

empowerEd

Beyond the Clock Pulse and the Code Loop, We Engineer Every Possibility. The Power of Two Streams, One Vision.



Serves as a dynamic platform to share knowledge, innovations, and updates in the rapidly evolving tech world. Its primary motive is to foster a culture of learning, collaboration, and creativity among students by showcasing projects, technical articles, and industry trends. This initiative helps bridge the gap between academic learning and real-world applications, inspiring peers to stay informed and engaged in their field.

CONTEXT

- THE BREAKTHROUGHS
- BYTES
- FROM "WHAT'S OPEN SOURCE?" TO 3RD PRIZE
- THE METAVERSE
- ABOUT US
- NOBLE PRIZE 2023
- VISION & MISSION

NEWS LETTER OF ERE'26
EDITION 3
SEPTEMBER 2023 - DECEMBER 2023

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THE BREAKTHROUGHS



India's G20 Presidency Marks Historic Firsts: African Union Joins, Global Biofuel Alliance Launched

The 2023 G20 New Delhi Summit, held on September 9–10 at Bharat Mandapam, Pragati Maidan, marked India's inaugural hosting of the G20. Under Prime Minister Narendra Modi's leadership, the summit achieved unanimous adoption of the New Delhi Leaders' Declaration, addressing global challenges such as climate change, sustainable development, and geopolitical tensions . Key outcomes included the African Union's admission as a permanent G20 member, enhancing representation of the Global South . India also launched the Global Biofuel Alliance, aiming to promote sustainable biofuels with participation from 22 countries and 12 international organizations . Additionally, the summit announced the India–Middle East–Europe Economic Corridor, a multinational rail and shipping project involving India, Saudi Arabia, the UAE, Jordan, Israel, and the European Union, designed to bolster economic integration across these regions . India's G20 presidency emphasized themes such as green development, inclusive growth, technological transformation, and women-led development, reflecting its commitment to addressing both national and global priorities.

DO YOU KNOW ?

Google's very first office was set up in the garage of a friend's house in Menlo Park—the garage has become a tech pilgrimage site.

THE BREAKTHROUGHS



UK Hosts Pioneering AI Safety Summit; Countries Commit to Collaborative Risk Mitigation

On November 1, The first AI Safety Summit takes place in the United Kingdom, with 28 countries signing a "world first agreement" on how to manage the riskiest forms of artificial intelligence



Google DeepMind Unveils Gemini: A Multimodal AI Model Integrated into Search and Bard

On December 6, Google DeepMind released the Gemini Language Model. Gemini will act as a foundational model integrated into Google's existing tools, including Search and Bard



IBM Unveils 'Condor': World's First 1,121-Qubit Quantum Processor

IBM unveiled its 1,121-qubit "Condor" quantum processor in December at IBM Quantum Summit. Condor, featuring a honeycomb pattern and a large number of qubits, utilizes IBM's cross-resonance gate technology, which enables precise two-qubit operations. Condor boasts 1,121 qubits, making it the first quantum computer with over 1,000 qubits from IBM.

DO YOU KNOW ?

The term "debugging" is widely associated with Admiral Grace Hopper's work on the Mark II computer at Harvard University in the 1940s. A moth entered the computer and caused a malfunction. This incident popularized the term "bug" for software errors, and the process of finding and fixing them became known as "debugging".

THE BREAKTHROUGHS



India's Stellar Year: Chandrayaan-3 Lands on Moon's South Pole; Aditya-L1 Embarks on Solar Mission

In 2023, India achieved significant milestones in space exploration, underscoring its growing prominence in the global scientific community. On August 23, the Indian Space Research Organisation (ISRO) successfully executed the Chandrayaan-3 mission, making India the first country to land near the Moon's south pole and the fourth to achieve a soft lunar landing. The mission's Vikram lander and Pragyan rover conducted experiments, including the detection of sulfur and other elements, providing valuable insights into the Moon's composition .



Following this, on September 2, ISRO launched Aditya-L1, India's first dedicated solar mission, aimed at studying the Sun's outer layers and solar phenomena such as coronal mass ejections. Positioned at the Lagrange point 1 (L1), approximately 1.5 million kilometers from Earth, Aditya-L1 provides continuous observation of the Sun, enhancing our understanding of space weather and its impact on Earth .



These missions reflect India's commitment to advancing space research and its strategic intent to be a key player in global space exploration initiatives.

BYTES

AI, ML, DL : Making Machines Think



What is Machine Learning?

ML is a subset of AI where machines learn from data and improve their performance without being explicitly programmed for every task.

Types of ML:

- Supervised Learning (e.g., spam detection)
- Unsupervised Learning (e.g., customer segmentation)
- Reinforcement Learning (e.g., teaching robots to walk)

Example:

You give a model hundreds of cat and dog images, and it learns patterns and starts identifying them in new images.

What is Artificial Intelligence?

AI is the broad concept of machines being able to perform tasks that normally require human intelligence, like decision-making, learning, reasoning, problem-solving, and language understanding.

Examples:

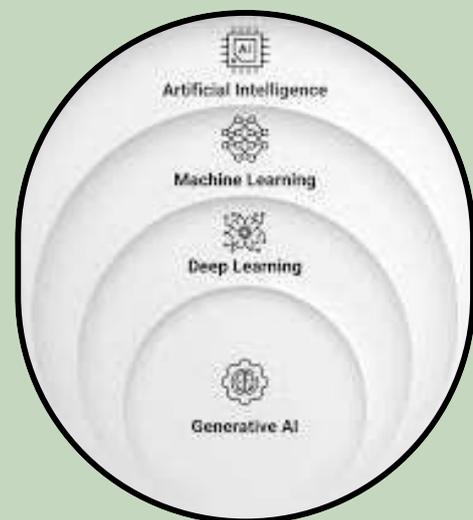
- Chatbots like ChatGPT
- Virtual assistants
- * Face recognition
- * Autonomous cars

What is Deep Learning?

DL is a subset of ML that uses artificial neural networks, inspired by the human brain. It works well for complex problems with huge data, like image recognition, speech, and video processing.

Example:

DL powers self-driving cars to understand lanes, obstacles, and traffic signs through video feeds.



How Are They Related?

- AI is the big idea.
- ML is one way to achieve AI.
- DL is a powerful way to do ML.

BYTES

AI, ML, DL : Making Machines Think



Popular Algorithms and Models

- Machine Learning:
 - Linear Regression (used in price prediction)
 - Decision Trees (used in rule-based systems)
 - Support Vector Machines (used in classification)
 - K-Means Clustering (used in grouping data)
- Deep Learning:
 - CNN (for images)
 - RNN (for time series, text)
 - LSTM (for language models)
 - Transformers (for understanding language)

Data is the Backbone

- AI/ML/DL models are only as good as the quality and quantity of data they're trained on.
- Issues like bias or incomplete data can lead to wrong predictions or unfair decisions.
- Data preprocessing (cleaning, normalizing, splitting) is crucial.

Trends & Emerging Areas

- Explainable AI (XAI): Making AI decisions transparent.
- Federated Learning: ML without sharing raw data (e.g., phones learn locally).
- TinyML: ML on low-power devices.
- AutoML: Automatic generation and tuning of models.
- Generative AI: Creating new content (text, image, music).
- Multimodal AI: Using text, audio, image together (like GPT-4V, Gemini).

Why Are They Important?

- They automate decision-making
- Handle huge volumes of data
- Enable personalized experiences
- Help in predictive analytics, process optimization, and even creative tasks

AI vs Human Intelligence

AI lacks intuition, emotion, morality, and consciousness. AI is task-specific (narrow AI). General AI (like a human brain) is still far off.

FROM “WHAT’S OPEN SOURCE?” TO 3RD PRIZE

30th September 2023.

Prayaag 3.0.

A 6-hour hackathon by IEEE.

It was my first hackathon. My friend Gopika and I walked into the venue, surrounded by teams from all sorts of colleges — laptops open, people discussing APIs, designs, and features... and us? We were standing there thinking:

“Umm... what exactly is open source?”

No clue. No plan. Just vibes.

But hey, participation is what matters, right?

After a quick Google crash course on “what is open source,” we jumped into brainstorming. We thought, What’s our problem? Something real, something we wish we had a solution for. Turns out, our branch being new meant resources were scattered or nonexistent.

So we pitched:

KTU Resource App — a one-stop platform where students can upload notes, edit, search with filters, and find exactly what they need.

But wait, we got a little ambitious:

- AI PDF reader to summarize notes & answer doubts
- Expert Q&A section like Quora
- A “study room” where you can join video-only sessions for pure study vibes

Huge idea. Tiny experience. Zero clue how to make all of it.

We were still learning as we went, no role splits, no rigid plan. Just two curious newbies building something. With some major support from the judging panel (shoutout to the seniors who were absolute lifesavers), we managed to get 3 out of 6 features working in just 6 hours. Then came the result time. We were standing there, happy that we had even finished something. The announcer called out:

“3rd place — you KTU guys!”





(contd...)

We were stunned. Shocked. Thrilled.

That single moment... that's where my tech journey started.

From that clueless hackathon day, we've gone on to:

- 6+ fully deployed projects
- 5+ hackathon wins
- Countless late-night debugging sessions, endless cups of chai, and that constant hunger to learn more.

Hackfiesta wasn't just a competition.

It was the spark.

And if you've ever thought you're "not ready" for a hackathon, trust me, neither were we. Just show up. You never know where it might take you.

~ Adithya Ramesh

THE METAVERSE

EVOLUTION, SCOPE, TECHNOLOGIES,
AND CONTRIBUTIONS

~ DEVIKA UDAYAKUMAR

The Metaverse is a vast network of connected digital spaces where users interact with each other and the virtual world in realistic, real-time ways. It is often seen as the next step for the internet, moving from two-dimensional browsing to a three-dimensional, shared virtual universe. The term “metaverse” was first used by Neal Stephenson in his 1992 novel Snow Crash, where humans interact as avatars in a virtual space that resembles the physical world. Since then, the concept has shifted from fiction to a real technological goal pursued by tech companies, startups, and governments.

The evolution of the metaverse comes from decades of advancements in digital communication, 3D technology, and immersive experiences. Early examples include Massively Multiplayer Online Games (MMOs) like Second Life and World of Warcraft, which gave users shared digital experiences. With the rise of modern Virtual Reality (VR) and Augmented Reality (AR), the idea of the metaverse became clearer. Companies like Meta (formerly Facebook), Microsoft, Apple, Google, NVIDIA, and Epic Games are investing heavily in platforms and hardware to make metaverse features a reality. Key developments include Meta’s Horizon Worlds, Microsoft Mesh for collaboration, and Apple’s Vision Pro headset, which introduces spatial computing to consumers.

The metaverse covers a wide range of areas and industries. It includes entertainment, education, business, healthcare, real estate, manufacturing, defense, and e-commerce. In entertainment, users can attend concerts, art exhibits, and film festivals in virtual spaces. In education, immersive classrooms and training simulations increase student engagement and practical learning, especially in fields like medicine, engineering, and vocational training. Businesses are leveraging the metaverse for remote teamwork, virtual showrooms, and digital twin simulations to improve their operations. The real estate industry uses VR for interactive property tours, while brands like Nike and Gucci are creating digital clothing and NFTs to generate new income streams. Even government and defense agencies are looking into metaverse solutions for training and simulation.

Technologically, several key components support the metaverse:

- 1. Extended Reality (XR) – A blend of VR, AR, and Mixed Reality (MR) that creates immersive experiences.*
- 2. Blockchain and Web3 – Enabling decentralized ownership, digital identities, and secure transactions using NFTs and cryptocurrencies.*
- 3. Artificial Intelligence (AI) – Supporting intelligent avatars, virtual assistants, content moderation, and automated world building.*
- 4. 3D Modeling and Game Engines – Tools like Unity and Unreal Engine help build realistic virtual environments.*
- 5. Cloud and Edge Computing – Allowing real-time rendering and large-scale virtual environments.*
- 6. Spatial Audio and Haptics – Improving sensory experience with sound and physical feedback.*

The metaverse is already making an impact across various industries. It creates new economic models, such as the creator economy, where people can design, sell, and profit from virtual goods and experiences. It is driving advancements in telemedicine, where VR therapies assist with PTSD, anxiety, and phobias. In business, companies are holding virtual conferences and team meetings that mimic face-to-face interactions, saving money and reducing environmental impact. Additionally, the metaverse is expanding global access, providing educational and job opportunities regardless of location.

Despite its potential, the metaverse faces several challenges and criticisms. These include the high costs of quality VR/AR hardware, a lack of universal standards and compatibility across platforms, worries about data privacy and security, and the mental effects of prolonged time spent in virtual environments. Regulatory frameworks are also lagging, struggling to address legal issues related to digital ownership, identity theft, and content moderation.

Looking ahead, the success of the metaverse depends on making hardware more affordable, improving bandwidth infrastructure (like 5G), and developing open platforms. Collaborations among tech companies, academic institutions, governments, and society will be crucial to creating a metaverse that is inclusive, ethical, and sustainable. As it develops, the metaverse has the potential to change how people interact, work together, create, and experience reality, blurring the lines between the physical and digital worlds.

ELECTION'23

PARTICIPANTS

- DEVI KRISHNA S
~ WOMEN REPRESENTATIVE
- DRISHYA N
~ ECE-AEI-ERE ASSOCIATION
SECRETARY
- AKSA ROSE
~ MAGAZINE EDITOR

S2 Toppers



Anudhyana A S
Sgpa : 9.05



B R Kavya Prabhakar
Sgpa : 8.74



Devi Krishna S
Sgpa : 8.26



Gopika M Sharma
Sgpa : 8.12

ABOUT US

We are the first batch of the newly introduced Electronics and Computer Engineering course at LBSITW, launched in the year 2022, with Electronics and communication Engineering as our parent department. Our class comprises 49 students, and according to the result analysis of the S2 examinations, we have achieved an overall pass percentage of 69.57%.

Class Representatives : Drishya N, Nivedya G S

Staff Advisors : Dr. Reena M Roy, Dr. Deepambika



NOBLE PRIZE 2023



Physics



Chemistry



Medicine



Economics



Peace



Literature



In 2023, the Nobel Prizes honored groundbreaking contributions across various fields. In Physics, Pierre Agostini, Ferenc Krausz, and Anne L'Huillier were recognized for developing experimental methods that generate attosecond pulses of light, enabling the study of electron dynamics in matter. The Chemistry prize was awarded to Mounqi G. Bawendi, Louis E. Brus, and Aleksey Yekimov for the discovery and synthesis of quantum dots, nanoscale particles with unique optical properties used in electronics and medical imaging. Katalin Karikó and Drew Weissman received the Physiology or Medicine prize for their discoveries concerning nucleoside base modifications that enabled the development of effective mRNA vaccines against COVID-19. Norwegian author Jon Fosse was honored with the Literature prize for his innovative plays and prose that give voice to the unsayable. The Peace Prize was awarded to Iranian activist Narges Mohammadi for her fight against the oppression of women in Iran and her efforts to promote human rights and freedom for all. Lastly, Claudia Goldin received the Economic Sciences prize for her research advancing the understanding of women's labor market outcomes, providing insights into the historical and contemporary roles of women in the workforce.

VISION & MISSION

- **VISION OF THE INSTITUTION**

To be a centre of academic excellence empowering women in technical domain.

- **MISSION OF THE INSTITUTION**

Imparting value based technical education for transforming young women to professionals excelling globally in academics, research & development and industry meeting societal challenges.

- **VISION OF THE DEPARTMENT**

To become a centre of excellence in Electronics, Communication, Instrumentation and Computer Engineering to facilitate professional education and research keeping higher level of value systems.

- **MISSION OF THE DEPARTMENT**

M1 : To transform young women to high quality engineers, entrepreneurs and researchers with ethical values.

M2 : To contribute creative engineering solutions to industry by keeping pace with latest technological advancements.

M3 : To provide intellectual services to the society by the application of Electronics, Communication and Computer Engineering.