ECHELON
TRANSFORMING THE EDUCATION

ECHELON INSTITUTE OF TECHNOLOGY

TECHPULSE
Exploring Digital World
2021–22

**Department of
Computer Science & Engineering**

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EDITORIAL BOARD

Student Members:
Ayush, Nikita, Ishita

Faculty Advisor:
Ms. Ruchika Aggarwal (Associate Professor)

INTRODUCTION

Welcome to the **Department of Computer Science and Engineering.**

The Department of Computer Science and Engineering is enriched with competent and well-qualified faculty members who strive to bring out the best in students. Since its inception, the department has consistently maintained a high growth pace, driven by a strong dedication to providing exceptional engineering education. The department boasts well-equipped laboratories with internet access, web application facilities available on LAN and Wi-Fi, providing students with hands-on experience on the latest software and technological tools used in industries. To prepare students as future software professionals, the department organizes seminars, corporate training, and workshops conducted by experts. Additionally, PDP classes are conducted to enhance their technical skills further. Many of our students have graduated through campus placements, securing positions in multiple organizations.

MESSAGE FROM HOD'S DESK

I feel very elated and at the same time privileged to share a few words as you go through the pages of the magazine "TECHPULSE". The CSE department endeavors to help students to seek the best from their surroundings. The knowledge thus gained becomes a ladder for them to soar into greater heights. It's often the collective effort that leads to the discovery and fulfillment of aspirations. I feel proud to be a part of TECHPULSE, an instrument in molding the students. We try to shape every sphere of a student's personality in the CSE Department. I take this opportunity to express my sincere thanks to all the members of the faculty and auxiliary staff for their sincere contribution in making this Edition.

Ms Shefali Madan
Associate Professor & HOD

"
An invitation to the culture of inspiration, exploration, invention & growth.
"
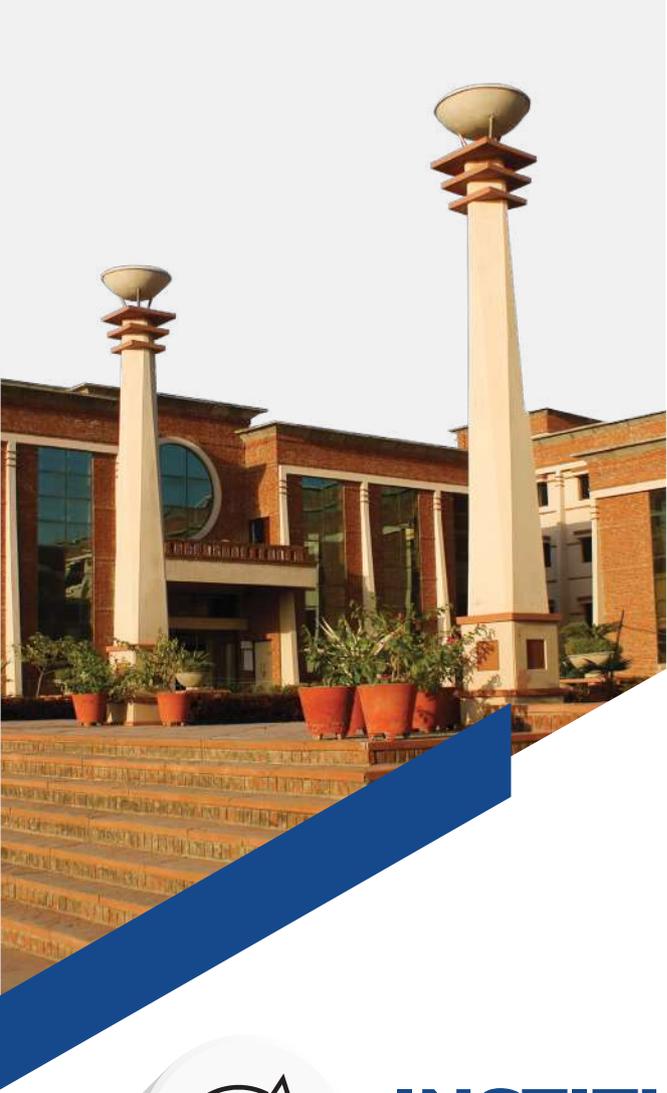
INSTITUTE VISION

"Technical and Management leaders engaged in the evolution of life, being at the frontiers of the continuous technological and administrative breakthroughs, inspired by ongoing exploration of self, society, and nature through self-reflective consciousness by building a culture of inspiration, exploration and growth."

INSTITUTE MISSION

M1 Having a culture of inspiration, exploration and invention through effective, experiential teaching-learning giving rise to ever evolving knowledge and wisdom.

M2 To have self-inspired students ever engaged in continually working upon and sharpening & deepening computational, creative, innovative and leadership consciousness.

M3 Having students established in self - reflective consciousness, committed to personal, social & human integrity an engaged in deep inquiry & conversation, giving rise to shared, inter-subjective human values & consciousness.

DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING

DEPARTMENT VISION

"To develop competent computer professionals who solve real-world problems through continuous learning and adaptive to rapid changes in computer science and engineering with ethical, social, and managerial capabilities."

DEPARTMENT MISSION

M1 To produce industry-ready professionals for successful careers in computer science and related domains.

M2 To provide exposure to cutting-edge computational tools in the field of computer science & engineering.

M3 To create competent and ethical computer professionals through quality education, innovative research, and exposure to entrepreneurship.

TECH NEWS

Covering technology news and developments of this year, several key trends, product launches, and regulatory decisions shaped the tech landscape. Here is a summary of notable highlights:

Semiconductor Industry Challenges

Chip Shortage: The global semiconductor chip shortage impacted various industries, from automotive to consumer electronics, highlighting the critical role of chips in modern technology.

Tech Industry Legal & Regulatory Challenges

Big Tech Scrutiny: Major tech companies, including Facebook (rebranded to Meta), Google, Amazon, and Apple, faced intensifying scrutiny over privacy, competition, and misinformation.

Data Privacy Legislation: Global movements towards stronger data privacy laws gained momentum, with discussions around regulations similar to the EU's GDPR happening worldwide.

Sustainability & Tech

Green Technology: The tech industry focused on sustainability, with initiatives aimed at reducing electronic waste and the carbon footprint of data centers and other infrastructure.

Electric Vehicles (EVs): EVs continued to gain market share, with traditional automakers and new players alike announcing new models and investments in charging infrastructure.

Space Exploration and Satellite Technology

Space Tourism: Companies like SpaceX, Blue Origin, and Virgin Galactic made headlines with their space tourism efforts, marking significant milestones in commercial space travel.

Satellite Internet: SpaceX's Starlink and other satellite internet services expanded their reach, aiming to provide global high-speed internet coverage, especially in underserved areas.

Cybersecurity Concerns and Developments

Ransomware Attacks: A surge in ransomware attacks targeted critical infrastructure, businesses, and public services worldwide, prompting increased investment in cybersecurity measures.

Cybersecurity Collaboration: Nations and corporations emphasized the importance of collaboration to enhance cyber defenses, sharing intelligence on threats and vulnerabilities.

Advancements in AI and Machine Learning

OpenAI's Progress: OpenAI made significant advancements, including the enhancement of natural language processing models, contributing to more sophisticated AI applications.

AI in Healthcare: AI-driven diagnostic tools and personalized medicine saw increased adoption, promising to revolutionize healthcare efficiency and outcomes.

Innovations in Consumer Electronics

Foldable Smartphones: Samsung and other manufacturers continued to innovate in the foldable smartphone market, offering enhanced designs and durability.

AR/VR: Augmented Reality (AR) and Virtual Reality (VR) technologies saw further development, with Meta pushing forward its vision of the metaverse.

Growth in Cryptocurrency and Blockchain

Regulation and Adoption: Countries around the world grappled with how to regulate cryptocurrencies. Some, like El Salvador, embraced Bitcoin as legal tender, while others increased scrutiny.

NFT Boom: Non-fungible tokens (NFTs) surged in popularity, transforming digital art, gaming, and collectibles by leveraging blockchain technology for unique ownership.

Remote Work & Collaboration Tools

Hybrid Work Models: As the world adjusted post-pandemic, companies adopted hybrid work models, leading to innovations and improvements in remote collaboration tools and infrastructure.

Looking Ahead

This period was marked by rapid technological evolution, alongside significant challenges and debates over regulation, privacy, and the ethical use of technology. The overarching themes reflected a world increasingly reliant on digital solutions, grappling with the implications of this dependence.

GADGET CORNER

During this year, the tech world saw a variety of interesting launches across gadgets, software, and literature that cater to tech enthusiasts. Below is a curated list highlighting some of these releases, spanning a range of interests from cutting-edge hardware to thought-provoking reads.

Tech Gadgets

Apple iPhone 13 Series

Introduced a smaller notch, brighter displays, and significant camera improvements including Cinematic mode for video recording. The Pro models received ProMotion displays with up to 120Hz refresh rates.

Samsung Galaxy Z Fold3 & Z Flip3

Samsung's continued innovation in foldable phones. The Z Fold3 introduced S Pen support and under-display camera technology, while the Z Flip3 offered a more durable, water-resistant design with a larger cover screen.

Framework Laptop

A modular, repairable, and upgradable laptop designed for longevity and customization. It aimed to tackle the issue of electronic waste by allowing users to easily swap out components.

Oculus Quest 2 - 128GB Model

An update to the popular VR headset, doubling the storage of the base model at the same price point. It continued to offer a standalone VR experience with access to a vast library of content.

DJI Mavic 3 Drone

Featured a dual-camera system with a 4/3 CMOS sensor, offering superb image quality, and up to 46 minutes of flight time. It was aimed at professional photographers and videographers.


Software & Platforms

Windows 11

Microsoft's latest operating system, introducing a new user interface, improved window management features like Snap Layouts and Groups, and deeper integration with Teams.
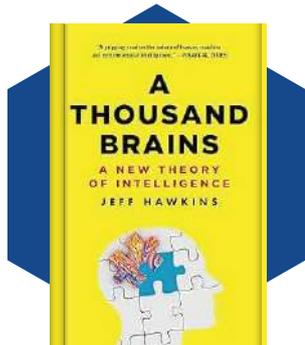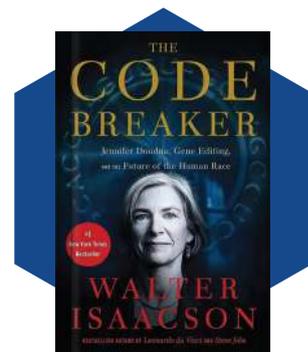
Adobe Photoshop & Illustrator for Web

A significant move towards making powerful design tools more accessible through web browsers, allowing for easier collaboration and sharing.
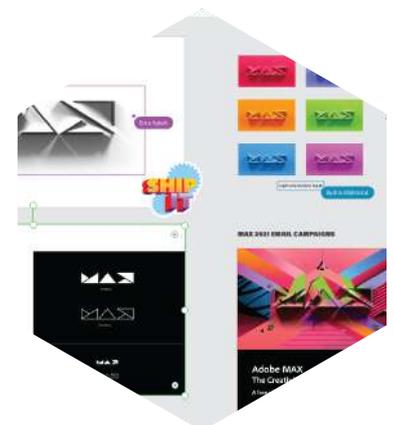
Books

The Code Breaker

A biography of Nobel Prize winner Jennifer Doudna, detailing her work on CRISPR technology and its profound implications for biology and humanity.

A Thousand Brains

The co-inventor of the Palm Pilot and researcher in neural networks presents a new theory of intelligence that could shape the future of AI.

Liftoff

This book offers an inside look at the early, turbulent days of SpaceX, detailing how Elon Musk's company overcame numerous challenges to revolutionize space travel.
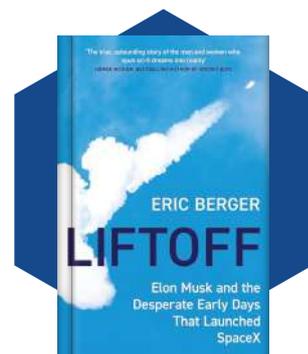
Final Thoughts

These selections represent a snapshot of the dynamic field of technology, where innovation in physical devices, software platforms, and intellectual contributions through literature continually shapes our understanding and capabilities within the tech landscape.
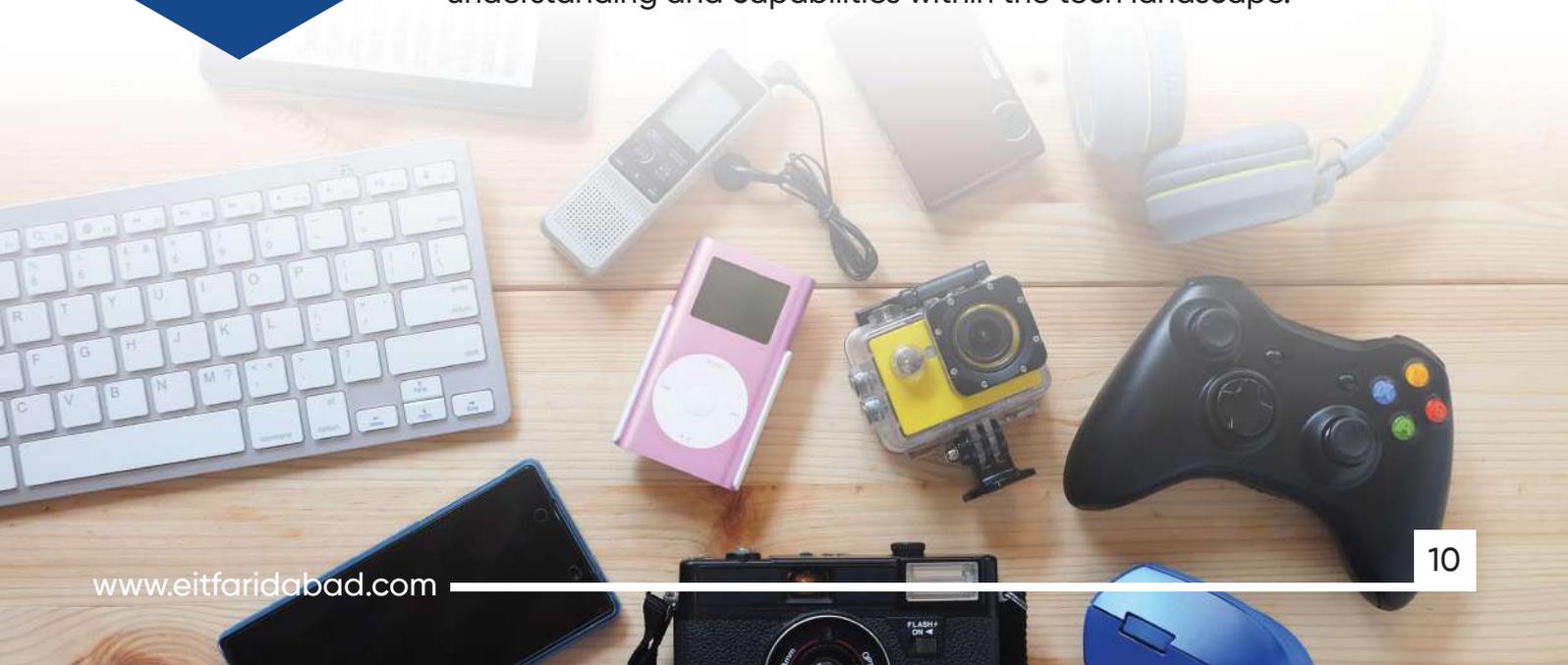
FACULTY LIST

CSE

S. No.	Faculty Name	Designation
01	Dr. Sudarshan Goswami	Professor
02	Dr. Monica Sankat	Associate Professor
03	Mr. Mohammad Danish	Associate Professor
04	Ms. Shefali Madan	Associate Professor
05	Ms. Ruchika Aggarwal	Associate Professor
06	Ms. Charu Rohilla	Assistant Professor
07	Ms. Jagriti Malviya	Assistant Professor
08	Ms. Kavita	Assistant Professor
09	Ms. Suman	Assistant Professor
10	Ms. Laxmi	Assistant Professor
11	Ms. Anshul Anshu	Assistant Professor
12	Ms. Nidhi Sharma	Assistant Professor
13	Mr. Prashant Gupta	Assistant Professor
14	Ms. Priyanka Sharma	Assistant Professor
15	Mr. Ravi Singh Rana	Assistant Professor
16	Ms. Savita	Assistant Professor
17	Ms. Shika Taneja	Assistant Professor
18	Ms. Shivani Gogia	Assistant Professor
19	Ms. Swati Gupta	Assistant Professor
20	Ms. Varsha Chaprana	Assistant Professor
21	Ms. Anita Chauhan	Assistant Professor
22	Mr. Tejender	Assistant Professor
23	Mr. Ashif Ali	Assistant Professor
24	Ms. Lucky Rajpoot	Assistant Professor

FIRST YEAR

S. No.	Faculty Name	Designation
01	Ms. Mahima	Assistant Professor
02	Ms. Shikha Pandit	Assistant Professor
03	Mr. Yogender Sharma	Assistant Professor

M.TECH

S. No.	Faculty Name	Designation
01	Mr. Amrendra Kumar	Assistant Professor
02	Ms. Dimpy Gambhir	Assistant Professor

MOUs Signed

S. No.	Name of MOU
01	Skill Clout
02	Rubicon Skill Development Pvt. Ltd.
03	KV Computer Home Pvt. Ltd.
04	Froyo Technology (p) Ltd.
05	Institute For Industrial Development

INNOVATIONS AT CAMPUS

Student Corner-Projects Publication

Introducing How2tech: A Web-Based Project-Based Learning Model for Collaborative Education & Cybersecurity Awareness

Figure 1: Showing the front end of the proposed model

Figure 2: Showing the menu options in the model

ABSTRACT

Technical support, often referred to as tech support, involves entities providing assistance to users of technology products or services. It focuses on addressing specific issues with a product or service rather than offering training or customization. Most companies offer technical support either as part of the product/service package or for an additional fee. Support can be provided via various channels such as phone, email, live chat, or website platforms. Larger organizations typically have internal technical support for computer-related issues. The internet also serves as a valuable resource for free tech support, with experienced users offering assistance. Premium technical support services are available from fee-based service providers.

Support delivery methods vary depending on the situation. Direct inquiries can be handled through phone calls, SMS, online chat, support forums, email, or fax. Basic software problems are often resolved over the phone or through remote access repair services. Complex hardware issues may require in-person assistance. This project utilizes a live chat support system and WhatsApp chat system to create a high quality and easily understandable support platform.

By: Sanjay Kumar, Ms. Ruchika Aggarwal, Ms. Priya Singh
CSE, Echelon Institute of Technology

MedConnect: A Medical Pager Chat App for Instant Healthcare Communication
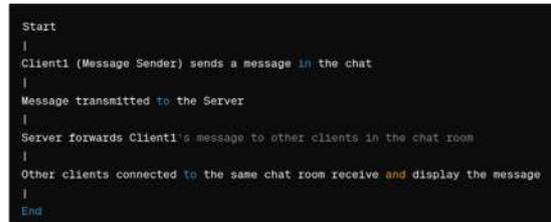
Figure 1: Server-Client Block Diagram

Figure 2: Showing Flow chart of the porposed model

ABSTRACT

The proliferation of chat applications has significantly impacted daily life, with numerous options offering varying features and functionalities. Competing organizations continuously strive to enhance their platforms, often adding innovative features with each update. Amidst this landscape, applications like WhatsApp, Facebook Messenger, Instagram, and Hike have garnered widespread adoption, shaping people's communication habits.

"MedConnect" aims to leverage the benefits of chat applications within the healthcare sector. This project explores the potential advantages of integrating a medical pager chat app into healthcare communication systems. By facilitating immediate, two-way communication of various content types—verbal, pictorial, etc.—MedConnect offers numerous benefits. These include enhanced access to experts and specialists, increased productivity by eliminating travel time, cost savings, reduced environmental impact, and improved accessibility to remote areas. MedConnect not only revolutionizes healthcare communication but also addresses critical challenges in healthcare delivery, making it a valuable tool for medical professionals and patients alike.

By: Nishu, Dr. Sudarshan Goswami
CSE, Echelon Institute of Technology

Mastering Mouse Movements: AI-Powered Virtual Control Project

Figure 1: Showing flow diagram of the proposed model

Figure 2: Showing sound control module of the proposed model

ABSTRACT

This project focuses on the development and implementation of an AI-driven virtual mouse control system. Leveraging the power of artificial intelligence (AI), the system aims to provide users with an intuitive and efficient means of controlling their computer cursor through hand gestures or other input modalities. By employing advanced machine learning algorithms, the virtual mouse can adapt to the user's movements, enhancing accuracy and responsiveness. The project encompasses the design and integration of sensor technologies, such as cameras or motion sensors, to capture user input and translate it into cursor movements in real-time. Additionally, user interface design and optimization play a crucial role in ensuring a seamless and user-friendly experience. Through experimentation and evaluation, the effectiveness and performance of the virtual mouse control system will be assessed, paving the way for potential applications in various domains, including accessibility, gaming, and virtual reality.

By: Snehashish, Dr. Nand Kumar, Ms. Laxmi
CSE, Echelon Institute of Technology

Unveiling The Magic: Crafting Your Own Color Picker Through Image Processing

Figure 1: Unveiling the Invisible: An Exploration of Mask Application in Image Processing

ABSTRACT

This paper delves into the intriguing concept of making visible things invisible, reminiscent of the magical cloak from the Harry Potter series. Dispelling the notion of actual magic, it reveals the science and art behind achieving this effect through graphics tricks. The proposed solution introduces the creation of a 'Color Picker' utilizing Image Processing techniques. By exploring methods to manipulate objects based on color or texture, this study presents a step-by-step approach devoid of Python and OpenCV. The process involves capturing and storing the backdrop frame, identifying specific colors, generating masks, and ultimately producing the illusion of invisibility. This abstract encapsulates the essence of the paper, promising insights into crafting a magical experience through technology

By: Abhishek Shukla, Ayush Sharma, Shivam Sharma, Ms. Savita
Associate Professor, CSE
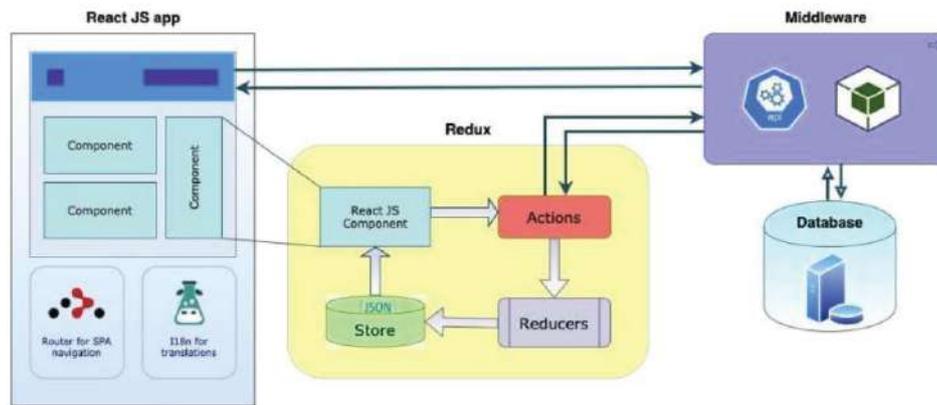
Price Watch: Your Amazon Price Tracking Companion

Figure 1: Showing proposed model based on React JS app

ABSTRACT

In today's digital age, where the majority of activities are conducted online, e-commerce has emerged as a dominant force. Platforms like Amazon, Flipkart, and Snapdeal facilitate a plethora of transactions daily. However, the dynamic nature of online pricing poses a challenge for consumers, as prices fluctuate frequently. Enter the "Amazon Price Notifier," a solution designed to alleviate this concern
by monitoring product prices on behalf of users. This project, AZ Price Notifier, offers a user-friendly web interface where users can input the link to a product they wish to monitor. Upon submission, the system automatically tracks price changes and notifies users when a drop occurs. The project's primary goal is to enhance the online shopping experience by empowering consumers to make informed purchasing decisions. By providing timely notifications of price reductions, AZ Price Notifier aims to alleviate the stress associated with price monitoring while promoting e-commerce engagement. Through streamlined functionality and an intuitive interface, the project seeks to save users both time and money. Anticipated outcomes include improved consumer satisfaction, increased product demand for producers, and the encouragement of more frequent online shopping. Overall, AZ Price Notifier represents a step towards a more efficient and enjoyable online shopping experience.

By: Abhishek Shukla, Ayush Sharma, Shivam Sharma, Ms. Savita
Associate Professor, CSE

Student Corner-Articles

No Shortage of Machine Learning Talent

If you thought learning some machine learning models and making a few projects on data would be sufficient to land you a job in the financial sector then the report on machine learning in financial services from the Bank of England and Financial Conduct Authority (FCA) will come as a bit of a shock. The report is based on a survey of 106 banks and finance firms in London. It turns out that, yes, machine learning is being used in banks. But, no, it's not hard to find anyone to fill the roles and that is the least of the worries as machine learning is rolled out across the finance sector. The Bank of England and FCA also asked survey respondents what their problems were in implementing machine learning solutions. As the chart below shows, a shortage of machine learning talent was not top of the list.

Instead, banks ranked machine learning talent shortages as a negligible constraint alongside the horror of maintaining old legacy systems. Other problems faced by investment capital firms are the lack of explain ability and insufficient data.

Another key factor to take into consideration is that Firms mostly design and develop ML applications in-house. However, they sometimes rely on third-party providers for the underlying platforms and infrastructure, such as cloud computing.

By: Kadam Jain
CSE, Echelon Institute of Technology

Cloud Computing With Amazon Web Services

Definition: Web service is self-describing and stateless modules that perform discrete units of work and are available over the network.

Web service providers offer APIs that enable developers to exploit functionality over the Internet, rather than delivering full-blown applications.

Web Services Description Language (WSDL) :

- Expressed in XML which include both data type and messages
- Four types of operations:
  - One-way – Messages sent without a reply required
  - Request & response – Sending and replying messages
  - Solicit response – A request for a response
  - Notification – Messages sent to multiple receivers

Service Oriented Architecture

Service Oriented Architecture (SOA) is essentially a collection of services which communicate with each other. Contain a flexible set of design principles used during the phases of systems development and integration Provide a loosely-integrated suite of services that can be used within multiple business domains.

Approach: Usually implemented by Web Service model

Challenges:

- Ever changing business requirements, high competition
- Long and delayed software delivery
- High rate of solution obsolesce
- High cost of setting up a data center
- High cost of operation (SW Licence, Labour)

Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics, three service models, and four deployment models.

By: Sameer Ansar
CSE, Echelon Institute of Technology

Cybersecurity

The information Technology landscape is now evolving at such a rapid pace that any predictions of the ground-breaking technical trends becomes obsolete within days of publishing it.

The evolution of technology itself is fuelling exponential growth which is causing the rapid acceleration in new areas and fields which just few years back seemed to be part of fantasy or fiction.

What we, as humans, forget or turn a blind eye is towards the inherent security risks comes with the peril of technology. Any of our information which was considered is not private any more. Google and Facebook would probably know more about us than even our own family members. This is where cyber security plays a crucial role in the field of IT.

Cyber Security might not seem like emerging technology, but as new threats are constantly coming up, the field of cyber security is also constantly innovation to fight all types of threats evolving the hackers who are trying to illegally access data are not going to give up any time soon, and they will continue to find ways to get through even the toughest security measures. In today's world it's not just for financial gains but political measures as well as national security as well. The latest threat being revealed is the Cyber-attack on Kudankulam nuclear Power plant in our country.

As long as we have threats from hackers having malafide intent, we will have cyber security as an emerging technology because it will constantly evolve to defend against those hackers. However, we're falling short when it comes to filling those jobs. As a result, it's predicted that we will have 3.5 million unfilled cyber security jobs by 2021. There are plenty of options from a beginner to an expert in the field of IT if you are interested in cyber security.

Career Paths in Cyber Security:

• Chief Information Security Officer
• Information Security Analyst
• Security Architect
• IT Security Consultant
• Forensic Computer Analyst
• Penetration Tester
• IT Security Engineer
• Security Systems Administrator

Cyber security purpose is to protect the data and integrity of computing assets belonging to or connecting to an organization's network including your IOT based gadgets and smartphones. Its purpose is to defend those assets against all threat actors throughout the entire life cycle. Kill chains, zero-day attacks, ransomware, alert fatigue and budgetary constraints are just a few of the challenges that cyber security professionals face. Cyber security experts need a stronger understanding of these topics and many others, to be able to confront those challenges more effectively.

By: Nikhil Sharma
CSE, Echelon Institute of Technology

Blockchain Technology

Blockchain technology, born from the inception of Bitcoin in 2008, has evolved far beyond its cryptocurrency origins. With its decentralized and secure structure, blockchain is reshaping industries by solving challenges related to trust, transparency, and data integrity.

Beyond Cryptocurrency

Originally conceptualized for Bitcoin transactions, blockchain's potential was quickly recognized in various sectors. Its transparent, secure, and decentralized nature makes it ideal for addressing trust issues and reducing reliance on intermediaries.

Applications Across Industries

Blockchain's impact is seen across diverse industries:

1. **Supply Chain:** Enhancing transparency by tracking product origins and movements, reducing counterfeiting and optimizing logistics.
2. **Financial Services:** Enabling secure cross-border payments, reducing fraud through immutable records, and facilitating decentralized financial instruments.
3. **Healthcare:** Revolutionizing data management with secure patient records and interoperability.
4. **Identity:** Providing self sovereign digital identities, benefiting areas with limited official documentation.
5. **Real Estate:** Streamlining property transactions and reducing fraud with tamper-proof ownership records.
6. **Voting Systems:** Enhancing electoral process security with transparent and tamperproof voting records.

Challenges and Future:

Challenges like scalability, energy consumption, regulatory clarity, and platform interoperability persist. However, ongoing research aims to overcome these hurdles, expanding blockchain's potential applications.

Blockchain's journey from Bitcoin's creation to its current state as a transformative technology highlights its ability to reshape industries. With increased efficiency, security, and new business models, blockchain paves the way for innovation and collaboration on a global scale. Its decentralized essence positions it as a catalyst for lasting change in the way industries operate and society's function.

By: Sanjay
CSE, Echelon Institute of Technology

Sustainability in Tech:
A Student's Vision for a Greener Future

Abishek Sharma, an CSE major with a passion for sustainable technology, discusses the importance of greener practices in the tech industry. He emphasizes the carbon footprint associated with producing and disposing of electronic devices and suggests that companies should prioritize sustainability. His vision includes more robust recycling programs, energy efficient devices, and a shift towards renewable energy sources in production processes.

By: Abishek Sharma
CSE, Echelon Institute of Technology

FACULTY CORNER-RESEARCH

RESEARCH PAPERS

S. No.	Name of the Author	Title of Research Paper	Name of the Journal	Indexed by	Year
01	Ms. Shefali Madan	DDoS attacks in cloud environment	International Journal of Health Sciences	SCOPUS	2021-22
02	Ms. Shefali Madan, Ms. Suman	Secure encrypted image parsing over server	International Journal of Health Sciences	SCOPUS	2021-22
03	Mr. Mohammad Danish, Ms. Ruchika Aggarwal, Ms. Jagriti, Malviya	Exploring Traditional Methods and Quantum-Based Approaches In Text Classification: A Comprehensive Study on Natural Language Processing	Journal of Pharmaceutical Negative Result	SCOPUS	2021-22
04	Ms. Savita	Unveiling The Magic : Crafting Your Own Color Picker Through Image Processing	Journal Of Pharmaceutical Negative Results	SCOPUS	2021-22
05	Mr. Ravi Singh Rana	Price watch : Your Amazon Price Tracking Companinon	Journal Of Pharmaceutical Negative Results	SCOPUS	2022-23
06	Ms. Ruchika Aggarwal, Ms. Rachna Srivastava, Ms. Priya Singh	Opinion Mining based on partial textual entailent	International Journal of Health sciences	SCOPUS	2021-22
07	Mr. Lucky Rajpoot	Mastering Mouse Movements: AI-Powered Virtual Control Project	IJITKM	DOAJ, Google Scholar	2021-22
08	Ms. Ruchika Aggarwal, Ms. Priya Singh	How2techh: A Web-Based Learning Model for Collaborative Education	IJITKM	DOAJ, Google Scholar	2021-22
09	Ms. Priyanka Sharma	MedConnect: A Medical Pager Chat App for Instant Healthcare Communication	IJITKM	DOAJ, Google Scholar	2021-22

PATENT

S. No.	Author Name	Title of Patent	Country
01	Mr. Mohammad Danish	A Crictical Investigation in Analysing the key Determinants of Internet of Things (IoT) in Enhanching Employee Engagement in the Multinational Companies located in Developing Countries.	India

Opinion mining based on partial textual entailent

ABSTRACT

The net is a heap of uncooked facts within the form of multimedia messages such as tweets, blogs and many others. Unordered and unconnected. The information that turns into records is most effective after it is processed, organized and structured in the form of online textual content snippets. According to related research, we determined the current sentiment analysis tools to be sluggish, cumbersome and arithmetically heavy which causes the venture handy to be inefficient. Consequently, to bypass the above-mentioned trouble of reading opinions proficiently, a latest procedure is put forward in the current tabloid utilizes the conception of Partial Textual Entailment (PTE) to handle this job of Opinion Mining. Among the tweets the method for calculating Semantic resemblance as a way to organize homogeneous tweets simultaneously the utilization of PTE is recommended. To minimize the load on Sentiment analyzer this approach is expected as it also helps to make the processing speed quicker. Additionally, for making countless Natural Language Processing applications we advise an amendment in the current procedure of PTE which can also be additionally accepted.

By: Ms. Ruchika Aggarwal
Associate Professor, CSE

Speech Recognition Intelligence System for Desktop voice Assistant by using AI &IoT

ABSTRACT

The net is a heap of uncooked facts within the form of multimedia messages such as tweets, blogs and many others. Unordered and unconnected. The information that turns into records is most effective after it is processed, organized and structured in the form of online textual content snippets. According to related research, we determined the current sentiment analysis tools to be sluggish, cumbersome and arithmetically heavy which causes the venture handy to be inefficient. Consequently, to bypass the above-mentioned trouble of reading opinions proficiently, a latest procedure is put forward in the current tabloid utilizes the conception of Partial Textual Entailment (PTE) to handle this job of Opinion Mining. Among the tweets the method for calculating Semantic resemblance as a way to organize homogeneous tweets simultaneously the utilization of PTE is recommended. To minimize the load on Sentiment analyzer this approach is expected as it also helps to make the processing speed quicker. Additionally, for making countless Natural Language Processing applications we advise an amendment in the current procedure of PTE which can also be additionally accepted.

By: Mr. MD Danish
Associate Professor, CSE

Faculty Corner-Articles

Quantum Computing & Its Application

The quantum in "quantum computing" refers to the quantum mechanics that the system uses to calculate outputs. In physics, a quantum is the smallest possible discrete unit of any physical property. It usually refers to properties of atomic or subatomic particles, such as electrons, neutrinos and photons.

A qubit is the basic unit of information in quantum computing. Qubits play a similar role in quantum computing as bits play in classical computing, but they behave very differently. Classical bits are binary and can hold only a position of 0 or 1, but qubits can hold a superposition of all possible states.

Quantum computers harness the unique behavior of quantum physics—such as superposition, entanglement and quantum interference—and apply it to computing. This introduces new concepts to traditional programming methods.

A quantum computer has three primary parts:
• An area that houses the qubits
• A method for transferring signals to the qubits
• A classical computer to run a program and send instructions
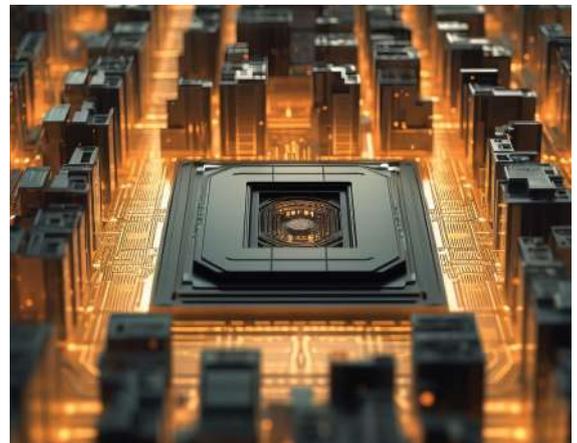
For some methods of qubit storage, the unit that houses the qubits is kept at a temperature just above absolute zero to maximize their coherence and reduce interference. Other types of qubit housing use a vacuum chamber to help minimize vibrations and stabilize the qubits. Signals can be sent to the qubits using a variety of methods, including microwaves, laser and voltage.

For some methods of qubit storage, the unit that houses the qubits is kept at a temperature just above absolute zero to maximize their coherence and reduce interference. Other types of qubit housing use a vacuum chamber to help minimize vibrations and stabilize the qubits. Signals can be sent to the qubits using a variety of methods, including microwaves, laser and voltage.

Applications Of Quantum Computing

Cryptography: Classical cryptography—such as the Rivest–Shamir–Adleman (RSA) algorithm that is widely used to secure data transmission—relies on the intractability of problems such as integer factorization or discrete logarithms. Many of these problems can be solved more efficiently using quantum computers.

Quantum machine learning: Machine learning on classical computers is revolutionizing the world of science and business. However, training machine learning models comes with a high computational cost and that has hindered the scope and development of the field. To speed up progress in this area, we are exploring ways to devise and implement quantum software that enables faster machine learning.

Optimization: Optimization is the process of finding the best solution to a problem given its desired outcome and constraints. In science and industry, critical decisions are made based on factors such as cost, quality and production time—all of which can be optimized. By running quantum-inspired optimization algorithms on classical computers, we can find solutions that were previously impossible. This helps us find better ways to manage complex systems such as traffic flows, airplane gate assignments, package deliveries and energy storage.

Quantum simulation: Quantum computers work exceptionally well for modelling other quantum systems because they use quantum phenomena in their computation. This means that they can handle the complexity and ambiguity of systems that would overload classical computers. Examples of quantum systems that we can model include photosynthesis, superconductivity and complex molecular formations.

Search: A quantum algorithm developed in 1996 dramatically sped up the solution to unstructured data searches, running the search in fewer steps than any classical algorithm could.

By: Mr. MD Danish
Associate Professor, CSE

Why is Kotlin the future of Android application development?

Kotlin, a statically-typed programming language that is 100% compatible with Java, can be compiled to JavaScript and runs on the Java Virtual Machine (JVM), which was created by JetBrains back in 2010. JetBrains' major goal was to design an industrial-level object-oriented programming language that would be fully compatible with existing Java and Android projects and still eliminate some of the biggest issues of Java programming including nullity and excessive coding. Over the years, the language had gone through many stages before its stable version was unveiled in 2016. Kotlin is relevant today because of two reasons. It has been developed as a solution to the problems that Android developers have faced over some time.

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

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

Since Google has made Kotlin a first-class language for Android development, this growth is expected to continue, in a similar way to how Swift overtook Objective-C for iOS development. This language is simply creating waves in the world of android application development. Kotlin will continue to grow in popularity, and eventually dominate the Android space especially for new applications built in it. The biggest question out there is whether it will manage to spread out into other parts of development as successfully as it's managed to spread into Android not only but also web via KotlinJS, and native compilation targets.

By: Ms. Priya Singh
Assistant Professor, CSE

OP-EDs

The potential of Virtual Reality (VR) to transform educational experiences is being explored in the field of educational technology. VR offers immersive and interactive learning environments that can cater to diverse learning styles. However, concerns include the digital divide and the risk of VR addiction. A balanced approach is recommended, integrating VR in a way that complements traditional learning methods.

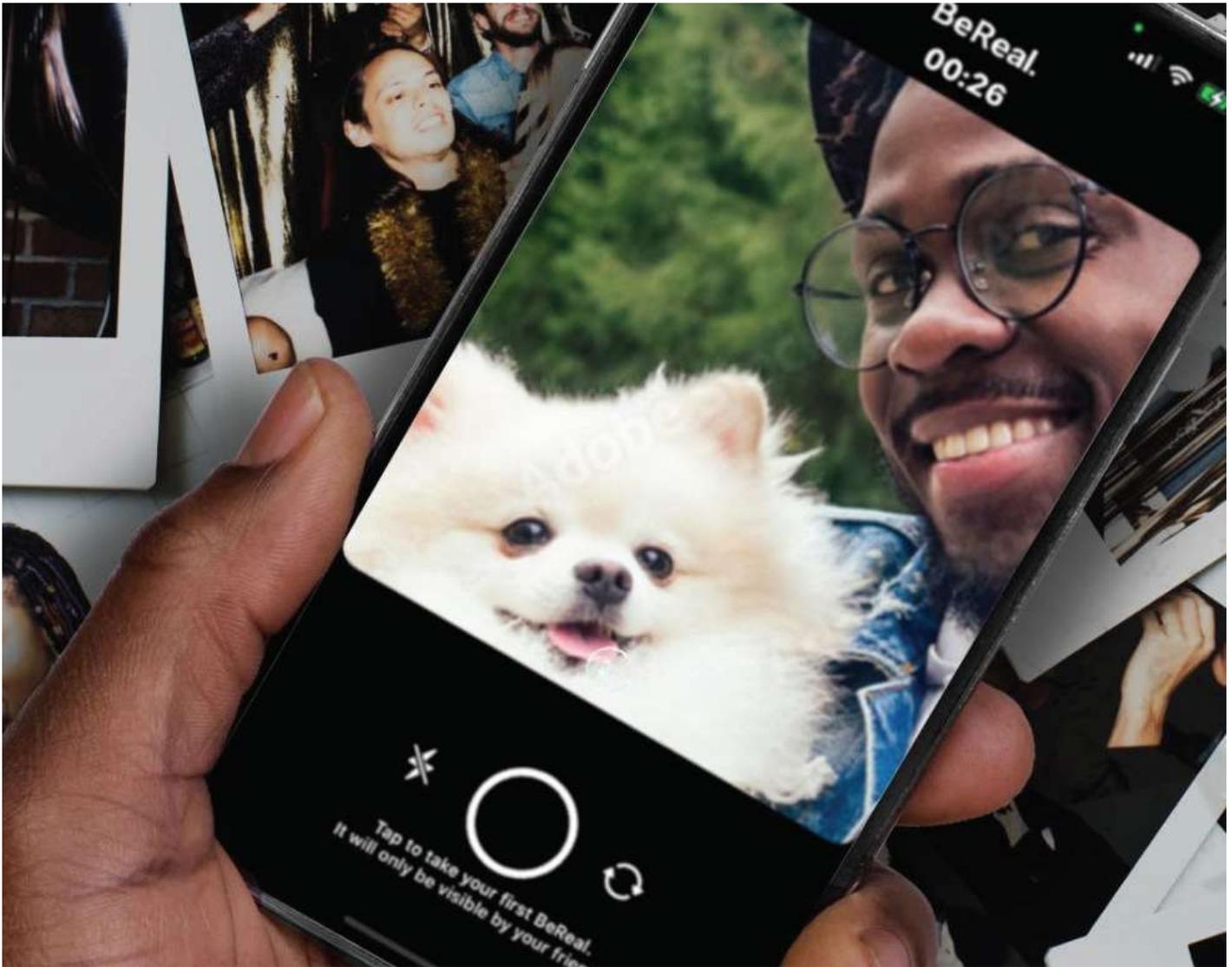**By: Ms. Shefali Madan**
Associate Professor, CSE

APP OF THE YEAR

BeReal

One standout app that gained attention for its utility and innovation this year is "BeReal." Although initially launched in 2019, BeReal garnered significant popularity and user engagement during this specific period, distinguishing itself in the crowded social media landscape.

OVERVIEW

BeReal is a social media app that prompts users to share a photo of whatever they are doing at a random time once a day. The catch is that users have two minutes to capture and share a photo using both the front and back cameras of their phones simultaneously. This concept aims to encourage more authentic and less curated content than what is typically seen on other social media platforms.

KEY FEATURES

Spontaneity and Authenticity: BeReal's core innovation lies in its mechanism to promote authenticity. The random timing and the dual-camera feature discourage staged photos, offering friends a real glimpse into each other's lives.

Simplicity: Unlike other platforms that are feature-heavy, BeReal sticks to a straightforward approach. It focuses on the main activity of sharing and viewing daily photos, without the complexities of likes, followers, or intricate algorithms.

Privacy-Focused: BeReal doesn't operate on the basis of followers or likes. Users share their daily photos with their friends, not the whole world, which stands in contrast to the broader exposure seen on platforms like Instagram or Twitter.

IMPACT AND RECEPTION

Cultural Shift:

BeReal has been part of a broader conversation about social media fatigue and the desire for more genuine online interactions. Its growth reflects a segment of users seeking relief from the pressure of curating perfect online personas.

User Engagement:

Despite its simplicity, or perhaps because of it, BeReal has successfully engaged users, especially among younger demographics. Its approach has prompted discussions about the future of social media and the potential for platforms that prioritize real-life moments over polished content.

Industry Influence:

The app's popularity has influenced other social media giants to explore similar features that encourage spontaneity and authenticity. This suggests a potential shift in how social media platforms design experiences to foster genuine social connections.

CONCLUSION

BeReal's rise during this year showcases the app's appeal in promoting authentic & spontaneous digital interactions. Its approach challenges the norms of social media engagement, offering a refreshing alternative that resonates with many users. As the digital landscape continues to evolve, BeReal's impact during this period marks an interesting chapter in the ongoing dialogue about the future of social connectivity online.
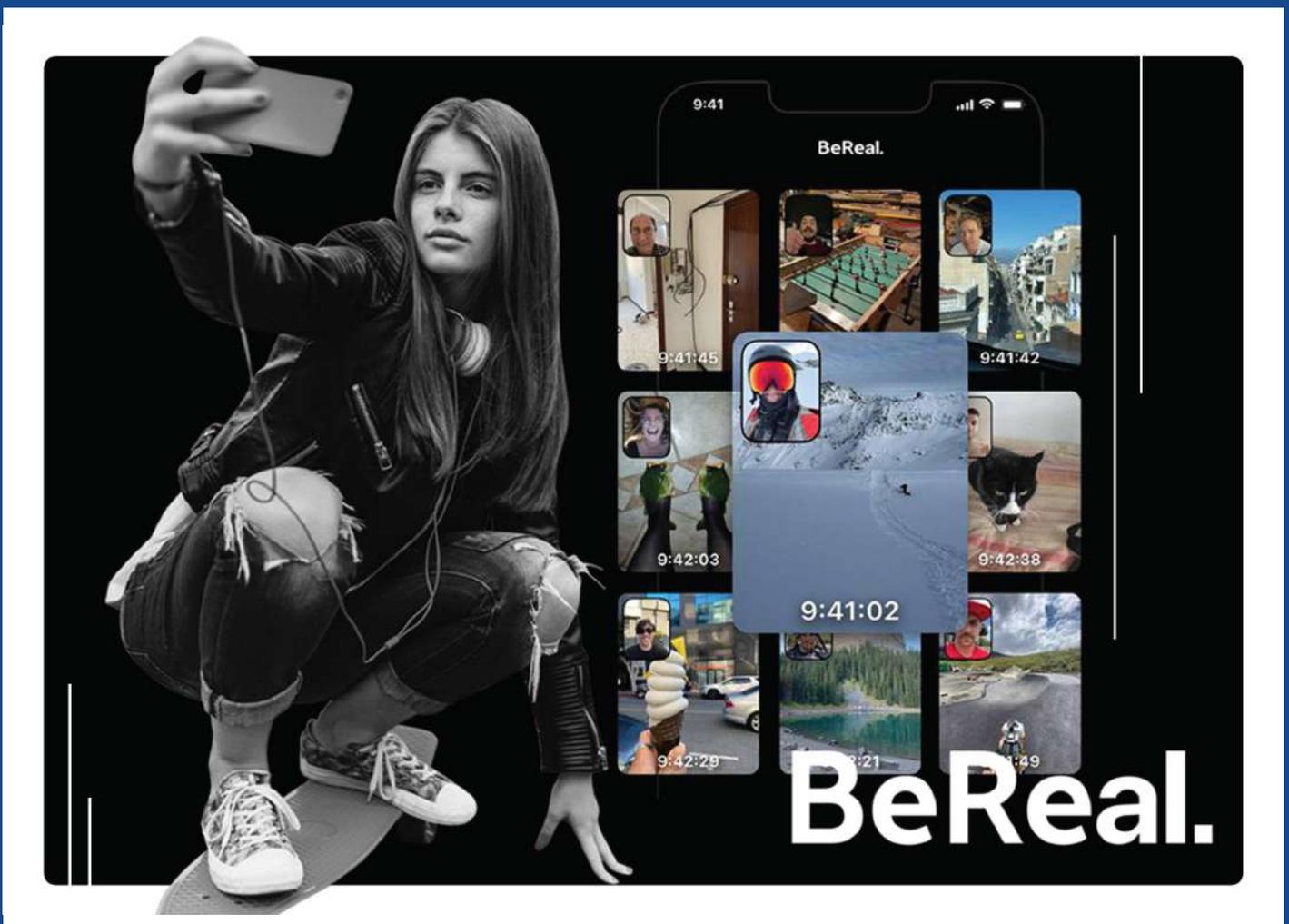
CAREER ADVICE

Venturing into the tech industry offers an exciting opportunity to engage with innovative technologies and dynamic work environments. As the landscape continues to evolve, standing out and securing a position requires a nuanced approach. Here are fresh insights and strategies tailored for those aiming to make their mark in tech, emphasizing nuanced strategies for interviews, internships, and job searches that distinguish from previous advice.
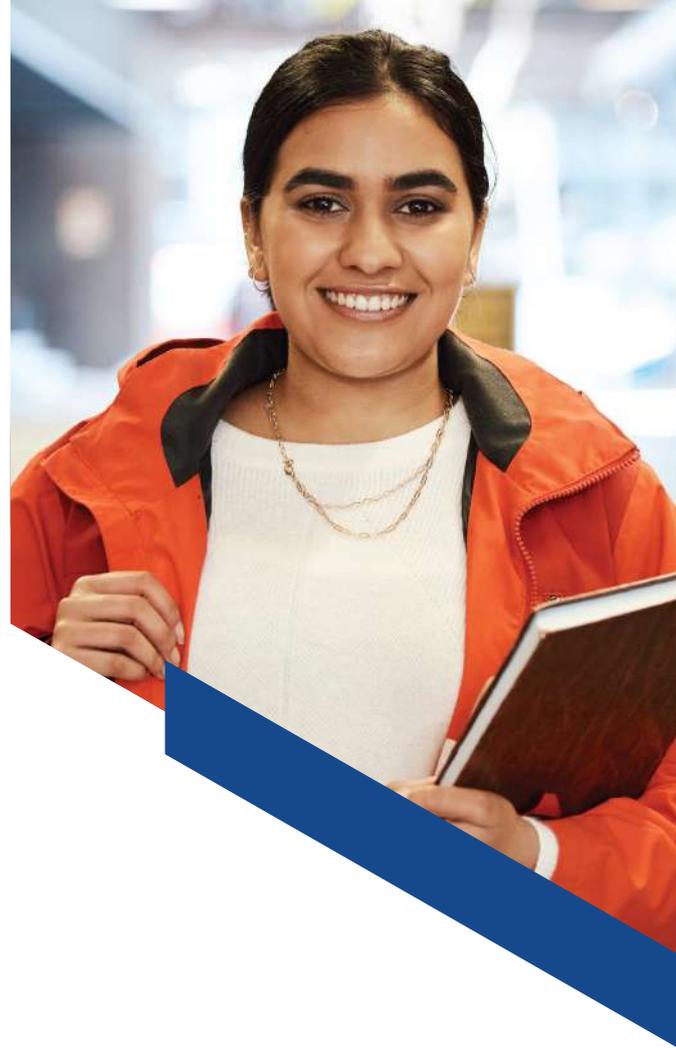
Elevating Your Interview Skills in Tech

Embrace Technical Depth & Breadth

While depth in a particular technology or language is crucial, showcasing a breadth of understanding across different technologies can set you apart. Be prepared to discuss how various technologies integrate and complement each other in a project you've worked on.

Behavioral Interview Nuances

Tech companies are increasingly valuing cultural fit and emotional intelligence.Reflect on experiences that demonstrate your adaptability, resilience, and ability to collaborate in diverse teams. Craft stories that highlight these qualities, focusing on the situation, task, action, and result (STAR method).

Case Study Preparation

Some tech roles, especially in product management or strategy, may involve case study interviews. Practice structuring your thoughts and analyses methodically. Resources like "Cracking the PM Interview" by Gayle Laakmann McDowell can be invaluable.

Personal Branding Through Content Creation

Start a tech blog, podcast, or YouTube channel where you discuss projects, explore new technologies, or share learning experiences. This can significantly enhance your online presence and attract potential employers.

Strategic Use of Social Media

Use LinkedIn to share your achievements, projects, and professional reflections. Engage with content posted by companies you're interested in, and don't shy away from sharing your thoughts on industry trends.

Agile Job Search Strategy

Adopt an agile approach to your job search. Set short-term goals, regularly review your job search strategies, and be ready to pivot based on what's working. This mindset can help you adapt to the fast-paced tech job market more effectively.

Entering the tech field is an ongoing process of learning, adapting, and networking. By focusing on these nuanced strategies, you'll be better equipped to navigate the complexities of the tech job market and carve out a successful career path.

GLIMPSES OF THE ORGANIZED EVENTS

ECHELON

TRANSFORMING THE EDUCATION

16 YEARS OF
*** EXCELLENCE ***

Approved by AICTE, Ministry of Education, Govt. Of India & DTE, Haryana and affiliated to J.C. Bose University of Science & Technology, YMCA, Faridabad – A Haryana State Govt. University – Accredited A+ by NAAC

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