ISSUE 7

CIRCARDIAN

The official magazine of the department of
Artificial Intelligence and Machine Learning

DECEMBER

The official magazine of the department of Artificial Intelligence and Machine Learning

The magazine committee extends its deepest appreciation to **Dr Rajesh I S**, faculty coordinator, for the successful completion of the magazine

The Founders

The history of BMS institutions rewinds back to the year 1946 with the establishment of the first private engineering college in the country, BMS College of Engineering (BMSCE), by late Sri B.M Sreenivasaiah. He was a philanthropist and a great visionary who realized the necessity of technical education even before the country got independence. He was honored by the Maharaja of Mysore with the title "Dharma Prakasha Raja Karya Prasaktha" for his extraordinary service in the field of education.

The legacy he once began is being upheld with the same zeal by his inheritors and they continue to cherish his vision and ideals. After the sad demise of Sri B.M Sreenivasaiah, his renowned son, Sri B.S Narayan, a vibrant and ingenious personality, molded BMS College of Engineering into one of the finest engineering colleges.

Shri B. M Sreenivasaiah
Founder, BMS Institutions

Shri B. S. Narayan
Founder & Donor Trustee

Apart from BMS College of Engineering, he had also established other institutions that promoted higher education which includes BMS College of Law, BMS College of Women, and BMS Evening College of Engineering. He was extremely supportive in the initiation of several collaborative programs such as training foreign students under the International Co-operative Division, cross-cultural programs with Melton Foundation U.S.A, etc.

BMS Institute of Technology (BMSIT), established in the year 2002 is one of the six institutions under BMS Educational Trust, is managed by a council of trustees appointed by Dr. B.S. Ragini Narayan, the successor of Late Sri B.S Narayan and the donor trustee and Member Secretary of BMS Educational Trust and it is one of the best engineering college in Bangalore. BMS School of Architecture is the latest addition to the BMS group of institutions

CONTENTS

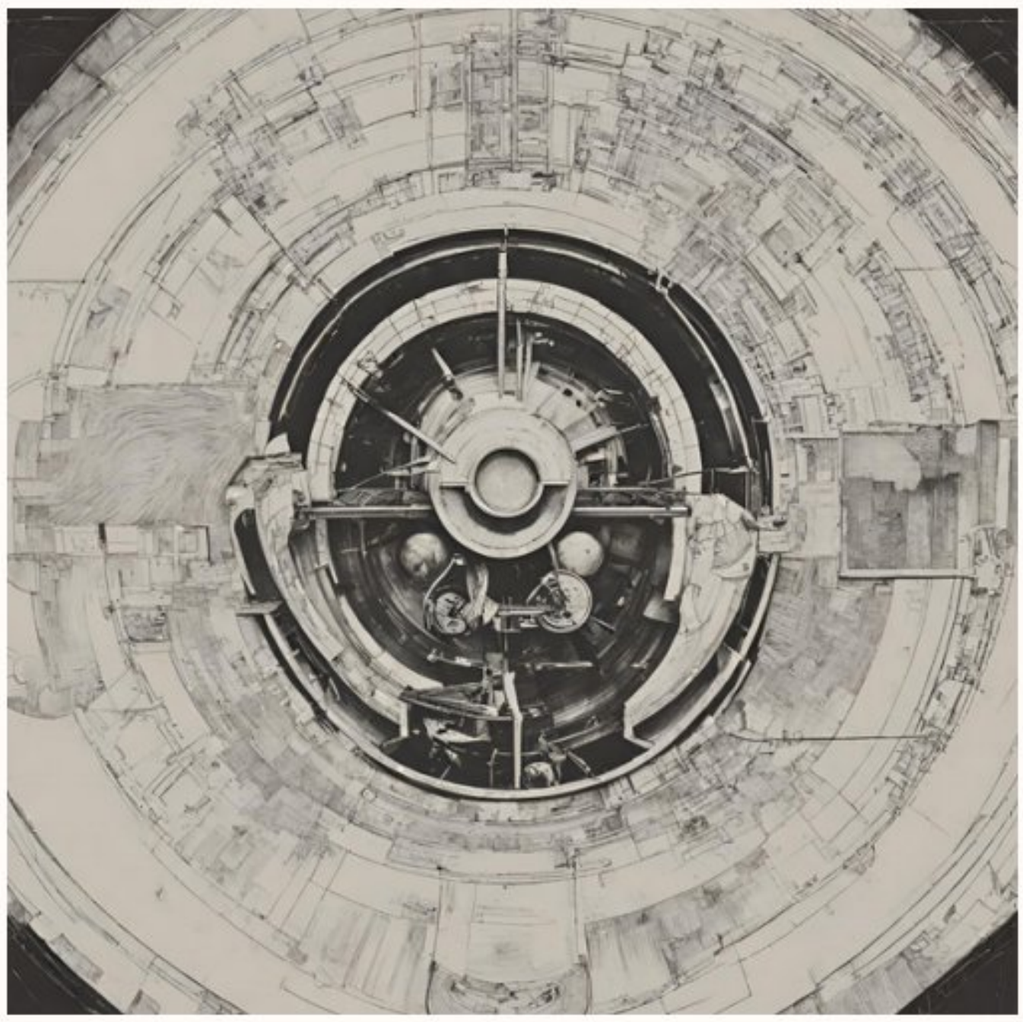
INTRODUCTION

SECTION-2

SECTION-3

Vision

To develop professionals equipped to build sustainable and intelligent solutions that effectively interact with the natural intelligence towards creating a digitally empowered environment for future generations, safeguarding social ethics



Mission

To enable students with the spirit and power of interdisciplinary acumen by integrating a world of knowledge into a world of intelligent systems and subsystems. boost academic outcomes through place-based education and collaborations with establishment reserach labs and industries. Encourage entrepreneurship efforts among students and develop them into great leaders.

HoD's Message

It gives me immense pleasure to present another issue of "Circadian" from the department of Artificial Intelligence and Machine Learning. This is a half yearly newsletter where all the departmental activities which includes both students and teachers are brought under one folder. The Department of Artificial Intelligence and Machine Learning is showing consistent improvement in its academics, research and placement performance. This Magazine showcases the talents of the students and the achievements of the faculties in the department. I congratulate the editorial team for their effort and hard work for covering the information. Wishing best of luck to all of them.....

Dr Anupama H S
Associate Professor and HoD
Department of Artificial Intelligence and Machine Learning

COMMITTEE *Introduction*

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BRAINIUM

The technical forum of the department of Artificial intellingence and machine learning has evolved over the last one year. The main aim of this forum is to help students develop skills and knowledge, which can be applied into their projects and future careers. The forum hosts a plethora of events such as workshops, webinars, clutural and technical fests, and expert talks, helping the students connect with the best of the industry.

AAAI

It brings us immense exuberance to share that Brainium is now a member of the AAAI **(ASSOCIATION FOR THE ADVANCEMENT OF ARTIFICIAL INTELLIGENCE)** organization, a rightful place for the students of our institution to be exposed to the plethora of opportunities that lie ahead.

Founded in 1979, the Association for the Advancement of Artificial Intelligence (AAAI) is a nonprofit scientific society devoted to advancing the scientific understanding of the mechanisms underlying thought and intelligent behavior and their embodiment in machines. AAAI aims to promote research in, and responsible use of, artificial intelligence. AAAI also aims to increase public understanding of artificial intelligence, improve the teaching and training of AI practitioners, and provide guidance for research planners and funders concerning the importance and potential of current AI developments and future directions.

Members throughout the world benefit from AAAI's efforts in research. Major AAAI activities include organizing and sponsoring conferences, symposia and workshops; publishing a quarterly magazine for all members; publishing a series of books, proceedings, and technical reports; compiling a host of online resources and publications; and awarding grants and scholarships. AAAI is committed to fostering student interest and development in the field of artificial intelligence. Student members are eligible for conference grants and fellowships, and receive publishing opportunities through AAAI conferences, workshops, and symposia.

Special networking and mentoring events are offered at the annual AAAI conference, as well as other AAAI meetings. AAAI promotes student career advancement through its annual job fair program and through recognition of exceptional work with special student research awards

Designing Tomorrow: The Impact of AI on the Dawn of Designer Babies

"We must address, individually and collectively, moral and ethical issues raised by cutting-edge research in artificial intelligence and biotechnology, which will enable significant life extension, designer babies, and memory extraction." —Klaus Schwab

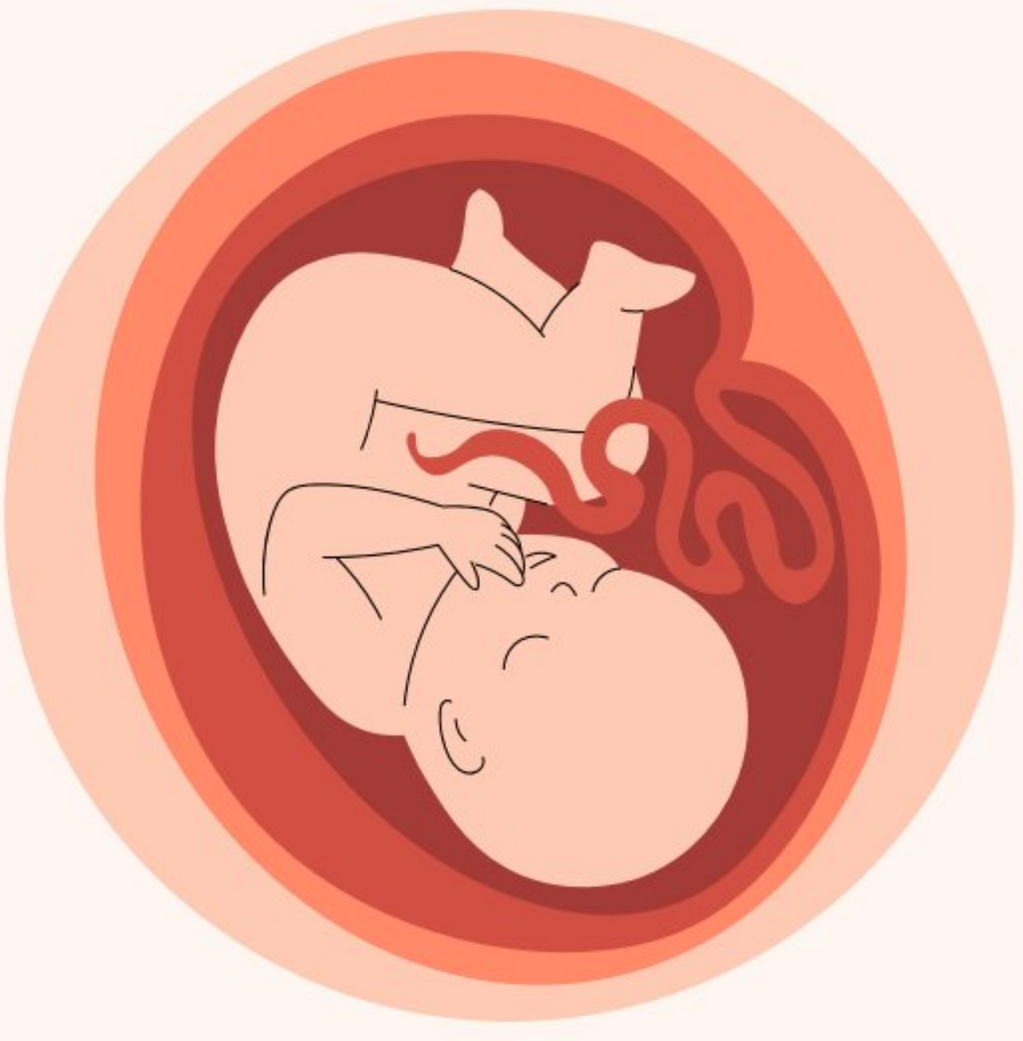
ChatGPT has taken the world by storm, making every day tasks easier. LLMs and generative transformer models have a vast field of application ranging from creating a travel itinerary to writing a paper. But what if we made its application more specific? What if we could change the very way a child inherits genes? This is where the discussion of designer babies come in. So what exactly is it: The idea of selecting or manipulating traits in offspring constitute the creation of a designer baby.

Although it gained prominence in the late 1990s, the basic idea of a designer baby has been around for generations. This idea of picking a favoured gene involves using technologies such as CRISPR-Cas9(a gene editing tool used to alter the DNA of an embryo). The intersection of AI with the concept of designer babies encompasses various dimensions. One significant aspect involves the use of AI and machine learning algorithms for Genetic Prediction and Selection. By analyzing extensive sets of genetic data, these algorithms can predict the likelihood of certain traits or genetic conditions. This opens the possibility of selecting embryos with specific desired characteristics, raising ethical questions about the potential consequences of manipulating the human genome and the associated risks of unintended consequences.

Nidhi Umashankar
5th semester, AI&ML
1BY21AI036

As AI facilitates the accessibility of genetic and personal information, concerns about Data Privacy and Security become paramount. The sensitive nature of genetic data and the potential consequences of unauthorized access underscore the need for robust privacy and security measures. The ethical handling of genetic information is integral to maintaining public trust in the responsible development and use of genetic technologies.

While the concept of designer babies takes center stage, AI's role extends beyond ethical considerations to Medical Applications. AI contributes to genetic research and personalized medicine by assisting in the identification of disease-related genes and potential treatments. This aspect, while separate from the idea of designer babies, is part of the broader landscape of leveraging AI in healthcare for improved diagnostics and targeted therapies.



STUDENT INDUCTION PROGRAMME (SIP) 2023-24

The inauguration of the STUDENT INDUCTION PROGRAMME (SIP) 2023-24 marked a significant milestone at our institute, ushering in a new era of learning and exploration for 100 students specializing in Artificial Intelligence and Machine Learning (AI & ML) and an additional 30 students from the Computer Science and Business Systems (CSBS) department. Held on September 4, 2023, this immersive program unfolded over the course of ten days, concluding on September 14, 2023, providing a comprehensive introduction to the academic and research landscape.

The program commenced with an enlightening session that delved into the institute's overarching vision and mission. It was an opportunity for students and their parents to gain insights into the central facilities, offering a panoramic view of the resources at their disposal. From cutting-edge laboratories to well-equipped research centers, the orientation provided a holistic understanding of the technological infrastructure supporting advanced studies in AI & ML.

A critical aspect of the induction program was the exposition of academic and assessment rules. This transparent communication ensured that both students and their parents had a clear understanding of the expectations and requirements, setting the stage for a smooth academic journey. By demystifying the academic landscape, the program instilled a sense of responsibility and ownership among the students, fostering a conducive learning environment.

The collaborative efforts of the Departments of AI & ML and CSBS played a pivotal role in the success of the program. Faculty members from both departments worked seamlessly to organize and execute a program that catered to the diverse needs of the students. The cross-disciplinary nature of the initiative encouraged students to explore the intersections between AI & ML and Computer Science and Business Systems, promoting a well-rounded education that goes beyond disciplinary boundaries.

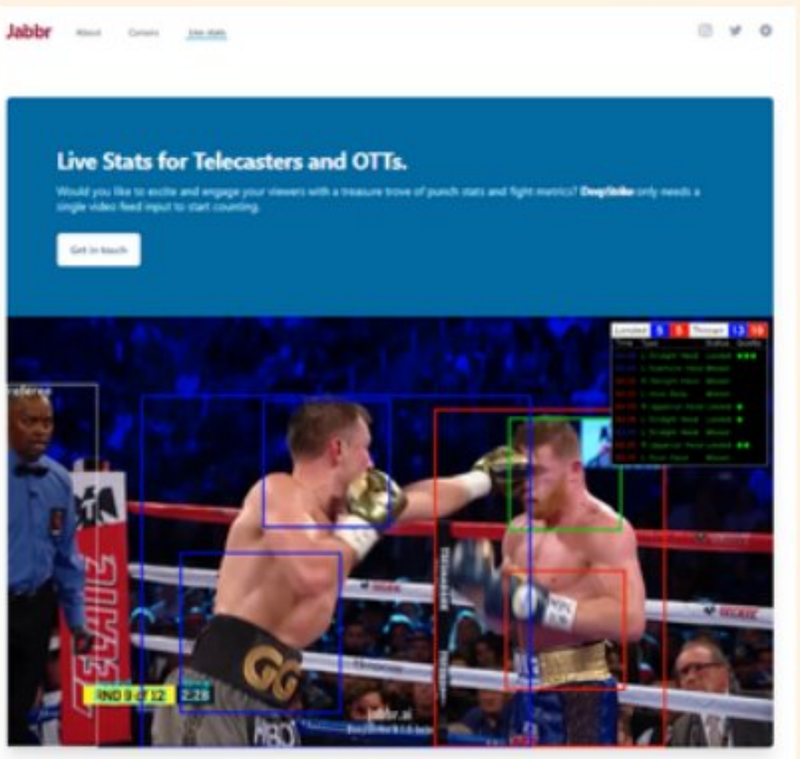
Throughout the ten-day program, students engaged in a series of workshops, hands-on sessions, and interactive lectures facilitated by distinguished faculty members. The feedback received from participants highlighted the effectiveness of the program in fostering a sense of camaraderie, establishing a strong foundation for academic pursuits, and igniting a passion for cutting-edge research.

The participation of parents added a valuable dimension to the induction program, creating a supportive ecosystem for the incoming students. The orientation provided a platform for networking and community building, essential elements for a successful academic journey.

As the Student Induction Programme 2023-24 concluded, our institute stands poised to welcome a fresh cohort of AI & ML enthusiasts. This initiative, with its emphasis on exploration, collaboration, and discovery, serves as a testament to our commitment to nurturing the next generation of innovators. The groundwork laid during this immersive experience positions these students to make significant contributions to the dynamic and evolving field of artificial intelligence and machine learning.

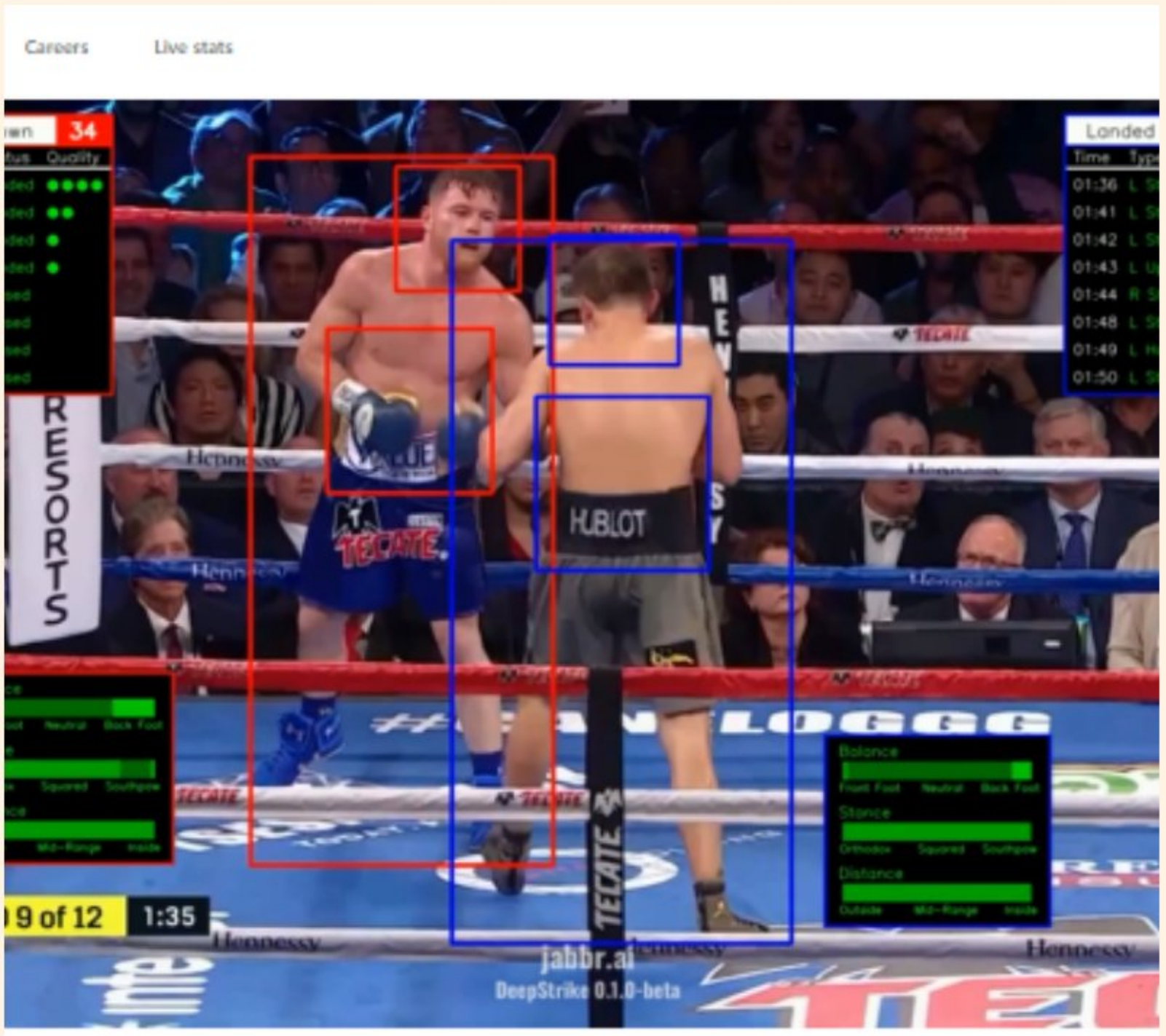
We extend our heartfelt gratitude to all faculty members, organizers, and participants for their contributions in making the Student Induction Programme a resounding success. Here's to a promising academic year filled with exploration, discovery, and breakthroughs in the dynamic world of AI & ML!

AI IN COMBAT SPORTS: DEEPSTRIKE



The Evolution of Boxing

When it comes at the field of artificial intelligence, an overlooked field of application would be that of combat sports but the tech business company named jabbr.ai has implemented a fully fledged artificial intelligence that is used to analyze combat sports. The AI collects and uses vast parameters, all specific to the field combat sports. The parameters include every punch thrown, missed, landed, footwork and stance. The AI then aggregates the data in 50 metrics for each individual boxer and provides an accurate and complete analysis of their performance. It can also be used to detect certain actions that may be considered to be foul play and can help the referees make key decisions. The scope of AI is far greater than just a single use case. Some other applications may include data science and analytics, since the AI is capable of collecting up to 50 metrics, the input will be varied and thorough and can provide a very deep insight into various aspects of the sport.



The Future of Deepstrike

The AI focused jabbr.ai team has been working on deepstrike for over two years and is the first computer vision AI that focuses on combat sports. The AI is incredibly useful in the professional and the consumer space. Professionally, the deeper insight provided by the AI can assist in delivering a fairer outcome. On the consumer end, fans can be provided a deeper understanding of the sport and therefore enjoy it more. Retaining viewers and enhancing the experience of the viewers while drawing in new fans is key; keeping this in mind, evolving the way fans watch and interact with the sport using AI is paramount to keep the fans engaged and involved.

Deepstrike, although already in use, still has room for development. The jabbr.ai team is only looking to further improve and progress deepstrike as time goes on.

Rahul Unnikrishnan
5th semester, AI&ML
1BY21AI042

Expert Talks

The Department of Artificial Intelligence and Machine Learning (AIML) at our institute facilitated a series of enlightening expert talks, offering invaluable insights to 1st-semester students specializing in AIML and Computer Science and Business Systems (CSBS). These talks, held on September 9, 2023, and September 13, 2023, brought together esteemed professionals to share their expertise on pertinent topics in the field of artificial intelligence.

On September 9, 2023, Mr. Sushanth Rajesh Kumar, an industry expert, delivered an insightful talk on "Current Trends in AI" to the 1st-semester students of AIML and CSBS. Mr. Kumar's expertise provided students with a comprehensive understanding of the latest developments and emerging trends in the dynamic field of artificial intelligence.

Following this, Dr. Sanjay H.S, a distinguished figure in the industry, presented a talk on "Career Guidance" on the same day. This session was tailored to meet the career development needs of 1st-semester students in both AIML and CSBS, providing them with valuable insights into potential career paths within the AI domain.

Continuing the series, on September 13, 2023, the Department of AIML organized another expert talk on "Current Trends in AI," this time featuring Dr. Narayan K, a respected expert in the field. Dr. K's talk focused specifically on 1st-semester AIML students and CSBS students, offering a deeper dive into the evolving trends shaping the landscape of artificial intelligence.

These expert talks served as a bridge between theoretical knowledge and real-world applications, exposing students to the practical facets of the AI industry. The participatory nature of these sessions allowed students to engage directly with industry professionals, posing questions and gaining valuable insights that go beyond traditional classroom learning.

By aligning these expert talks with the current needs of the industry and providing guidance on career paths, the Department of AIML has demonstrated its commitment to preparing students for success in the rapidly evolving field of artificial intelligence. As our 1st-semester students embark on their academic journey, armed with insights from these expert talks, we anticipate their enhanced understanding and preparedness for the exciting challenges and opportunities in AI.

MICROSOFT 365 COPILOT

Vishishta Shenoy
3rd semester, AI&ML
1BY22AI123

humans are hard-wired to dream, to create, to innovate. Each of us seeks to do work that gives us purpose — to write a novel, to make a discovery, to build strong communities, to care for the sick. But today, we spend too much time consumed by the drudgery of work on tasks that zap our time, creativity and energy. Repeatative and monotonous tasks.

Who are co-pilots? Co-pilots assist the pilot in flying an aircraft. They help with navigation, communication, and monitoring systems.
Introducing Microsoft 365 Copilot — your copilot for work. It combines the power of LLMs with your data in the Microsoft Graph and the Microsoft 365 apps to increase productivity.

Copilot is integrated into Microsoft 365 in two ways. It works alongside you, embedded in the Microsoft 365 apps you use every day — Word, Excel, PowerPoint, Outlook, Teams and more — to unleash creativity, unlock productivity and uplevel skills. Second is Business Chat. Business Chat works across the LLM, the Microsoft 365 apps, and your data — your calendar, emails, chats, documents, meetings and contacts — to do things you've never been able to do before.

With Copilot in Word, you you never start with a blank slate again. Copilot gives you a first draft to edit and iterate on — saving hours in writing, sourcing, and editing time. You're always in control as the author, driving your unique ideas forward, prompting Copilot to shorten, rewrite or give feedback. Copilot in PowerPoint helps you create beautiful presentations with a simple prompt, adding relevant content from a document you made last week or last year.

With Copilot in Excel, you can analyze trends and create professional-looking data visualizations in seconds.

We all want to focus on the 20% of our work that really matters, but 80% of our time is consumed with repetitive monotonous tasks. Copilot lightens the load. From summarizing long email threads to quickly drafting suggested replies. It helps you clear your inbox in minutes, not hours. And every meeting is a productive meeting with Copilot in Teams. It can summarize key discussion points including who said what and where people are aligned and where they disagree and suggest action items, all in real time during a meeting. And with Copilot in Power Platform, anyone can automate repetitive tasks, create chatbots and go from idea to working app in minutes.

With Copilot, you're always in control. You decide what to keep, modify or discard. Now, you can be more creative in Word, more analytical in Excel, more expressive in PowerPoint, more productive in Outlook and more collaborative in Teams.

Ayudha Pooja, a celebration infused with spiritual fervor and cultural richness, unfolded with grandeur at the AIML Department on October 21, 2023. The department resonated with an air of festivity as all laboratories, equipment, and the entire department floor were adorned with vibrant flowers, colors, and other decorative elements, creating a visually stunning ambiance.

On the auspicious morning of Ayudha Pooja, the members of the AIML Department congregated in the John McCarthy Lab at 9 a.m., marking the epicenter of the ceremonial activities. A small yet sacred altar took center stage, adorned with idols of deities, aromatic incense, and traditional lamps. The ambiance was imbued with a sense of sanctity and reverence.

Ayudha Pooja

The ceremonial proceedings commenced with a puja led by Dr. Niranjanamurthy, who guided the gathering through sacred hymns and prayers. The rituals were a testament to the collective prayers for the well-being and success of the college and its members. The principal, Dr. Mohan Babu G. N, and other distinguished individuals added grace to the occasion with their esteemed presence, enhancing the spiritual significance of the event.

Following the completion of the rituals, the attendees were treated to the distribution of Prasadam and sweets, symbolizing the blessings and goodwill shared among the devotees. This communal gathering not only strengthened the spiritual fabric of the AIML Department but also fostered a sense of unity and camaraderie among its members.

The celebration of Ayudha Pooja at the AIML Department transcended mere rituals; it was a vibrant tapestry of tradition, spirituality, and shared joy. As the vibrant colors and divine atmosphere lingered, the event left an indelible mark, reflecting the cultural richness and unity within the AIML community.

OPEN DAY- SEM 4

BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT'S OPEN DAY 2023: IGNITING INNOVATION, CELEBRATING EXCELLENCE, AND INSPIRING FUTURE TRAILBLAZERS.

On May 9, 2023, the campus of BMS Institute of Technology and Management was filled with an air of anticipation and innovation as it hosted Open Day 2023. This event served as a dynamic platform for students to showcase their Project-Based Learning (PBL) initiatives, providing a glimpse into the forefront of advancements across various disciplines.

The pivotal aspect of the day was the evaluation of projects by external judges, ensuring an unbiased and comprehensive assessment. Among the myriad of presentations, four exceptional projects were singled out to represent the epitome of student ingenuity.

In the spotlight was the Smart Attendance Management System, presented by the first group, which comprised Aayush Prasad, Anubhav Anand, Shekhar Suman, and Harshit Jain from the 4th-A section. Their project, guided by Dr. Chandrashekhar B N, secured the prestigious 1st Prize, lauded for its practicality and potential impact on educational institutions.

Another notable project was the second group's endeavor titled "Foot Physiology Analysis for Disorder Prediction and Display of Health Indicators." Nidhi Umashankar, Rahul Unnikrishnan, and Vaibhav MK from the 4th-A section, guided by Dr. Rajesh I S, earned the 2nd Prize for their innovative approach to health monitoring.

Another noteworthy project, "Second Story" by PBL Batch 07, featuring Aakash Nagamalli, Aryan Aiyappa, Anmol A, and Vismai A from the 4th-A section, added a touch of creativity to the mix.
PBL Batch 12 also left an impression with "Aquaxplorer: AUV Endeavour." Featuring Abhishek Aradhya B U, Nithin Parimi, Prajwal Reddy J, and Yogesh A from the 4th-A section, this project showcased the intersection of robotics and marine exploration.

The departmental winners were also announced, further recognizing excellence within specific academic domains. In the AI Department, the first group clinched the 1st Prize, while the second group secured the 2nd Prize, affirming their dedication, creativity, and the practical application of theoretical knowledge.

These projects not only showcased the students' ability to address real-world problems but also highlighted their dedication and creativity. The event left an indelible mark on the BMS Institute of Technology and Management's academic landscape, fostering a culture of innovation and problem-solving. Open Day 2023 was a celebration of academic achievements, inspiring future generations to push the boundaries of knowledge and make meaningful contributions to their respective fields.

OPEN DAY- SEM 6

BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT'S OPEN DAY 2023: IGNITING INNOVATION, CELEBRATING EXCELLENCE, AND INSPIRING FUTURE TRAILBLAZERS.

The buzz of innovation echoed through the Amphitheatre Academic Block at BMS Institute of Technology and Management on July 8, 2023, as the Department of Artificial Intelligence and Machine Learning hosted its Open Day. This event served as a culmination of the inventive ideas presented by 6th-semester students, predominantly focusing on Networking, Machine Learning, Big Data Analytics, and Image Processing. Initially, a total of 08 projects were unveiled on July 7, 2023, followed by a meticulous shortlisting process that led to the evaluation of four exceptional projects on Open Day.

The judging panel, consisting of Mr. Kaushik B, Infrastructure Engineer (IT) at Lowes Services India Pvt. Ltd, and Dr. Niranjan Murthi M, Assistant Professor in the Department of AI&ML at BMSIT&M, brought their expertise to critically assess the projects.
Among the standout projects, AI-1 presented "Maze Solver Using Reinforcement Learning." This project, led by A S Adithiyaa, Ravooru ArpitHa, Sakshi Sunil Neelgund, and Vandana Kumar Swamy, guided by Dr. Vishwa Kiran S, secured the coveted 1st Prize, showcasing a remarkable application of reinforcement learning.

AI-2 brought forth "Data Cleaner for Non-Image Datasets," earning the 2nd Prize. The team, led by Aravind Suresh, M S Kaushik, Manish A S, and Sandeep Arockia Samraj X, under the guidance of Dr. Rajesh I S, exhibited a practical solution for refining non-image datasets.
The roster continued with AI-3 presenting "Sales Prediction and Fraud Detection Using Machine Learning Techniques," guided by Dr. Pradeep K R. AI-4 featured "Subject Answer Evaluation System - AutoGrade," under the guidance of Dr. Bharati Malakreddy A. Both projects demonstrated an innovative approach to real-world challenges.

This Open Day was not merely a display of technical acumen; it symbolized a commitment to pushing the boundaries of knowledge. The winning projects exemplify the intersection of creativity, dedication, and the practical application of theoretical knowledge. The event left an indelible mark, fostering a culture of innovation and inspiring future breakthroughs in the realm of Artificial Intelligence and Machine Learning at BMSIT&M.

Stanford Alpaca

THE STANFORD ALPACA 7B

Off late, a variety of powerful AI language models such as ChatGPT and Google's BERT have been introduced to humanity. Such AI models are mainly used by industries to make predictions and implement crucial decisions based on data. Generative AI collects information and processes data from various sources, enhances data quality and provides the end-user with the desired(condensed) content. Building these AI models is a very sophisticated process involving highly qualified professionals and extreme dataset training.

Researchers at Stanford University's Department of Human-Centred Artificial Intelligence designed and developed Alpaca 7B, a robust iterative learning AI model finetuned from Meta's open-source Llama 7B model that behaves similarly to OpenAI's base model. It is a small, affordable and lightweight model of artificial intelligence that works perfectly on all computers.

HOW WAS THE ALPACA 7B BUILT?

A LlaMa (Large Language Model Meta AI) is a set of algorithms that are repeatedly trained using large datasets to gain insights and make logical decisions. Meta had publicly released its own version of LLaMA in order to help researchers gain expertise in the field of AI. Over the last year, large language models and natural language processing (NLP) systems have shown new capabilities to generate creative text, solve complex problems and make important predictions and more. Smaller models have been trained on more data sets and are easier to retrain or rectify incorrect outputs and fine-tune for specific potential products. LLaMA 7B is the smallest AI model and is trained on one trillion data sets.

To build Alpaca 7B, these Llama models were used as the base pre-trained language model and instruction following demonstrations were generated from OpenAI's other base models such as text-davinci-003. 175 tasks were adopted and simplified to generate 20 instruction-output pairs, hence, producing 52,000 unique instructions and respective outputs after supervised finetuning. The overall cost of the training data turned out to be around $500 and consumed just 3 hours on 8 80GB A100, a Graphic Processing Unit designed for deep learning tasks.

To help other researchers and developers design their own AI models, the Stanford team that built Alpaca 7B published all necessary instructions and datasets on tech platforms such as GitHub.

LIMITATIONS OF THE ALPACA 7B

The Alpaca 7B was made available for public on March 13th,2023 and was taken down just a week later due to rising ethical and safety concerns. Alpaca 7B has problems common to most other AI language models. These problems include biased, non-existent, inaccurate, faulty and harmful outputs.

To avoid the problem of bias, developers of Alpaca 7B have suggested retraining the model with larger, fair and diverse datasets. Data must be well-organized and its quality as well as processing must be prioritized. Reinforcement learning from human feedback mechanisms will be implemented to make sure the AI model is safe to use, stays up to date and maintains accuracy.

Now, Alpaca is intended only for academic research and any commercial use is prohibited due to the following three reasons:

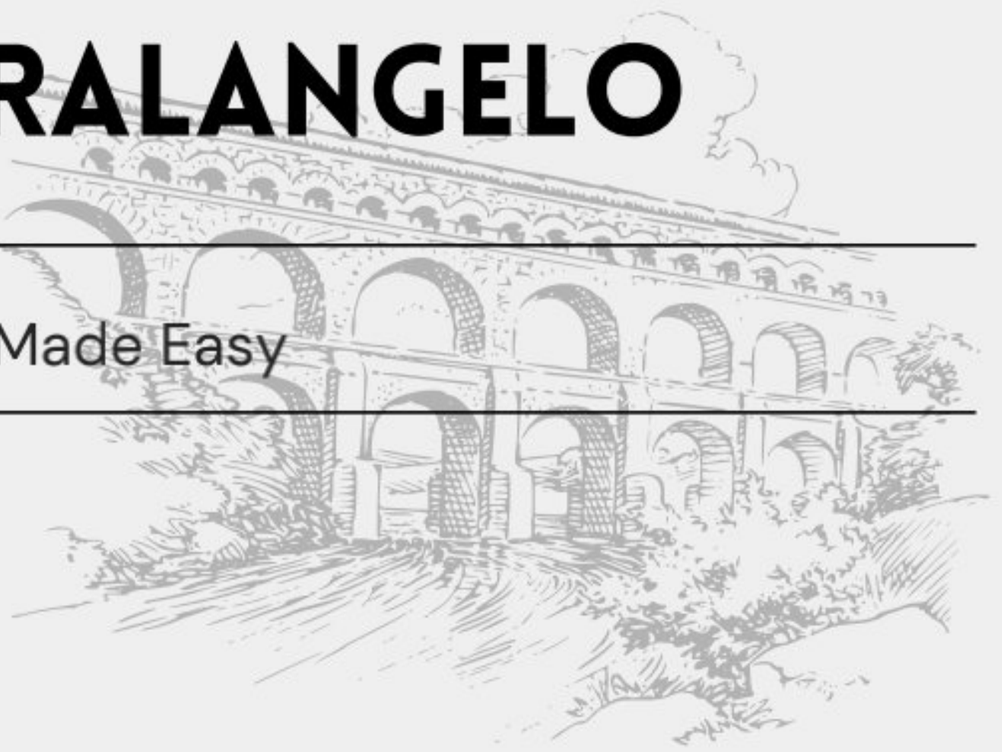
- It has a non-commercial license
- OpenAI's terms of use prohibit developing similar AI models that could be a potential competitor.
- This model raises safety concerns due to faulty outputs, deepfakes and market volatility

In today's world, such AI models can be a powerful weapon which could assist human society in automating tasks and improving efficiency in various sectors such as education, finance, healthcare and much more. Although AI offers innumerable benefits, we must use it carefully and ensure integrity as well as harness its potential in the right way to prevent any misuse. There must be a balance between advantages and constraints of AI to secure harmony in the community

Diya U Ghorpade
1st semester, AIML E -SECTION

NVIDIA NEURALANGELO

3D Modeling, Made Easy

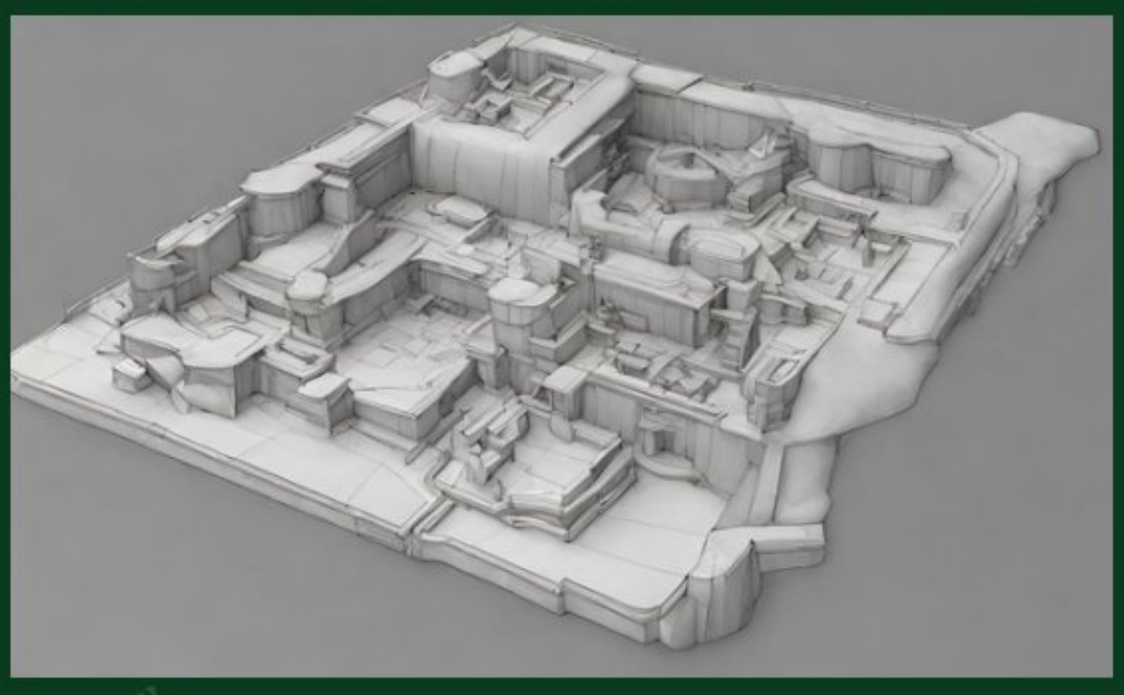


Three-dimensional (3D) modeling is the process of creating a representation of a physical object or a scene in a digital environment. Creating 3D models of real-world objects requires the time, financial, and expertise resources typically accessible only to movie studios and video game developers. This process involves the use of specialized software tools like Blender, Autodesk Maya, and others, and the techniques used in 3D modeling also require a high level of skill.

Neuralangelo is a new AI model developed by NVIDIA Research that can reconstruct 3D scenes from 2D video clips. With Neuralangelo, a smartphone camera is enough to record 2D videos for 3D reconstruction of that scenario. The new AI model, built by NVIDIA Research team, turns complex 2D video into highly accurate 3D replicas, capturing fine details of complex materials like roof designs, glass panes, and smooth materials.

Neuralangelo utilizes a neural surface reconstruction technique to generate high-fidelity 3D representations from multiview image sequences. This method leverages the power of neural networks to capture intricate details and structures, enabling the creation of realistic and accurate 3D models.

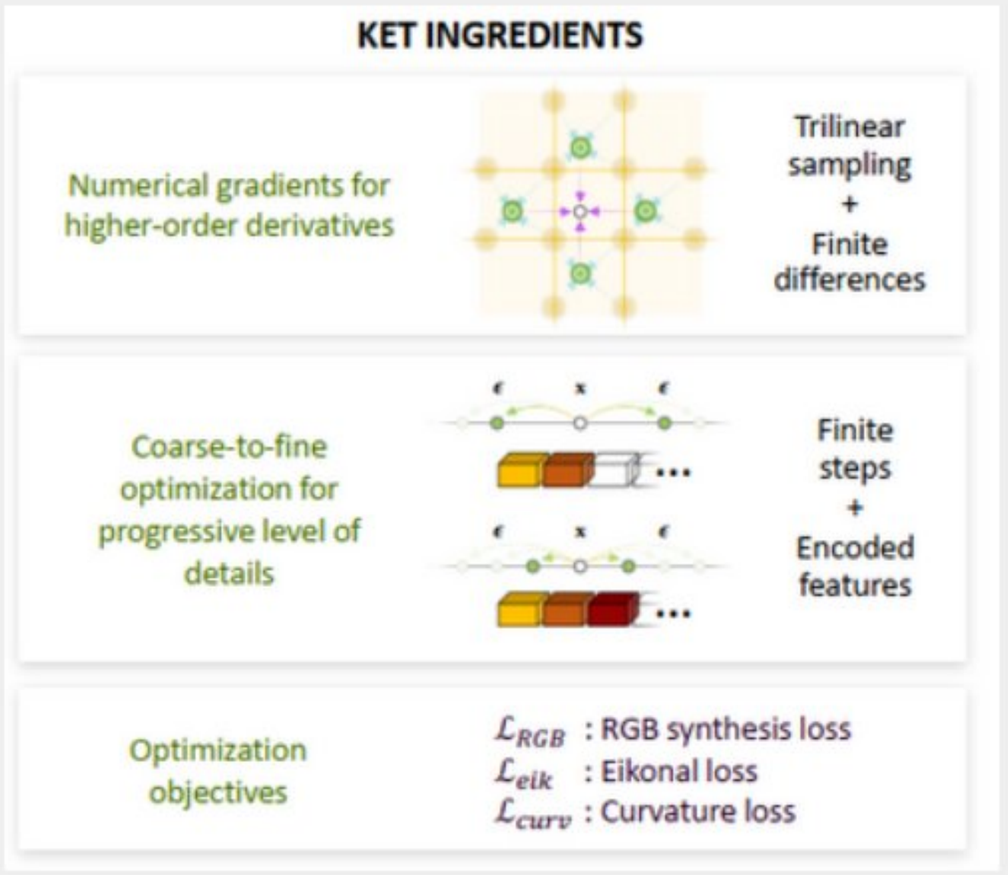
Neural surface reconstruction refers to the use of neural networks and machine learning techniques to generate three-dimensional (3D) surface representations from given data, typically point clouds or voxel grids. This process is commonly applied in computer vision, computer graphics, and medical imaging for tasks such as reconstructing 3D models of objects or anatomical structures.

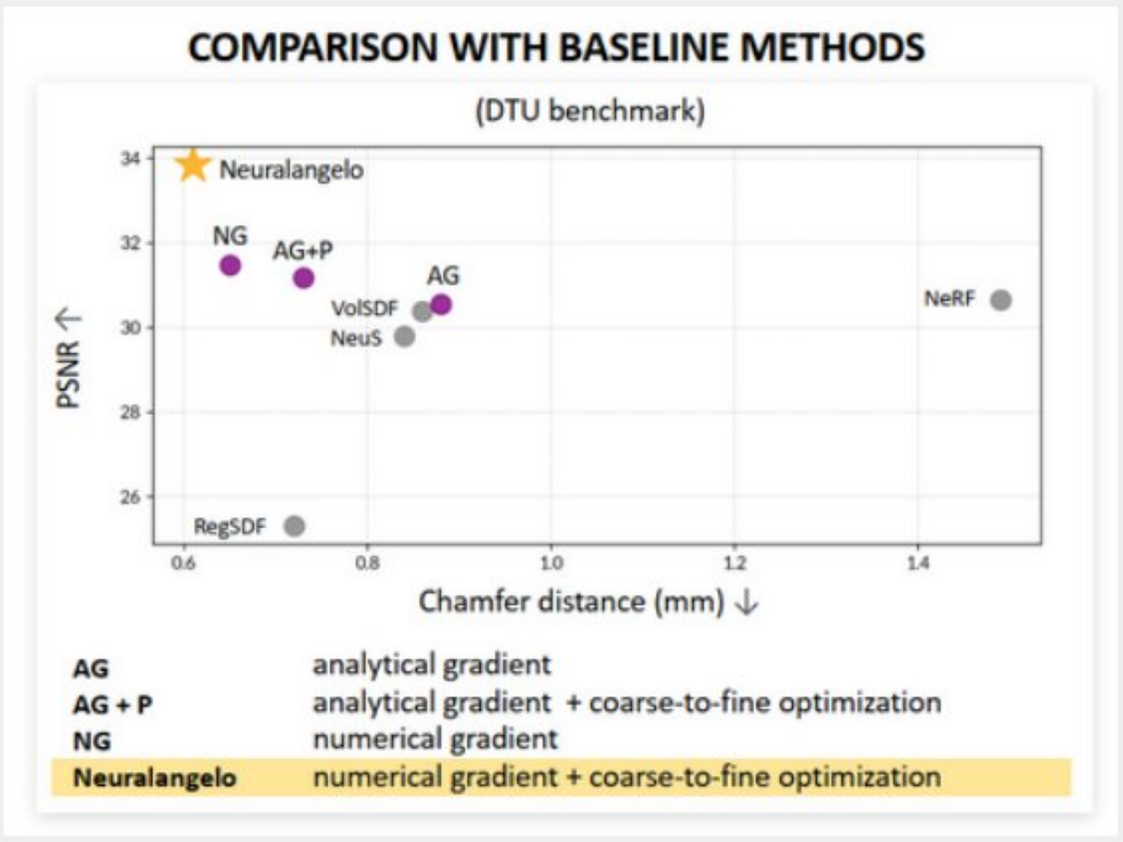


The core of Neuralangelo's approach lies in its employment of multiresolution 3D hash grids, which efficiently represent the 3D surface of an object. These hash grids are combined with neural surface rendering, a technique that utilizes neural networks to render images based on the underlying 3D structure.

The new approach is enabled by two key ingredients

- Numerical Gradients for Smoothing: Neuralangelo employs numerical gradients to compute higher-order derivatives, acting as a smoothing operation. This smoothing process helps refine the 3D representation, eliminating noise and producing smoother, more detailed surfaces.
- Coarse-to-Fine Optimization: Neuralangelo utilizes a coarse-to-fine optimization strategy, gradually refining the hash grids to progressively enhance the level of detail in the 3D reconstruction. This approach ensures that fine-grained details are captured while maintaining overall structural accuracy.





The NVIDIA Neuralangelo has also been recognized as one of TIME's Best Inventions of 2023.

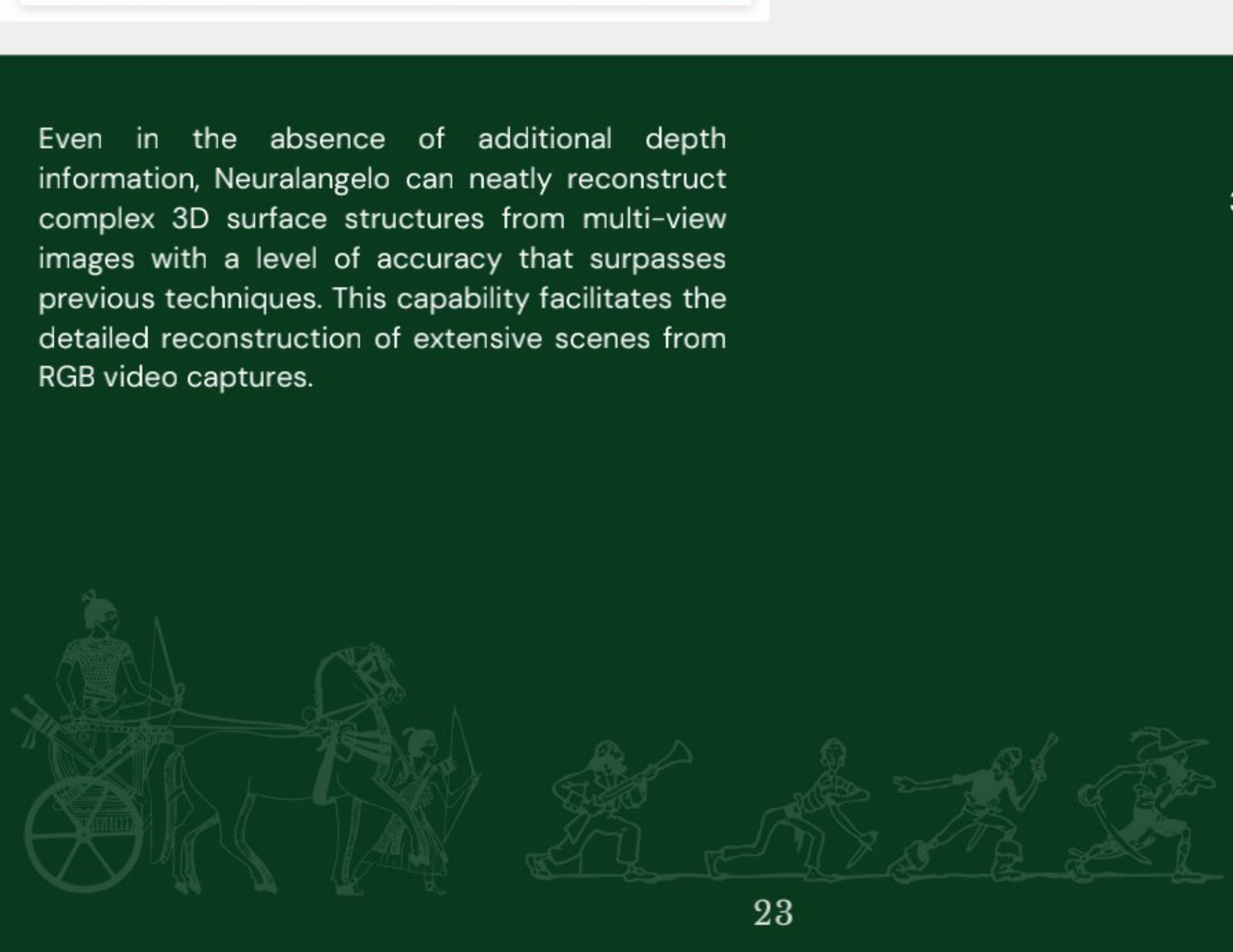
Neuralangelo can be used for a variety of applications, including:

- Creating digital twins of real-world objects and scenes.
- Developing new virtual reality and augmented reality experiences.
- Creating new forms of art and entertainment.

Neuralangelo is a powerful new tool that has the potential to revolutionize the way we interact with the digital world.

Even in the absence of additional depth information, Neuralangelo can neatly reconstruct complex 3D surface structures from multi-view images with a level of accuracy that surpasses previous techniques. This capability facilitates the detailed reconstruction of extensive scenes from RGB video captures.

Abhay Sharma
3rd semester, AI&ML
1BY22AI004



Faculty Achievements

DR ANUPAMA H S

- Dr Anupama H S, Associate Professor, Department of AIML Was a Resource Person For faculty development programme BMSIT&M, Bangalore, On the Topic “Mathematical Foundation For Python Programming & Data Science: Hands On Approach” On 06.11.2023 TO 10.11.2023.

DR NIRANJANAMURTHY M

- Dr. Niranjanamurthy M, Assistant Professor, Department of AI&ML, was Session Chair for International Conference on Evolutionary Algorithms and Soft Computing Techniques (EASCT- 2023) at RVITM, Bangalore on 21.10.2023.
- Dr. Niranjanamurthy M, Assistant Professor, Department of AI&ML, was a reviewer for the International Journal “Multimedia Tools and Applications” (Journal is indexed in SCOPUS and SCI)
- International Conference- citations : Kantharaju, V., Harish Kumar, G. Deepak, S. A. Karthik, M. Niranjanamurthy, and Kushal Gopal. “AIRFACTOR-Bangalore Based Air Pollution Monitoring and Prediction Application Using Machine Learning.” In 2023 International Conference on Network, Multimedia and Information Technology (NMITCON), pp. 1-6.IEEE, 2023.
- Book Chapter: Mamatha, T., A. Balaram, B. Rama Subba Reddy, C. Shoba Bindu, and M. Niranjanamurthy. “Applications and Advancements in Data Science and Analytics.” Data Engineering and Data Science: Concepts and
- Applications (2023): 409-439.

B. N. CHANDRASEKHAR

- B. N. Chandrasekhar, Assistant Professor, Dept of AI&ML, presented a paper titled “Forecast Model for Scheduling an HPC Application on CPU and GPU Architecture” 2023 3rd International Conference on Intelligent Technologies (CONIT-2023), pp. 1-5, DOI: 10.1109/CONIT59222.2023.10205724.) [SCOPUS].

DR BHARATHI MALAKREDDY A

- Dr. Bharathi M A, Professor, Dept. of AI&ML was session chair for IEEE INDISCON- 2023 organized by IEEE Mysuru Subsection at GSSS IETW, association with IEEE India Council and IEEE Bengaluru Section on 05.08.2023 to 07.08.2023
- Dr. Bharathi M A, Professor, Dept. of AI&ML, published a paper Titled "BPCPR-FC: Blockchain-based Privacy preservation with Confidentiality using Proxy Re-encryption and ring signature in Fog Computing environments" in International Journal of Information Technology (Springer-Q2 rated), published on 08.08.2023

DR PRADEEP K R

- Pradeep, K.R., Amar, A., Abhishek, S.T., Singh, G.R. and Sahana, N., 2023. "Sales Prediction and Fraud Detection Using Machine Learning Techniques". Tuijin Jishu/Journal of Propulsion Technology, 44(3), pp.2197-2207.
- Dr Pradeep K R, Assistant Professor, Department of AIML Was a Resource Person For faculty development programme BMSIT&M, Bangalore, On the Topic "Mathematical Foundation For Python Programming & Data Science: Hands On Approach" On 06.11.2023 TO 10.11.2023.

DR RAJESH I S

- Dr. Rajesh I S, Assistant Professor, Dept. of AI&ML, Session Chair for IEEE INDISCON-2023 organized by IEEE Mysuru Subsection at GSSS IETW, association with IEEE India Council and IEEE Bengaluru Section on 05.08.2023 to 07.08.2023
- Dr. Rajesh I S, Assistant Professor, Dept. of AI&ML, BoE Member for the School of Computing and Information Technology, at REVA University, Bengaluru on 23.08.2023
- Dr. Rajesh I S, Assistant Professor, Dept. of AI&ML, Distinguished Chief Guest for the Inauguration of "Google Developer Student Club (GDSC)" on 24.08.2023 at Kalpataru Institute of Technology, Tiptur.

Student Achievements

Lakshmi Sowmya, ganeshdarshan bhat and muqadasah won the THIRD PLACE in the GirlGeekHack'23 on the account of Computer Science Week by IEEE Computer Society Bangalore Chapter, hosted by NITK Surathkal, India from 29th November to 1st December, 2023.

Empowering Education

Empowering Education: AI&ML Department's Successful Parent-Teacher Meeting

The Department of Artificial Intelligence and Machine Learning (AI&ML) held a productive Parent-Teacher Meeting on December 9, 2023, from 9:30 am to 11:00 am at the John McCarthy Laboratory, BSN Block 5th Floor. Designed for parents of 1st-semester students, the meeting addressed academic concerns and provided valuable insights.

Approximately 40 parents attended, posing questions about academics, 1st internal assessment marks, and attendance. The Head of the Department (HoD) and faculty in-charges satisfactorily answered all queries, fostering transparency and alleviating concerns.

The discussion included a detailed breakdown of 1st internal assessment results, reassuring parents about the rigorous evaluation process. The importance of attendance for a holistic learning experience was emphasized, along with initiatives to keep students engaged.

Parents expressed appreciation for the college's facilities, infrastructure, and the various activities organized by the AI&ML Department. The meeting successfully strengthened the bond between the institution and parents, setting a positive tone for continued success and growth in the department.

STUDENT *Submissions*

I still remember that day

Teenaged were we,
I started writing the letter,
Friends were like "finally something's better."
Little did they know I did lack courage,
To go and give you this message.

There was always a stone in my heart,
Keeping me from gathering all the strength apart.
"What if you said no?",
Brought down all my glow.

This time it was a bit different, cause my friends were behind my back,
Failure is a stepping stone not a setback.
First day of spring,
Weather with a new wing.

I gave this letter on this pink evening,
As always anxiety on full fling.
I asked her to reply for it tomorrow,
Hoping this was a great flow.

She didn't come the next day and a couple of days too,
I never got an answer to this insane flu.
Hoping this wait will once be over,
Looking at the balcony, near to the stone, I grew a flower.

Neha A Myageri
Roll 36 ,AIML G section

Kushal C S, 1BY22AI400

TRANCENDENCE UNLEASHED

AI&ML DEPARTMENT'S TECH TRANSFORM EVENT

In a dazzling display of technological prowess, the Department of Artificial Intelligence and Machine Learning (AIML) recently hosted "Transcendence" as part of their Tech Transform initiative on the 22nd and 23rd of December 2023. The event was a captivating fusion of innovation, creativity, and skill, showcasing the department's commitment to providing students with a holistic and immersive learning experience.

The two-day extravaganza featured an array of engaging events, each designed to challenge and inspire participants. "PictionaryCipher," "Mystery Zing," "Prompt Fiesta," and "Digital Dystopia" were among the exciting activities that captivated the imagination of the attendees. These events not only tested the technical acumen of the participants but also encouraged out-of-the-box thinking and collaborative problem-solving.

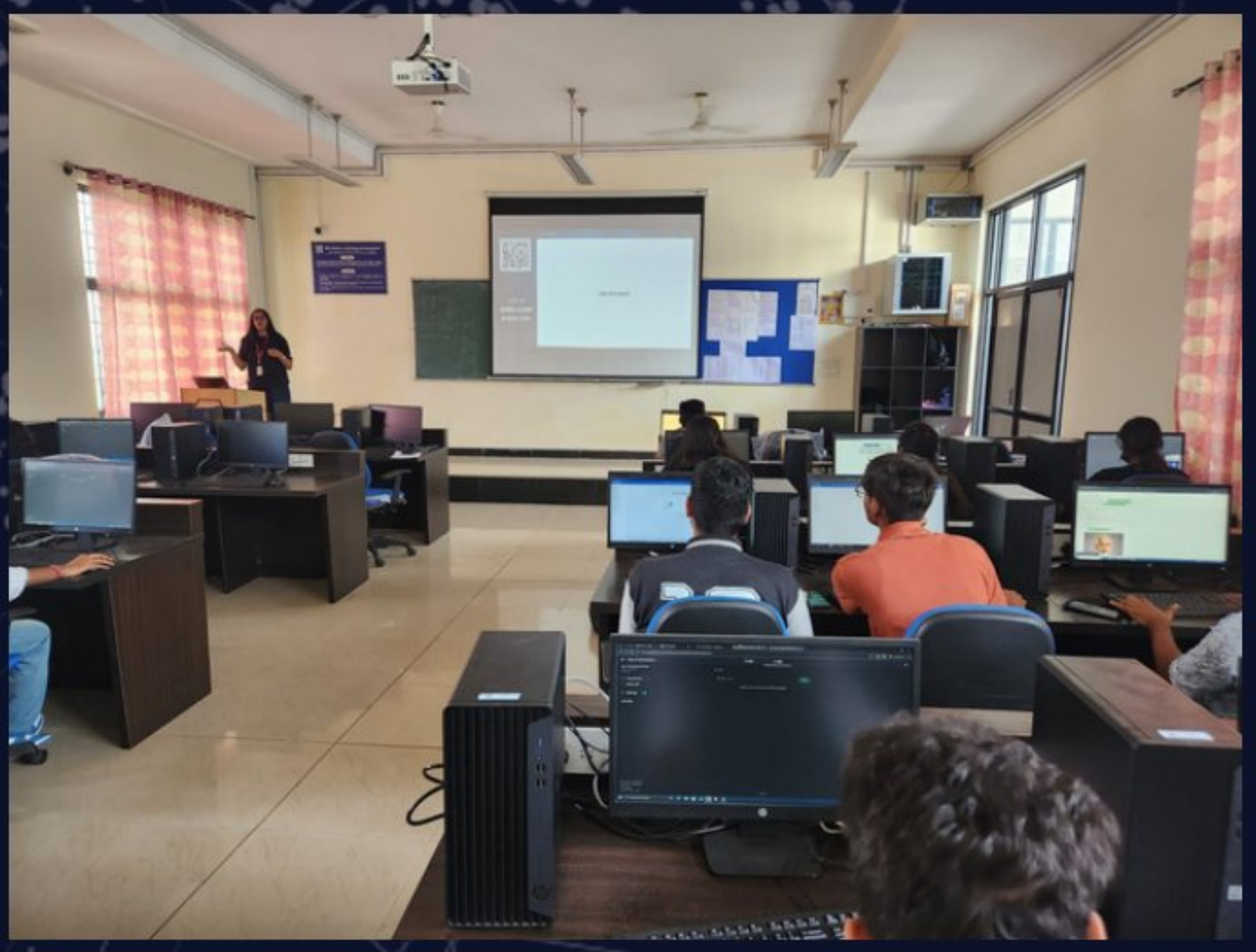
With about 25 students participating in each event, the competition was fierce, creating an atmosphere of excitement and camaraderie. The diverse range of challenges ensured that students from various backgrounds and skill sets had the opportunity to showcase their talents, fostering a sense of inclusivity and community within the AIML Department.

Adding to the immersive experience, the department went above and beyond by transforming their floors into a captivating space-themed environment. The creative decorations served as a visual representation of the limitless possibilities within the realm of artificial intelligence and machine learning. The attention to detail in the decor not only created an inspiring backdrop for the events but also reflected the department's dedication to making learning both enjoyable and visually stimulating.

"Transcendence" not only showcased the technical prowess of the students but also highlighted the AIML Department's commitment to nurturing a well-rounded educational experience. The event successfully brought together students, faculty, and technology enthusiasts in a celebration of innovation and creativity.

As the echoes of "Transcendence" linger, it is evident that the AIML Department's Tech Transform initiative goes beyond traditional academic boundaries. By organizing events that blend technical expertise with creativity, the department continues to inspire students to push the limits of what is possible in the exciting and ever-evolving field of artificial intelligence and machine learning. "Transcendence" has indeed set a high bar for future events, leaving participants eager for the next chapter in the department's journey towards technological excellence.

Snapshots from the events



As we draw the final pages of this edition to a close, the team behind **CIRCADIAN** would like to extend our heartfelt gratitude to each and every one of our esteemed readers.

It has been an incredible privilege to curate and present the captivating stories, insightful articles, and stunning visuals that have filled the pages of this magazine.

We sincerely hope that our content has enriched your lives, broadened your perspectives, and ignited your passions. May the words and images within these pages continue to inspire and entertain you. Happy reading!