



Chowgule Education Society's

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Best Affiliated College-Goa University Silver Jubilee Year Award

M.S.C IN
INFORMATION TECHNOLOGY

NEWSLETTER

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Informatics
Science of Information



EDITORIAL MESSAGE

Welcome to Volume 1 Issue III of MSc – IT Departmental Newsletter 'InformaTics' for the academic year 2023–2024. In this issue we bring to you all the events held in M.Sc IT (department of Computer Science) from February 2024– April 2024. We share with you the glimpses of the departmental activities undertaken, faculty participation, students articles, students achievement in various events and various activities conducted by the MSc – IT Programme. We bring to you the final edition of the departmental newsletter Informatics for the academic year 2023–2024



Amogh Santosh Pal Raiturkar
Assistant Professor, M.Sc IT
Editor In charge, InformaTics
Newsletter

STUDENT IN-CHARGE MESSAGE

Hello! Everyone this is Raquib Shaikh from M.Sc. IT Part 1. I would like to thank my faculty in charge Mr. Amogh Raiturkar for nominating me as a Student In-Charge for the Newsletter of academic year 2023 -2024, along with the Dept activities my duties will be coordinating / managing all documents and reports along with student activities during this publication, I will ensure to make our Newsletter fun to read and full of knowledge regarding the latest technology trends.

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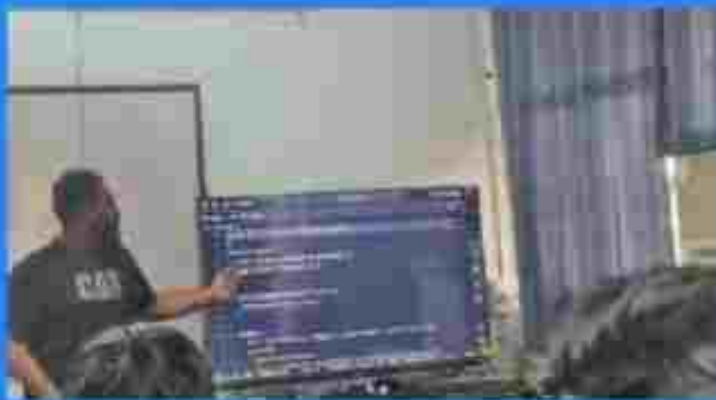
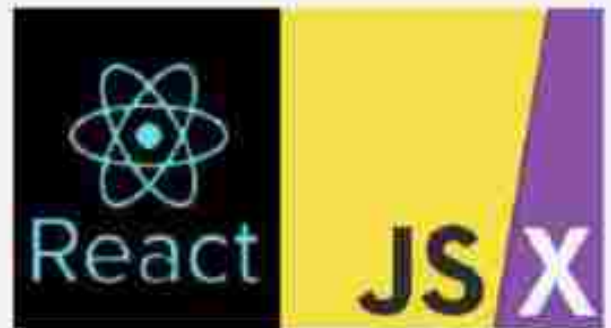
Raquib Shaikh
Newsletter - Student In-Charge (M.Sc.
IT)

DEPARTMENT MONTHLY ACTIVITIES

February 2024

Introduction to JavaScript - ReactJS

On 17th February 2024, the MSc IT Department organized a hands-on session on JavaScript & ReactJS software for the students of both MSc IT Part 1 & 2. The resource person for the event were Joshua Pereira and Nikesh Singh, MSc IT part 2 students. The session was conducted with the objective of providing participants with a comprehensive introduction to Web App development using JavaScript and ReactJS. A total of 34 students participated in the session.



VISIT TO PCCE COLLEGE



Importance of understanding words

Satkaam Foundation organised an online 3 months training program for the Aspiring PG students of MSc IT to provide a basic foundation to get employed in the various companies and to bridge the gap between academics and industries. The session was held every Friday commencing from February - April 2024. All 18 students underwent the session. The final session was one to one which was then attended by the students at Padre Conceicao College of engineering, Verna Goa



Blockchain - Revolutionizing the Future of Technology

In latest years, blockchain era has emerged as a sport-changer, revolutionizing various industries and tough conventional structures. Originally advanced because the underlying generation for cryptocurrencies like Bitcoin, blockchain has evolved into a versatile tool with the capability to transform sectors past finance. This article explores the basics of blockchain, its ability packages, and its effect on various industries

At its center, blockchain is a decentralized and dispensed digital ledger that statistics transactions across multiple computer systems. Unlike traditional centralized systems, in which a unmarried authority controls and verifies transactions, blockchain is predicated on a network of computers to validate and shop facts. Each transaction, or block, is securely related to the preceding one, forming an unalterable chain of facts.

One of the key blessings of blockchain is its transparency and immutability. Once a transaction is recorded at the blockchain, it can not be altered or deleted, offering a excessive stage of believe and safety. This function makes blockchain in particular appealing for applications which include deliver chain management, in which traceability and authenticity are important.

In supply chain control, blockchain can beautify transparency with the aid of recording each step of a product's adventure from its foundation to the quit customer. This enables stakeholders to verify the authenticity and high-quality of products, supporting to combat counterfeiting and make certain ethical sourcing. Additionally, blockchain can streamline administrative approaches by automating tasks like inventory management and charge settlements.

Another industry that stands to benefit from blockchain is healthcare. By securely storing patient records on a blockchain, healthcare vendors can ensure statistics integrity and enable seamless sharing of information across distinct healthcare systems. This can decorate affected person care by using reducing clinical mistakes, improving diagnosis accuracy, and facilitating scientific studies.

Blockchain also has the capacity to revolutionize the monetary zone. Traditional banking structures often involve intermediaries and complicated procedures that can be time-consuming and costly. With blockchain, transactions can be performed without delay between parties, casting off the need for intermediaries and decreasing transaction prices. This era additionally allows faster cross-border bills, making it in particular valuable for remittances and international change.

Beyond finance and healthcare, blockchain has packages in various different sectors. It may be used for identification verification, vote casting systems, intellectual belongings protection, and decentralized electricity grids, to call only some. The possibilities are sizeable, and because the generation maintains to adapt, new use cases are continuously being found.

However, blockchain is not without its demanding situations. Scalability, energy consumption, and regulatory frameworks are among the hurdles that need to be addressed for substantial

adoption. Nevertheless, governments, companies, and tech fans worldwide are investing in blockchain research and development to free up its full capability.

Blockchain Security

Blockchain era has won great attention for its potential to revolutionize diverse industries, from finance to supply chain management. It's often touted as a notably secure generation because of its decentralized and cryptographic nature. However, like every generation, blockchain isn't always proof against vulnerabilities, and its security panorama is greater nuanced than commonly believed. In this evaluation, we'll delve into the security strengths and weaknesses of blockchain era, address misconceptions, and spotlight the want for complete security measures.

Security Strength

Decentralization

Perhaps one of the maximum compelling safety benefits that blockchain gives is its decentralized structure. In traditional centralized systems, the presence of a unmarried point of failure exposes them to heightened risks of breaches and attacks. However, in a blockchain environment, information is sent throughout a community of nodes, ensuring that there's no solitary factor of weakness that malicious actors can make the most. This inherent decentralization significantly bolsters the system's resilience and shields it from being compromised through a single inclined entry point.

In end, blockchain era is remodeling the way we behavior transactions and manage information. Its decentralized and transparent nature offers several blessings throughout various industries. While challenges remain, the ability for blockchain to revolutionize technology and create a extra green and stable destiny is simple. As the technology maintains to mature, we are able to count on to see even more modern programs emerge, shaping the world of the next day. Blockchain technology undeniably offers a host of robust safety attributes but, it stays liable to vulnerabilities. Acknowledging each its strengths and vulnerabilities is pivotal in harnessing its potential whilst keeping a secure environment.



Prachi Naik

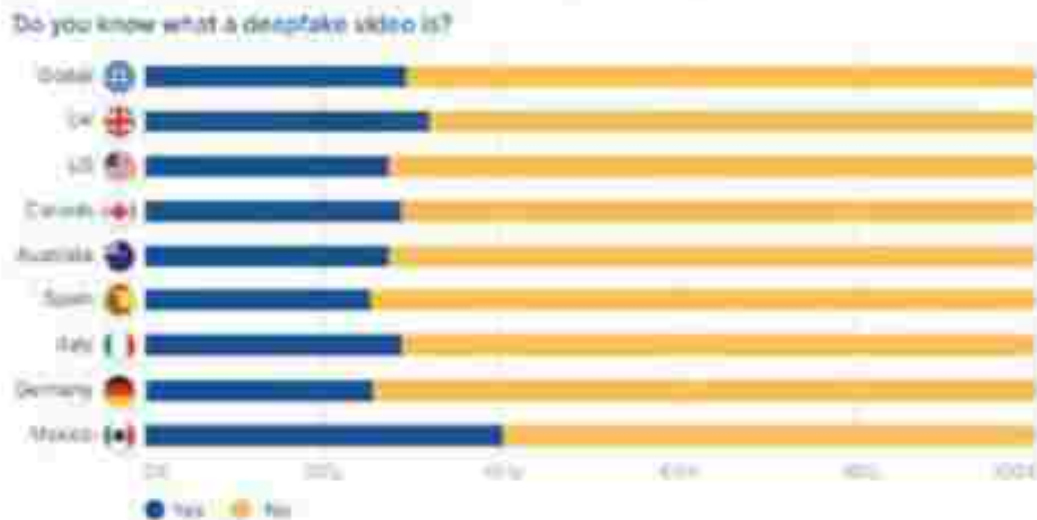
What is Deepfake and how to discern it?

As the Wall Street Journal reported back in 2019, an unnamed U.K.-based energy firm, in March of the same year, sent around £220,000 (₹2,32,66,892) to a Hungarian supplier on an urgent request. The CEO of the firm, at that time, thought he was on a call with the chief executive of the firm's German parent company. The caller, as they later discovered, was actually a fraudster who mimicked the German chief executive using AI-based software.

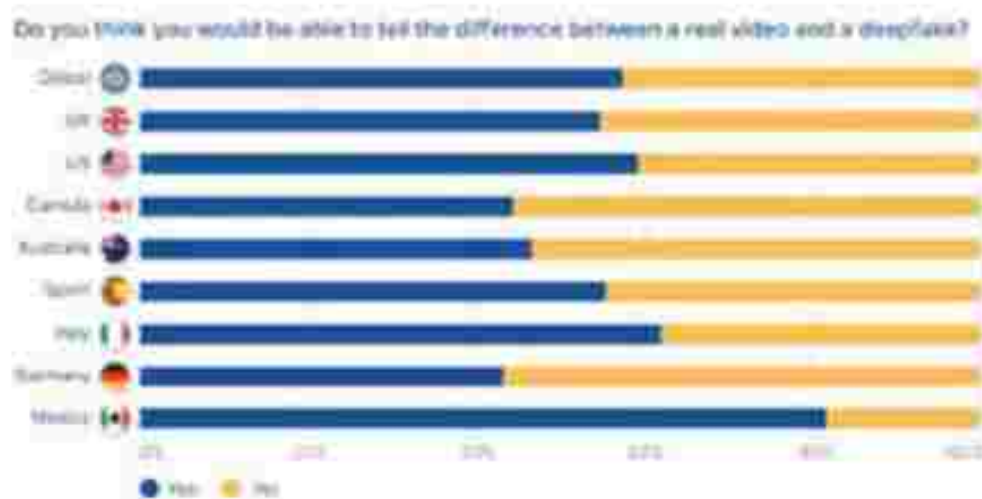
A promiscuous video of Indian actor Rashmika Mandanna had been circulating on social media platforms on 7th November 2023, which was later debunked as having been deepfaked. The actor has since come forward to state her face had been unwittingly and without consent been superimposed on the British-Indian influencer, Zara Patel.

These are two of the thousands of stories where deepfake was misused to bring harm to unsuspecting people. Such news about deepfake being used to blackmail, spreading misinformation, identity theft, pornography, politics, and frauds platforms these days are becoming concerningly frequent.

In 2022, iProov conducted a study wherein they surveyed 16,000 people across the U.S., Canada, Mexico, Germany, Italy, Spain, the U.K., and Australia. To the question, "Do you know what a deepfake video is?", 71% of respondents said they do not know what is a deepfake.



The study also concluded that 43% wouldn't even be able detect a deepfake.



With this being the current scenario, the need to talk and spread awareness about this spoofing method has become important now, more than ever. Which begs the question, what exactly is a deepfake and how can we detect deepfaked media?

Let's dive into this by first answering the question **'What is deepfake?'** According to Wikipedia, "deepfakes are synthetic media that have been digitally manipulated to replace one person's likeness convincingly with that of another." In other words, it is a video, image or audio created/manipulated using an AI-based software.

"Synthetically generated faces are not just highly photorealistic, they are nearly indistinguishable from real faces and are judged more trustworthy," concluded the study published in *Proceedings of the National Academy of Sciences USA*, in 2022.

Well, then, is there really no way of detecting a deepfake? Are we to hope for the best and pray that we don't fall prey to this technology? The good news is, we can actually safeguard ourselves and detect a deepfake by paying attention to the details.

- 1. Mouth and eye movements:** does the lip movement sync with the audio? Watch out for the subtle mismatches, pay attention to the unnatural blink patterns (or lack of blinking) and the eye movements.
- 2. Head to body proportions:** if the body is visible, then look out for the head to body proportion. Since the faces are superimposed, the proportions may appear amiss.
- 3. Unnatural movements:** look for unnatural body movements or facial expression that may not match with the audio.
- 4. Inside the mouth:** the article *"What is a deepfake and how can we detect?"* (by Ian Sample), posted on The Guardian's website, explains that the technology isn't faithful when it comes to constructing a mouth's inside,

i.e., the tongue and oral cavity when the person speaks. Blurred inside of a mouth is an extremely good indicator of a falsification.

5. Other minute inconsistent details: keep an eye out for small aspects of the deepfake. Such as inconsistent or unmoving shadows around the face and/or in the background, unrealistic facial hair, unnatural texture of the skin, unnatural lip colour, sudden changes in lighting or background noises.

6. Source of the media: do not accept any digital media at face value if its source isn't reputable or is unknown. If it is from a reputable news channel or website, or social media account, then it is more likely to be authentic.

7. Using technology: new technologies are being created to help with deepfake detection. Some of them are For Fake's Sake (by Sumsab), Sensity, and FakeCatcher (by Intel).

With the speed this technology and its use is growing, this little knowledge might not be enough to detect deepfake in the near future. And the number of such crimes and misconduct is likely to increase due to how easily accessible this technology has become. As Henry Adjer, the head of threat intelligence of Deeptrace, has rightly said, *"The world is becoming increasingly more synthetic. This technology is not going away."* So, make sure to always stay vigilant.



Raquib Shaikh

Computer Mechanics: The Heart of Modern Technology

Computers have become an integral part of our daily lives, powering everything from our smartphones to our cars. But what makes these machines tick? The answer lies in computer mechanics, the study of the physical components that make up a computer and how they work together. The Central Processing Unit (CPU), The CPU is often referred to as the "brain" of the computer. It carries out most of the processing inside the computer. The CPU interprets and performs instructions from the computer's memory, Memory is where the computer stores data. There are two main types: RAM (Random Access Memory) and ROM (Read-Only Memory). RAM is temporary and volatile, meaning it loses its contents when the computer is turned off. ROM, on the other hand, is non-volatile and stores instructions for the computer to start up. Input devices, like keyboards and mice, allow us to communicate with the computer, while output devices, like monitors and printers, let the computer communicate with us. Storage devices, such as hard drives and SSDs, hold all the data and files on a computer. Unlike memory, storage is non-volatile and retains its contents even when the computer is powered off. The motherboard is the main circuit board of the computer. It's where all other components connect and communicate with each other. In conclusion, computer mechanics is a fascinating field that combines elements of electrical engineering and computer science. Understanding these mechanics can help us appreciate the complexity and beauty of the technology we use every day.



Msc IT Part 1 Students presented Farewell to the Msc IT Part 2 Students of the academic year 2022 - 2024

All Students of Part 1 with the help from the faculty had presented an Farewell to the Msc IT Part 2 students on 27th March 2024, in the Seminar Hall

Thank You

EDITORIAL TEAM

Faculty Incharge

Mr. Amogh S Pai Raiturkar

Students Editor's

- Mr. RAQUIB SHAIKH
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- Ms. SARAH VAZ
- Mr. JENS VALTON ANTAO
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Send your Feedback to: mscit@chowgules.ac.in