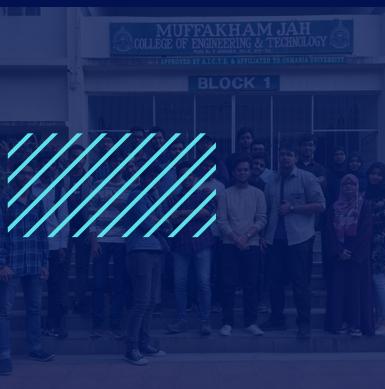




CSI BULLETIN

EDITION IX

FEBRUARY 2024



HACK
REVOLUTION
POWERED BY ACES

Annual
Hackathon

CSI Events &
Workshops

Future
Technologies

HACK REVOLUTION

POWERED BY 

~ Mohammed Abdul Adil

On December 17, 2023, Muffakham Jah College of Engineering and Technology (MJCET) organized a 15-hour hackathon called "Hack Revolution" from 7 am to 10 pm in collaboration with the Computer Society of India (CSI) and the Entrepreneurship Cell (E-cell), aiming to foster collaboration and inventive thinking, creating an environment that facilitates the hands-on application of diverse skills.

The sponsor for this grand event was Advance Communication and Electronic Systems (ACES), an international digital-neutral infrastructure company.



The hackathon consisted of four tracks: Healthcare, Fin-tech, Generic Software, and Generic Hardware. Each track offered a cash prize of Rs 75,000/-, contributing to a total pool prize of Rs 300,000/-. A total of 153 teams from different colleges of Telangana participated in phase 1 of which the best 60 teams were selected and invited to phase 2 where the participants would transform their innovative ideas into working models. Key elements like originality, inventiveness, social impact, and viability were evaluated during the thorough screening process of all entries. Reviews were being conducted at regular intervals by a judging panel composed of industry experts and academicians.



The prize distribution ceremony commenced around 9 pm, featuring the distribution of cash prizes to the winning teams. The event was attended by Mr. Mohammed N. Mazher, Managing Director of ACES India, and Ferhatullah Hussainy, Professor, and Dean of MJCET.

The winners of the “Hack Revolution” are as follows:

S.NO	Track Name	Winner Name	Project Title	College
1	Generic Software	Team Hex Tech	Deep fake detection	MJCET, CBIT, Lords
2		Clutch Monkeys	Zero Day attack detection system	KMIT
3		SLATE	Smart learning and teaching environment	MJCET
4	Generic Software	Team Robocon MJCET	Wall-E	MJCET
5		1.Ababeli 2.Team Robotics MJCET	1. Sea Port Surveillance Drone 2.Quadcopter with Robotic arm	MJCET
6		Touch vision	E-braille	MJCET
7	FinTech	Bitbounty Hunters	ARBISTATE	MJCET
8		Digital Titans	DripFin	MJCET
9		Hexa Hive	Money Manager	MJCET
10	HealthCare	Algorithm Assassin	Bio insights	MJCET
11		Light heads	Computerized cognitive retraining program for home training of children with disabilities	MLRIT, MJCET
12		Alphas	Medi Link	MJCET

The event would not have been possible without Ferhatullah Hussainy, Professor and Dean of MJCET, Md. Zainuddin Naveed, Assistant Professor of CSE at MJCET, Dr. Syed Shabbeer Ahmad, Head of CSED at MJCET, Dr. Arifuddin Sohel, Head of Research and Development at ACES India, and Dr. Md Abdul Raheem, Assistant Professor at MJCET. Their guidance and expertise played a crucial role in the event's successful organization.



A sincere acknowledgment is extended to the esteemed student leads who, alongside the faculty members, were instrumental in orchestrating the hackathon. The CSI team, led by Syed Maaz Ahmed, Ahmed Khan, and Mehveen Fatima, as Chief Coordinators of CSI-MJCET, demonstrated exemplary leadership. Additionally, Abdul Basith, Chief Coordinator of E-CELL MJCET, and Syed Shujaduddin, Deputy Chief Coordinator of E-CELL MJCET, played a crucial role in the event's organization and execution.

This collaborative effort, encompassing the dedication of faculty members, student leads, coordinators from various teams and volunteers of different portfolios culminated in the successful conduct of the hackathon.

STACKSPRINT: A WEB DEVELOPMENT ADVENTURE

~ Mohammed Ahmed Hussain



Computer Society of India MJCET and E-Cell MJCET organized their first pre-hackathon workshop named "StackSprint: A Web development adventure" which was a two-day workshop which was held on the 10th and 11th of November, Friday, and Saturday at CIC Lab from 9:30 am to 4 pm. This workshop was intended to provide an in-depth knowledge of Web Development.

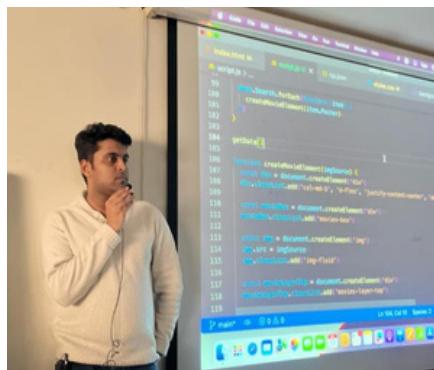
The workshop proved to be an insightful one for the 70+ attendees and offered them an opportunity to have a gateway into web development.

Also, this two-day workshop presented an opportunity for the students to enroll themselves in different certificate courses around the world making them capable of handling every field in the corporate world. The event commenced with an opening address by Syed Maaz Ahmed, who introduced the distinguished speaker, Mr. Syed Zohaib, a Software Engineer at Apple. The session kicked off with an in-depth exploration of HTML, spanning from 9:30 am to 12:00 pm. Participants were immersed in the fundamentals of HTML, setting the stage for a comprehensive understanding of web development.



Following the HTML introduction, the focus shifted to Cascading Style Sheets (CSS) and Bootstrap. Attendees gained insights into the significance of CSS in web design and were introduced to the powerful features of Bootstrap. The latter half of the session featured an engaging quiz, testing participants' comprehension of the topics covered, with cash prizes awarded to the 1st and 2nd place winners. The learning journey continued with an in-depth exploration of Bootstrap, further elucidating its functionalities. The session seamlessly transitioned into practical applications by explaining the integration of CSS in website development.

JavaScript took center stage, with a detailed discussion on key concepts such as the differences between 'let,' 'const,' and 'var,' and the manipulation of objects and arrays. The exploration of the Document Object Model (DOM) provided participants with essential insights into dynamic web page manipulation. The hands-on approach continued with the utilization of an API for movies, showcasing the creation of a dynamic movie app.

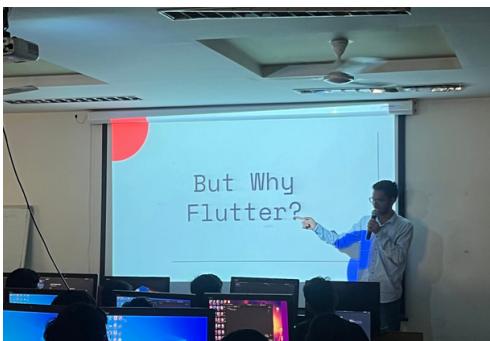


Participants actively engaged in the process of retrieving and displaying a list of movies, demonstrating the practical application of their newfound knowledge. As the session drew to a close, anticipation grew with the announcement of open registrations for a Hackathon, inviting participants to apply their skills in a real-world scenario. The event concluded with the exciting showcase of the website developed during the session and the audience's introduction to Hack Revolution's Timeline, Rules and Regulations and Registration process.

FLUTTERFIESTA : A JOURNEY INTO APP DEVELOPMENT WITH FLUTTER

- Shakaib Ahmed Mohammed

Computer Society of India (CSI) in collaboration with Ecell MJCET has culminated in the resounding success of the FlutterFiesta Workshop held on November 18, 2023, at the CIC Lab, block 2, from 9:30 am to 4:00 pm. With an open invitation to students across all academic years, our comprehensive marketing campaign, spanning both online and offline channels, drew eager participants. For non-members, the entry fee stood at Rs 50, while CSI and E-cell members enjoyed complimentary access which led to 100+ registrations.



The overwhelming enthusiasm from students reflected the event's inclusive nature, providing a hands-on experience that equipped them with profound insights into Flutter. This workshop promised to fortify their understanding and skill set, fostering an environment ripe for enhancing their performance in the upcoming Hack Revolution 2023.

The event began with a warm introduction by the chief coordinator of CSI Syed Maaz Ahmed and led by Mohammed Mohsin, the esteemed Lead Mobile Engineer at Cattleguru and Co-founder of Snapseva, who graced the event as the keynote speaker, infusing it with expertise and inspiration. Throughout the workshop, students embarked on a transformative learning journey, where the speaker delved into the intricacies of Introduction to Dart, including topics such as variables, data types, functions, loops, lists, maps, and Object-Oriented Programming concepts.

Transitioning to practical considerations, the discourse expanded to encompass the customization of versatile widgets, UI development, and an in-depth exploration of concepts such as Munch Alert!, various widget types, Rest APIs, Sync vs Async, and Futures.

In addition to these technical components, the session extended its scope to include broader thematic areas. These encompassed subjects like branding, concept design, brand identity, project portfolio, and diverse elements pertinent to social media and websites.

This multifaceted approach provided a comprehensive understanding, making the presentation valuable for a holistic perspective on App Development and its applications. This enriching experience empowered students with practical skills and knowledge, poised to fuel their journey in the ever-evolving landscape of technology.



A fun quiz was also organized for the young audience. They engaged with enthusiasm and raced against the clock to get their hands on the winning prize. The event was concluded by announcing the winners of the quiz & and with a vote of thanks by Mohammed Ahmed Khan the Chief coordinator of CSI.

DATAFORGE FUSION - A DATA ENGINEERING AND ANALYSIS WORKSHOP

~ Rania Mehreen Farooq

Computer Society of India (CSI-MJCET) and E-CELL MJCET successfully conducted their third pre-hackathon workshop in collaboration with the Computer Science and Engineering Department. The hands-on workshop titled DataForge Fusion – A-Data Engineering and Analysis Workshop took place on 25th November 2023 at CIC Lab, Block 2 MJCET, from 11:00 AM – 4:30 PM. With an impressive attendance of over 60+, the workshop provided an ideal starting point for students embarking on their journey to learning about the currency of today's world – Data.



The workshop commenced with an introduction to Machine Learning by the Tech Captain at CSI – MJCET, Abdul Mannan. The audience was introduced to the basic concepts of machine learning, its applications, and its types.

This was followed by a brief explanation of an ML Model utilizing the sci-kit-learn library in Python to instill enthusiasm among the audience. The next segment of the workshop was led by Mohammed Abdul Basith, Chief Technology Office at E-CELL MJCET. In this part of the workshop, the basics of Python were covered, including data types, operators, control statements, loops, functions, and Python libraries like NumPy, Pandas, and Matplotlib.

After lunch, the subsequent segment of the workshop was led by the guest speaker, Mohammed Imdauddin – Senior Cloud Engineer at PwC Australia. In this part of the workshop, participants learned the intricacies of data analysis. The project developed during this session focused on creating a house price prediction model.

The session began with instructions on how to download datasets from the popular platform Kaggle. Various Python libraries such as seaborn, sci-kit-learn, pandas, and matplotlib were utilized. The students were guided through the process of reading and analyzing data, handling null values by replacing them with mean values, converting string data to numeric data, and conducting data preprocessing.

The session also covered the extraction of patterns from pre-processed data. The speaker introduced the concept of linear regression, demonstrating how it aids in assessing the effectiveness of data training.



The speaker shared invaluable insights on excelling in the hackathon, igniting enthusiasm among the audience to actively participate. Following the insightful workshop sessions, participants were challenged with an engaging quiz designed to evaluate their knowledge. Winners were rewarded with exciting cash prizes, adding an element of excitement to the learning experience.

The workshop concluded as Ahmed Khan, Chief Coordinator of CSI MJCET, took the opportunity to showcase the Website: hackrevolution.in and motivated the audience to actively participate in the upcoming hackathon.

GAME DEV360

UNITY-POWERED GAME DEVELOPMENT EXPERIENCE

~ Mohammed Omer



On January 20, 2024, the Computer Society of India (CSI) hosted the GameDev 360 Workshop at the CIC Lab, Block 2, from 9:30 AM to 4:00 PM. The event was a symphony of creativity and knowledge. The event, which drew an enthusiastic audience of 70–80 people, sought to offer a hands-on exploration of Unity game development. The workshop welcomed CSI members with complimentary access, while non-members availed themselves of this enriching experience.

Mr. Shahbaaz Khan, a renowned game developer and Hack Revolution 2022 winner who currently provides his expertise to MAI Labs, was the day's featured speaker. Mr. Khan skillfully guided the audience through the complex world of Unity-powered game development with a wise combination of humor and insight.

The workshop's primary objective was to unveil the capabilities of Unity, the engine that powers popular games like Pokémon Go, Super Mario Run, and Monument Valley. Beyond the details, the event aimed to highlight the value of discipline and passion in this dynamic field of game development by bridging the gap between the academic and practical domains.

Throughout the day, participants were immersed in a comprehensive exploration of game development essentials. Mr. Khan talked about the foundations, how to get started with Unity projects in a practical way, and the nuances of components, object-oriented programming, and Unity-specific knowledge.



One of the most notable highlights was Mr. Khan's live demonstration of how to create a game using Unity. Participants were able to see firsthand how theoretical information was seamlessly incorporated into an exciting, dynamic gaming experience through this practical application



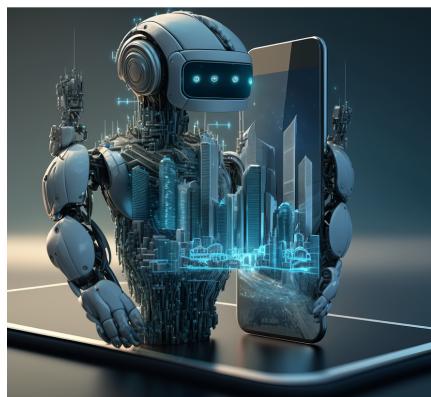
In conclusion, participants gained a thorough understanding of Unity game development thanks to Mr. Shahbaaz Khan's perceptive and entertaining style. In addition to giving participants useful skills, this enlightening experience promoted a comprehensive viewpoint on game development and its applications. As participants leave the event, they are poised to navigate the dynamic landscape of technology with confidence. The Chief Coordinator, Syed Maaz Ahmed, concluded the workshop with a Vote of Thanks.

THE ARTISTRY OF CODE: GENERATIVE AI AND THE FUTURE OF CREATIVITY

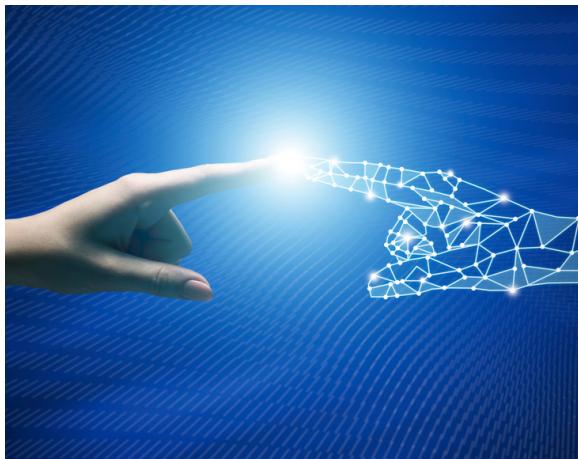
~ Faiza Mehvaan

In the 1998 cult classic film "Blade Runner," viewers were transported to a dystopian future where artificial beings known as replicants challenged the boundaries of humanity. In one particularly poignant scene, the protagonist, Rick Deckard, finds himself captivated by a hauntingly beautiful piece of art: a photograph that, upon closer inspection, reveals itself to be an AI-generated image, evoking questions about the nature of creativity and the boundaries between man and machine.

Little did audiences of the late '90s know that what seemed like science fiction then would become a reality just a few decades later. Today, we stand at the precipice of a new era in creativity, propelled by the remarkable capabilities of Generative Artificial Intelligence (AI). From art and music to literature and beyond, generative AI is redefining the creative landscape, pushing the boundaries of imagination and innovation in ways once thought impossible.



Generative AI works on the principle of learning patterns and structures from vast datasets and then generating new content based on those learned patterns. Unlike traditional AI models that are task-specific and require explicit instructions, generative AI systems are designed to autonomously generate output without direct human intervention.



Innovations like ChatGPT, GitHub Copilot, and Stable Diffusion have garnered global attention, showcasing their vast potential to enhance communication, creation, and user engagement.

Generative AI, like Generative Adversarial Networks (GANs), operates by training two neural networks: a generator and a discriminator. The generator produces synthetic data, such as images or text, while the discriminator evaluates the authenticity of the generated content. Through iterative training, the generator learns to create outputs that are increasingly indistinguishable from real data, while the discriminator becomes more discerning. This adversarial process drives both networks to continually improve, resulting in the generation of high-quality, original content.

During training, the model learns statistical patterns and correlations from a large dataset. Backpropagation is used to adjust the model parameters, guided by a loss function that quantifies performance relative to the discriminator. Once trained, the model can generate new content by sampling from the learned distribution. Evaluation metrics and human judgment are used to assess the quality and creativity of the generated content.

The effective incorporation of AI into software development processes promises a quicker and more cost-effective approach to software creation, heralding a new phase of smarter development. As research progresses and computational resources grow, Generative AI continues to evolve, pushing the boundaries of creativity and innovation across various domains.

EXCITING TECHNOLOGICAL TRENDS: A GLIMPSE INTO THE FUTURE

~ Rehmata Unissa

Greetings everyone,

Allow me to introduce some of the most compelling technological advancements that are currently shaping our world. These innovations transcend the ordinary and promise to redefine the boundaries of what we thought possible in the realm of technology. As a fellow enthusiast and newly inducted member of the CSI club, I am thrilled to share these remarkable developments with you.



1. Edge AI: Intelligent Solutions in Compact Form:

Bid farewell to the overwhelming influx of cloud data as we welcome the era of intelligent devices equipped with onboard cognitive abilities. Edge AI represents a paradigm shift, compressing potent algorithms into miniature chips. Imagine wearable devices capable of real-time health monitoring or drones autonomously navigating urban landscapes. This integration of intelligence into everyday objects marks a significant leap forward in technological advancement.

2. Bio-hacking: Exploring the Intersection of Humanity and Technology:

We find ourselves at the intersection of biology and technology, where innovative bio-hacking techniques are augmenting our physical and cognitive capabilities. From thought-controlled prosthetics to cognitive-enhancing implants, these advancements hold immense potential for reshaping the human experience. However, they also raise profound ethical questions, underscoring the need for careful consideration as we navigate this frontier.

3. Generative AI: Unleashing Creative Potential:

Artificial intelligence transcends its traditional role as a computational tool, venturing into the realm of creativity with generative AI. Capable of producing artwork, music compositions, and even code, this technology catalyzes creative exploration. The implications of such capabilities extend far beyond mere novelty, offering new avenues for expression and innovation.

4. The Metaverse: Bridging Realities:

Step into the metaverse, where augmented and virtual reality converges to create immersive digital environments. In these alternate realities, we can work, play, and connect in ways previously unimaginable. As these technologies continue to evolve, the line between physical and digital worlds becomes increasingly blurred, ushering in a new era of human-computer interaction.



In conclusion, these advancements represent only a fraction of the technological landscape that lies before us. As aspiring engineers, it is incumbent upon us to embrace these trends, explore their potential, and contribute to their development. Let us approach the future with curiosity and determination, recognizing the transformative power of technology to shape our world for the better.

QUANTUM COMPUTING

~ Maheeya Wahjahat

Quantum computing represents a paradigm shift in the world of computation, ushering in a new era of unparalleled processing power and the ability to solve complex problems previously deemed insurmountable for classical computers. At its core, quantum computing leverages the principles of quantum mechanics, where quantum bits or qubits can exist in multiple states simultaneously, enabling an exponential increase in computational capacity.

One of the key features of quantum computing is superposition, allowing qubits to exist in multiple states at the same time. This contrasts sharply with classical bits, which can only be in a state of 0 or 1. This unique attribute empowers quantum computers to process vast amounts of information in parallel, making them exceptionally adept at handling complex calculations, such as factoring large numbers or simulating quantum systems.

Entanglement is another crucial concept in quantum computing, where qubits become interconnected in such a way that the state of one qubit directly influences the state of another, regardless of the physical distance between them. This phenomenon enables faster information transfer and enhanced computational efficiency.

Despite its immense potential, quantum computing is not without challenges. Qubits are highly sensitive to their environment, making them prone to errors. Researchers are actively exploring quantum error correction techniques to mitigate these issues and bring quantum computers closer to practical use.

The impact of quantum computing extends across various domains, from cryptography and optimization problems to drug discovery and artificial intelligence. As researchers make strides in developing scalable and error-resistant quantum systems, the promise of solving complex problems at unprecedented speeds inches closer to reality, paving the way for a transformative technological landscape.

EDGE COMPUTING

~ Mohammed Mateen

In the dynamic world of technology, a significant transformation is underway with the rise of edge computing. Unlike traditional cloud setups, edge computing redefines data processing by bringing it nearer to the source. This decentralized approach is not just a tweak, it's a game changer ready to enhance the speed and efficiency of our digital interactions. At its core, edge computing minimizes waiting time by processing data closer to where it originates. This closeness results in faster response times which is a crucial factor in our interconnected world where every millisecond counts. The impact of edge computing is not restricted to a single industry; its applications are diverse and far-reaching.

In healthcare, quick data processing at the edge results in accelerated diagnostics and improved patient care. In manufacturing, it's useful in smooth coordination between robotic systems which can optimize production workflow.



As 5G connectivity becomes a reality, the collaboration with edge computing becomes more apparent. The ultra-low latency and high bandwidth of 5G networks align seamlessly with the capabilities of edge computing, unlocking new possibilities for augmented reality, virtual reality, and the Internet of Things (IoT). It's not just about speed, it's about creating an interconnected ecosystem flourishing on real-time interactions. While edge computing presents opportunities, it comes with its set of challenges. Security concerns, data privacy, and the need for standardized frameworks are aspects that require careful consideration. However, as these challenges are addressed, the potential for edge computing to transform industries and enrich user experiences remains unmatched.



In conclusion, the future of edge computing appears promising. As more devices become interconnected and the demand for instantaneous data processing rises, edge computing is positioned to play a pivotal role in shaping the digital landscape. The ability to process information at the edge is not just a technological advancement, it is a fundamental change that empowers us to rethink how we utilize the power of data.

A NEW ERA IN SEMICONDUCTOR INNOVATION: HIGH NA EUV LITHOGRAPHY

~ Syed Hariz

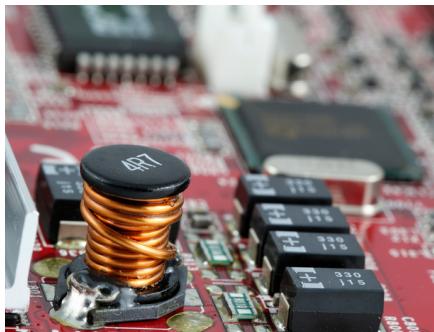
In the dynamic realm of technology, the pursuit of more powerful semiconductor chips has soared to unprecedented heights. High Numerical Aperture Extreme Ultraviolet (High NA EUV) lithography emerges as a beacon of innovation, poised to revolutionize chip manufacturing.

Driven by Moore's Law, semiconductor advancements have propelled the industry forward.



However, as transistors approach atomic scales, traditional methods face limitations. High NA EUV lithography introduces a novel approach, harnessing extreme ultraviolet light for finer features and heightened resolution.

High NA EUV lithography offers unparalleled capabilities for chip miniaturization, unlocking pathways to enhanced performance, reduced power consumption, and expanded functionality. Its implications span sectors from artificial intelligence to high-performance computing, promising to reshape the technological landscape.



This revolutionary technology heralds a seismic shift in the semiconductor industry, enabling the production of smaller, more powerful chips. It equips manufacturers with tools to meet the ever-growing demands of consumers and businesses, driving innovation and redefining manufacturing processes.

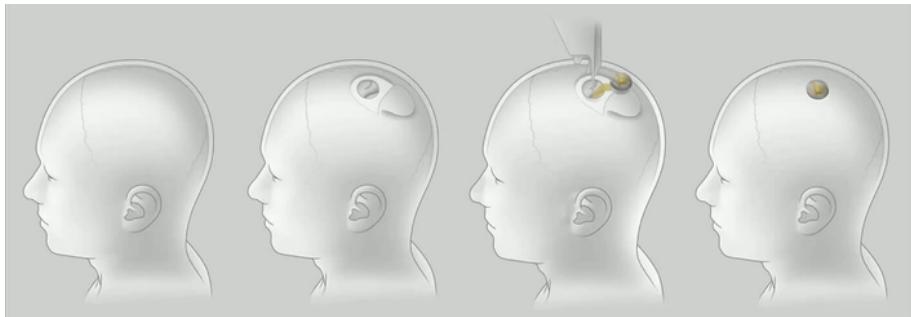
Realizing the full potential of High NA EUV lithography demands collaborative efforts across industry, academia, and government. The synergy between stakeholders is crucial in pushing the boundaries of technological innovation and ensuring seamless integration into mainstream manufacturing processes.

In conclusion, High NA EUV lithography represents a pivotal moment in semiconductor innovation. With its ability to achieve finer features and heightened resolution, this technology paves the way for a new era of chip manufacturing. Through collaboration and strategic investments, the semiconductor industry is poised to capitalize on its immense potential, ushering in a future filled with endless possibilities.

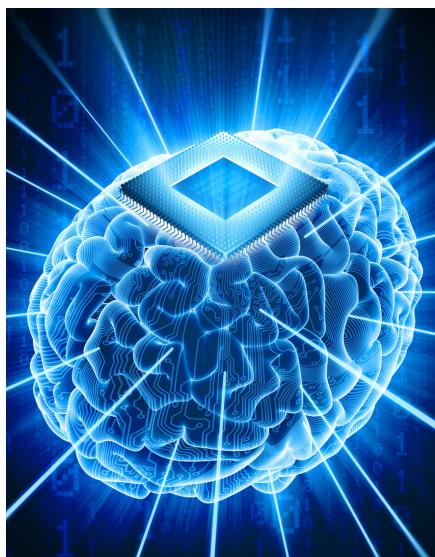
BRAIN-CHIPS: RAGNARÖK OR REFORMATION?

~ Mohammed Ahmed Hussain

Ever since Elon Musk unveiled Neuralink in 2016, there has been a buzz relating to it all around the world. Some believe that it would revolutionize the field of neuroscience and brain computing. Some believe it to be a medium to control and conquer the ones who speak for themselves, otherwise known as the free thinkers. While Neuralink's goal remains to develop an immersive technology that will potentially eliminate the gap between humans and computers, the neurological impacts of the brain implant remain questionable.



At the heart of Neuralink's technology is a chip containing neuron-sized threads, which is surgically implanted into the brain. The tiny flexible threads fan out with minuscule electrodes which can monitor brain activity and stimulate neurons as needed. The chip then transmits this neural data via a wireless connection to an external device, which is typically operating on Bluetooth Protocol. The interface allows information to not only be read from the brain but also delivered into it, creating a symbiotic relationship between biological and digital intelligence. The science behind how these implants work is not different from how you would go about trying to measure the energy from an AA battery which is known as neuro electrophysiological recording. For example, when you move your arm to the right, certain sets of neurons are activated in a certain pattern. Listening to that activity and that pattern, you can predict very quickly which direction the arm is going to move. These are the neurons that are directly wired to your muscles.



If Neuralink succeeds in its plans, people may eventually be able to control digital devices like smartphones and computers directly with their minds. Everyday tasks like searching the internet or texting someone could become possible just by thinking about it. The technology could also allow us to stream digital content right into our brains, skipping external sensory organs. Think about watching Netflix by sending the videos directly to your visual cortex rather than using your eyes. But some noble use of it would be in the healthcare front, where it can help people with brain and spinal cord issues or neurological and cognitive issues, just by stimulating that particular part of the brain.



While Neuralink remains in development by just starting to move to human trials in 2024. The future remains uncertain on how exactly it will fulfill the promises of its future. The very nature of it remains uncertain as it is all reliant on Bluetooth and the Internet.

Will it be possible to control humans through the internet? Can it be used as a means to hack people's brains? Will the reformation caused by the Neuralink be limited to a person who is a slave to the system?

What if someone is forced to have an implant, only to witness themselves losing control? Only time will tell. Neuralink is a neuro-technological marvel, but unfortunately, we remain unaware of its true nature.

BREAKING BARRIERS: EXPLORING THE POTENTIAL OF BRAIN-COMPUTER INTERFACES

~ Mohammed Abdul Adil

Do you remember the famous scene from the movie Matrix where Neo (played by Keanu Reeves) sits in a reclining chair and a head jack is plugged into his neck; voila! he enters the Matrix

We are not there yet. We will get closer to blurring the lines between physical human beings and intelligent machines. According to GlobalNewswire, the BCI market will be \$5.34B by 2030.

A brain-computer interface (BCI) is a system that allows a human to communicate with a computer using their thoughts or brain activity. It typically consists of sensors that are placed on the scalp or inside the brain, which pick up brain signals and a computer program that translates those signals into actions.

BCIs are still in the early stages of development,

but they have the potential to revolutionize the way people interact with technology. The major use case so far has been to help people with disabilities communicate and control prosthetics or other devices.

In the current state of technology, Brain-Computer Interfaces (BCIs) are an intriguing new development. By serving as a link between the human brain and computers, these interfaces enable users to operate devices solely with their thoughts. Our brains are amazing machines that control all of our emotions and actions. One of the main components of BCIs, brain stimulation, for example, can selectively activate neural pathways to improve memory and change behavior patterns. It's similar to optimizing the circuitry in the brain to function at its best.

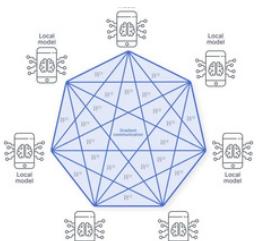
However, BCIs provide more than just improvements; by using neural signals, they allow for direct control over external devices such as computers and prosthetic limbs. BCIs hold promise for diagnosing and treating neurological disorders such as Parkinson's disease, epilepsy, and paralysis. They enable neurofeedback therapy, brain-computer interfaces for rehabilitation, and neural prostheses for restoring sensory functions. BCIs could be used to create new types of games and experiences that are controlled by the player's thoughts.

A significant change in human-computer interaction is brought about by this merging of mind and machine. As advancements continue to unfold, BCIs have the potential to enhance human capabilities, empower individuals, and unlock new frontiers of innovation in the digital age.

FEDERATED LEARNING: A BEGINNER'S GUIDE

~ Syed Maaz Ahmed

Federated Learning (FL) is revolutionizing the way we train machine learning models, making it possible to harness the collective knowledge of multiple devices without compromising data privacy. In simple terms, FL enables devices like smartphones, tablets, and IoT gadgets to collaborate on training a shared model, all while keeping users' data safe and secure.



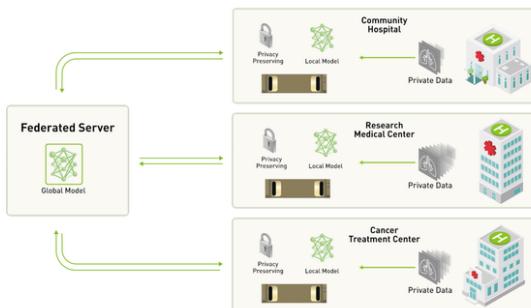
FL is like a smart way for our devices to learn together without sharing all their secrets. Here's how it works: Instead of sending all the data to one big computer for training, each computer learns a little bit on its own and then shares only the important stuff with the others.

Imagine you have a smartphone, and you want to use a virtual keyboard that predicts your next word accurately. Traditionally, your phone would send your typing data to a central server, where a model is trained to improve the keyboard's predictions. However, this raises concerns about privacy and security since your data is stored and processed on external servers.

Here's where Federated Learning comes in. Instead of sending your data to a central server, your smartphone collaborates with others in a decentralized manner. Each device trains a local model using its data without sharing it with others. Then, these local models are combined to create a global model, which is then sent back to each device, including yours, making your virtual keyboard smarter without compromising your privacy.

But how does FL work in practice?

Federated Learning enables devices to train machine learning models locally, using their data. This means your smartphone learns from your own usage patterns without sharing sensitive information with external servers. This is what we mean when we say the training is decentralized. Next, The trained local models are securely aggregated on a central server, which combines them to create an improved global model. This aggregation process ensures that individual user data remains private throughout the collaboration.



Furthermore, FL allows for continuous model improvement over time as more devices participate in training. This collaborative approach ensures that the global model becomes more accurate and personalized without sacrificing privacy.

Additionally, FL isn't limited to virtual keyboards, this was one instance. It's being used in various applications like auto-completion, item recommendation, healthcare applications, and IoT devices. This versatile approach to collaborative learning opens doors to new possibilities across different industries.

Federated Learning offers a win-win solution for both users and developers. Users benefit from improved services without compromising their privacy, while developers can leverage the collective intelligence of distributed devices to create smarter and more personalized applications.

FROM THE PRINCIPAL'S DESK

~ Dr. Mahipal Singh Rawat, Principal, MJCET

Dear Students,

As you navigate these formative years, remember Maya Angelou's words: "You may encounter many defeats, but you must not be defeated." Here at MJCET, we equip you not just with knowledge, but with the resilience to overcome challenges and emerge your best selves.

Your journey is unique, and your success story will be written in your unique way. Embrace the dedication and focus required to refine your skills and push your boundaries. The world eagerly awaits the unveiling of your unique talents, your innovative ideas, and your indomitable spirit.

Dream audaciously, dear students, for within the realms of imagination lies the blueprint for a brighter tomorrow. With unwavering faith in your abilities, MJCET stands as your steadfast ally, accompanying you on this odyssey of self-discovery and transformation.

While academics are paramount, don't underestimate the power of self-reflection and personal growth. Seek opportunities to refine your character, explore your passions, and foster healthy habits. A well-rounded individual, honed by knowledge and introspection, is truly prepared to make their mark on the world. As you embark on your remarkable journeys, remember that greatness resides not in the destination but in the journey itself. Embrace each challenge as an opportunity for growth, each setback as a lesson in resilience, and each triumph as a testament to your unwavering spirit. We are wishing you all the best for your future endeavors.

KEEPING UP WITH TRENDS:

WHY ENGINEERS NEED TO STAY AHEAD IN TODAY'S FAST-PACED WORLD

~ Dr. Syed Ferhathullah Hussainy, Dean, MJCET

Fresh batches of engineers coming out of college need to stay ahead of time to make a professional career in the future. Following are some of the reasons to stay ahead:

Technological Advancements: The field of engineering is dynamic and constantly evolving. New technologies, methodologies, and tools emerge regularly. Engineers need to stay updated to leverage the latest advancements and remain relevant in their respective domains.

Global Competition: In a highly connected world, engineers are not only competing with local professionals but also with a global talent pool. Staying ahead ensures that engineers can contribute effectively on a global scale and compete for opportunities worldwide.

Industry Requirements: Industries are evolving rapidly to adapt to changing market demands. Engineers must stay ahead to understand and meet the current and future needs of their industries.

This includes adapting to new manufacturing processes, materials, and sustainability practices.

Interdisciplinary Collaboration: Many modern challenges require interdisciplinary solutions. Engineers often need to collaborate with professionals from diverse fields such as data science, biology, and environmental science. Staying ahead helps engineers bridge these gaps and contribute effectively to interdisciplinary projects.

Innovation and Creativity: Staying current in engineering fields fosters innovation and creativity. Engineers who keep abreast of the latest developments are better positioned to think creatively, solve complex problems, and drive innovation within their organizations.

Adaptability: The ability to adapt to change is a key skill in today's fast-paced world.

Engineers who stay ahead are better equipped to navigate shifts in technology, industry trends, and job requirements. This adaptability is crucial for long-term success.

Lifelong Learning Culture: Embracing a culture of lifelong learning is essential for engineers. Continuous self-improvement is not just a professional requirement but a mindset that fosters personal development and fulfillment.

Risk Mitigation: Falling behind in knowledge and skills can pose risks to projects, products, and even to the safety of individuals in certain engineering disciplines, particularly the IT sector. Staying ahead helps mitigate these risks by ensuring that engineers are aware of and can implement the latest safety standards and best practices.

In essence, staying ahead is not just about professional survival; it's about thriving, contributing meaningfully to society, and enjoying a fulfilling and successful engineering career in a rapidly changing world.

WELCOME TO THE DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING, MJCET

~ Dr. Syed Shabbeer Ahmad , Professor & Head-CSED

The Department of Computer Science & Engineering (CSE) is dedicated for ensuring great careers for its students. For us, this means forging deeper industry linkages than ever before, creating a research culture from day one and ensuring seamless education using the best technology available anywhere. We provide ample opportunities for extracurricular activities, including technical clubs, hackathons, coding competitions, and professional networking events. These activities not only strengthen Students skills but also help students build a network of like-minded individuals who share your passion for computer science and engineering.

The excellent infrastructure, teaching

faculty of the best kind of the Department ensuring quality education such as interaction among students, parents and staff, along with a Training and Placement Cell ensures a bright future to its students. We strongly encourage innovation in research, in teaching and in service to the profession, the local community and industry. Our faculty and students are constantly striving to excel and to advance the state of the art in Computer Science and Engineering. I invite you to be part of our efforts as we propel the department of Computer Science & Engineering to ever-greater heights. In closing, I wish all the students and faculty a good academic career. Sincerely, and with best wishes,

"U HAVE IT IN YOU ..."

~ Dr. Maniza Hijab,
Associate Professor & Associate Head CSED.

Dear Students,

At the outset, I extend my Best Wishes to every student for their forthcoming semester-end examinations. In the backdrop of the impact of disruptive technologies in various work sectors, fluctuating campus recruitments in IT sector companies, and decent start-up entrepreneurial opportunities; it becomes furthermore mandatory for students to have their core CS fundamentals effectively in place coupled with good programming and communications skills to be at vantage point. The learning curve has to be continuous. Students have to be SMART, ENTERPRISING, AND PROFESSIONAL to be EMPLOYABLE. Discipline on all fronts is mandatory coupled with co-curricular and extra-curricular activity exposure in making oneself a holistic individual. Each one has within them hidden talent and potential. These must only be identified (individually or with assistance), harnessed, and realized. Through learning platforms viz., NPTEL, COURSERA, UDEMY, etc., coding platforms viz., Leetcode, HackerRank, CodeChef, etc., one can increase their knowledge and programming skills. Also, participation in Hackathons, Ideathons, etc., nurtures collaborative innovation. So my advice to every student is to set your life and career goals, focus, do the hard work, and strive to achieve them. **Remember HARDWORK comes before SUCCESS.**

THE SUNSET

~ Mohammed Abdul Adil



I watch you from the horizon
As you are leaving
The lonely cold world.

You are taking me with you
To a world I have never been
A feeling of death

We still need you
To light up this dark world
To keep us warm

Your friends visit
The Moon and Stars
To light up the world
For a while

Light is not forever
Darkness is not forever
We live in both light and darkness

One day we will surely leave
This empty world
And never return

Our loved ones will wait for us
To return like the Sun.
We will never come back
We have served our purpose
Our reason for living.

A PROMISED LAND?

~ Mohammed Ahmed Hussain

Past the desert, came a storied land,
Celebrated across the ancient world,
The land to which many did command,
Bound from the tales that unfurled,

Then emerge the clan from the north,
Claiming to have fled the oppression,
With their fibs, they exploit warmth,
And withdraw from other's possession.

Harmless, they thought of the tenants,
Unaware of the thievery to unfold,
Whole bearers, now left with remnants,
And a tragic ignorance of the world.

The hindrance to their daily chores,
A horror of catastrophes on the land,
People that they were cordial towards,
Now, a puppet of The New World command

Although natives condemn the grim act,
The sickening labels of terrorism arise.
But their spirits always remain intact,
While the world forms an unjust surmise.



Families left with ruins of their joy,
Children, orphaned, and women widowed.
The paths to freedom that were destroyed,
To conceal a genocide that did unfold.

There's courage in the face of tyranny,
A hope for a better tomorrow to rely on.
And a prayer for the humanity to cry on,
And a prayer against the tyrants of Zion.

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