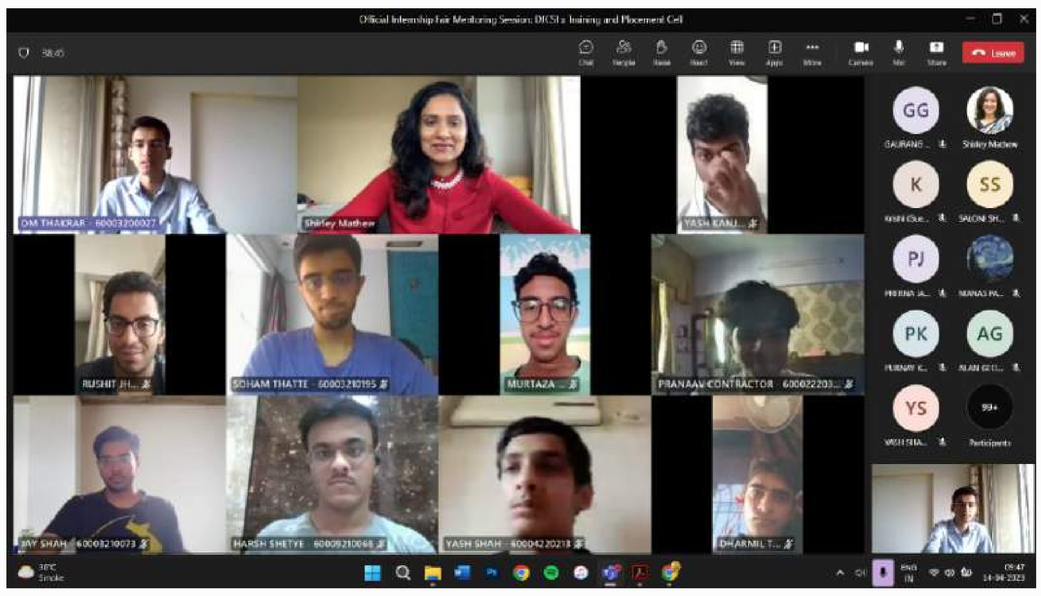
an interview. They needed guidance on how to present themselves formally for an interview and how to navigate through tricky questions asked by interviewers to land a job. This kind of guidance is exactly what Prof. Mathew provided the attendees.

The session commenced at 9:30 AM with Prof. Mathew introducing herself and highlighting the importance of such a session. She emphasised the importance of preparing for the interview, such as researching the company and the job position, practising responses to common interview questions, and preparing questions to ask the interviewer. The participants were provided with several tips on how to make a good first impression, such as dressing appropriately, arriving early, and being polite to everyone they meet.



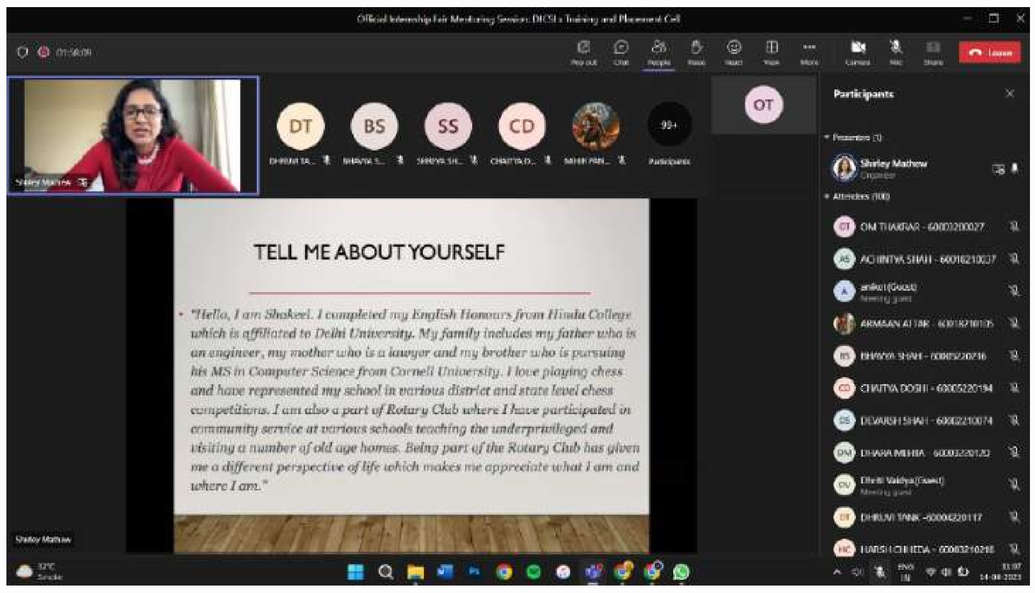
Prof. Mathew also discussed the different types of interviews, such as phone interviews, video interviews, and in-person interviews, and provided guidance on how to prepare for each one. The participants were provided with several tips on how to handle difficult interview questions, such as staying calm, being honest, and focusing on their strengths.

Prof. Mathew then proceeded to guide participants on how to build an effective resume. She emphasised the importance of tailoring the resume to the job description and highlighting the relevant skills and experiences. The participants were provided with several tips and tricks to make their resume stand out, such as using action verbs, including quantifiable achievements, and avoiding generic statements. Prof.



Mathew also discussed the common mistakes that job seekers make in their resumes, such as spelling errors and formatting issues, and provided guidance on how to avoid them. She also reviewed some resumes submitted by participants, and provided inputs on how they could be made better and more effective.

This was DJCSI's first time collaborating with the Training and Placement Cell of DJSCE, and overall, this first collaboration was well received. The online session was a huge success. The participants found the presentation informative and practical, and they appreciated the opportunity to ask questions and receive personalised feedback. The session provided the participants with the knowledge and skills they need to create a strong resume and perform well in job interviews. The participants left with a sense of satisfaction and confidence to ace interviews.



Our efforts paid off in an even better manner when we found that there were also parents who were attending the seminar on behalf of their children. One of the parents even gave a vote of thanks to our guest speaker towards the end of the seminar. The feedback from participants was extremely positive, and DJCSI hopes that this collaboration with the Training and Placement Cell will continue and yield more of such successful events. DJCSI will continue to strive to bring excellence to the community – onwards and upwards!

TECH TIMELINE

July 2022

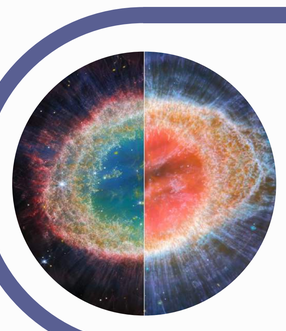


Image Of Deep Space Captured By James Webb Telescope Released

August 2022

Snap's Chief Business Officer leaves to run ads at Netflix

Launch of Samsung Galaxy Z Flip4

September 2022

Jupiter makes its closest approach to Earth since 1963

Apple's Far Out Event: Launch of the new iPhone 14 lineup. Apple Watch Ultra, Series 8 and SE. AirPods Pro Gen 2

October 2022

Elon Musk buys Twitter for $44 billion

November 2022

FTX, the cryptocurrency exchange, files bankruptcy.

OpenAI releases an early demo of ChatGPT on November 30, 2022.
Within five days, the chatbot had attracted over one million users.

December 2022

Farewell to 3G Network

January 2023

Apple introduces new MacBook Pro models with M2 Pro and M2 Max chips,
new Mac mini machines, and a new larger-sized $299 HomePod

February 2022

Google announces Bard, a ChatGPT rival

Microsoft disables Internet Explorer on Valentine's Day

European Parliament vote to approve a new law
banning the sale of petrol and diesel cars from 2035

March 2023

Tesla confirms its next Gigafactory will be in Mexico,
manufacturing their next-gen vehicle

Canva Launches 'Magic' AI Tools For Its
Design Software's 125 Million Users

April 2023

SpaceX's most powerful Starship rocket explodes, only minutes after the launch.

Apple BKC, Mumbai and Apple Saket, Delhi: First-ever Apple stores in India open its doors to customers

May 2023

NVIDIA becomes a $1 trillion company, thanks to the AI boom.

Microsoft announces Windows Copilot, an AI-based 'personal assistant' for Windows 11

OpenAI launches free ChatGPT app for iOS

June 2023

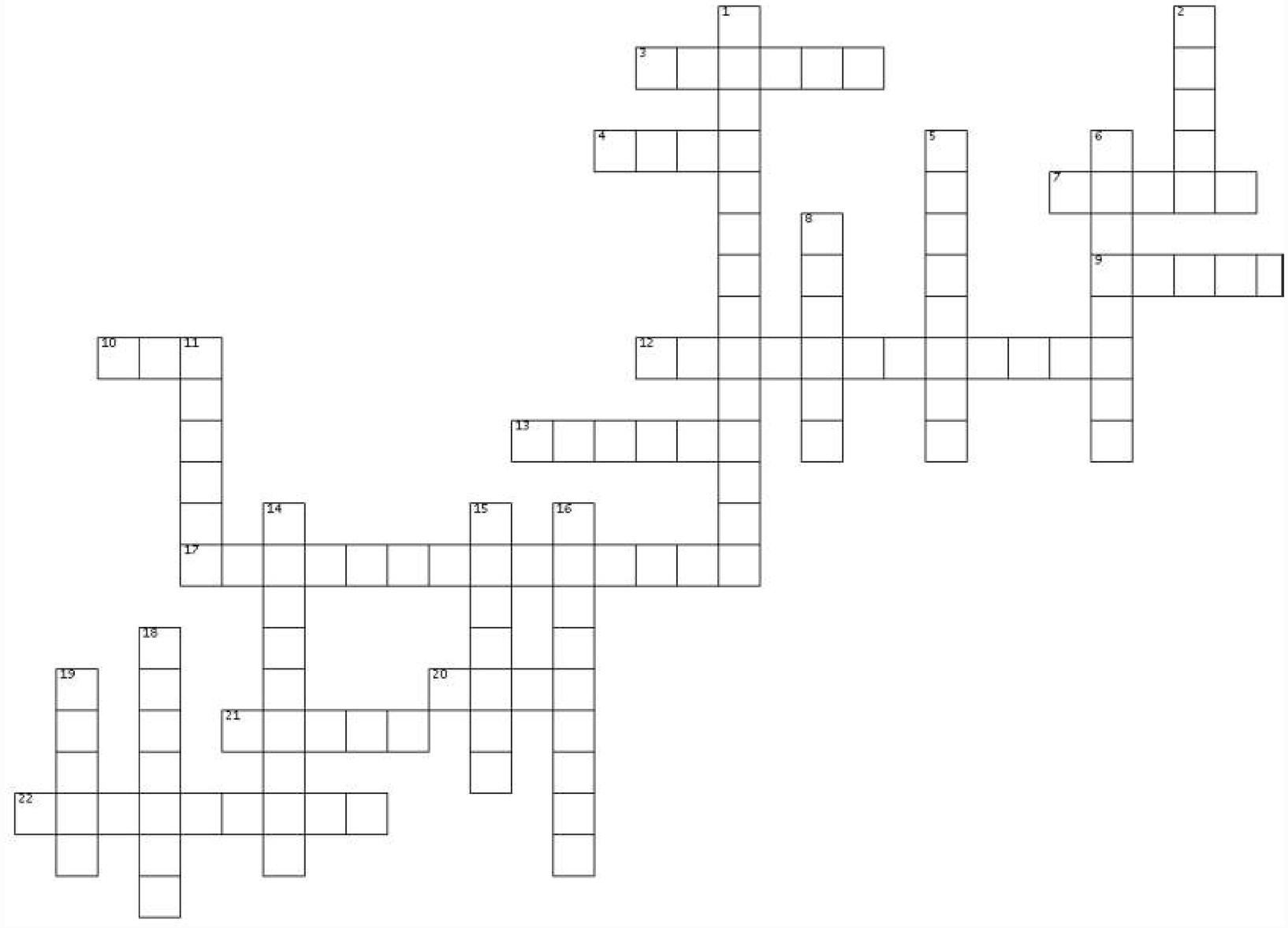
WWDC 2023 - Launch of Apple Vision Pro - Introduction to spatial computing, iOS 17, and the long-awaited Mac Pro with M2 Ultra Chip.

Google Pixel Tablet launch

July 2023

India launches Chandrayaan-3

CROSSWORD 2023



ACROSS

3. Code-Breaking Machine - Helped decipher Enigma-encrypted messages.
4. Blue: AI Board Game Master - Defeated world champions in 1997.
7. Internet's Backbone - High-speed data highways.
9. Renewable Resource - Energy harnessed from the sun.
10. Space Agency - Europe's intergovernmental organization.
12. Mars Rover - NASA's exploration vehicle on the Red Planet.
13. DNA Code - The unique genetic makeup of an organism.
17. The manipulation of individual atoms and molecules.
20. Smartphone Assistant - Responds to voice commands.
21. Light Amplification - Creates intense, focused beams of light.
22. Wireless Communication - Standard for short-range data exchange.

DOWN

1. Digital Currency - A decentralized form of money.
2. Microchip Pioneer - Co-founder of Intel Corporation.
5. Microscopic Organisms - Some are harmful, some are beneficial.
6. Influential Scientist - Proposed the theory of general relativity.
8. Electronic Messages - Short online posts or updates.
11. Online Retail Giant - Known for its fast shipping and wide selection.
14. Place where new ideas are developed.
15. Quantum Mechanics - The science of the very small.
16. Artificial Thinking - A field of AI that imitates human thought processes.
18. Energy Source - Fusion powers the sun and hydrogen bombs.
19. Innovative Automaker - Known for electric cars and clean energy.

ANSWERS: 1. cryptocurrency 2. moore 3. turing 4. deep 5. bacteria 6. einstein 7. fiber 8. tweets 9. solar 10. esa 11. amazon 12. perseverance 15. genome 14. incubator 15. physics 16. cognitive 17. nanotechnology 18. nuclear 19. tesla 20. siri 21. laser 22. bluetooth

WORDSEARCH 2023

C P M U L T I T H R E A D I N G V
L R I J B N B L O C K C H A I N U
O O U D K D A T A B A S E F N J L
U G D S T G Z N J M K O P J T Z B
D R C C X C L O E P I M D C E M L
C A X V U S L Y S V I L S D R D F
O M R D M L T A S Q Q Q O W F E I
M M Z K V V K D P F R C N F A B R
P I T Y V E M Z M H E N D K C U E
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N Q D A L G O R I T H M I I M N L
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F S Q L V P S C O M P I L E R G Y
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J A U F C Y B E R S E C U R I T Y

- COMPILER
- SQL
- DATABASE
- ALGORITHM
- CLOUDCOMPUTING
- BLOCKCHAIN
- FIREWALL
- ENCRYPTION
- CYBERSECURITY
- MULTITHREADING
- INTERFACE
- BYTECODE
- PROGRAMMING
- PHISHING
- DEBUGGING

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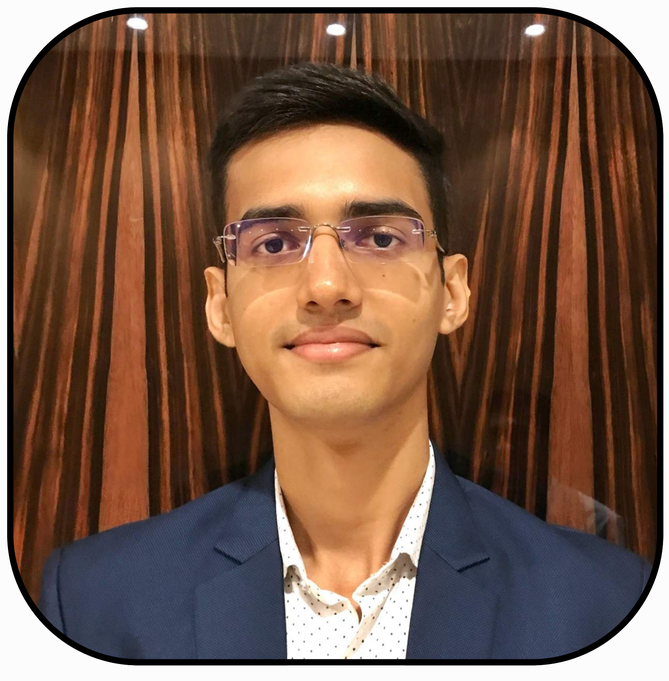

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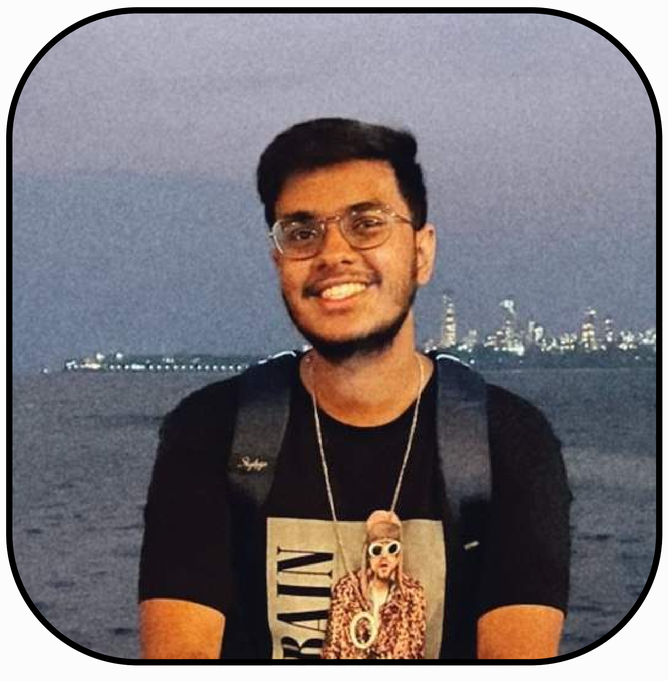

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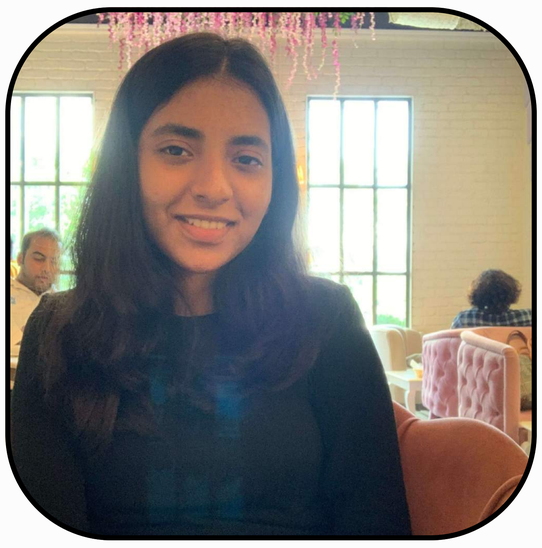

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Our student chapter at Dwarkadas Jivanlal Sanghvi College of Engineering, Mumbai, holds the distinction of being one of the oldest. Our goal has always been to host Tech events that coincide with industry innovations.

We extend our gratitude to the dedicated Editors and Designers behind this edition of Protocol. Stay ahead in the digital age with our cutting-edge Tech magazine, delivering the future to your fingertips.