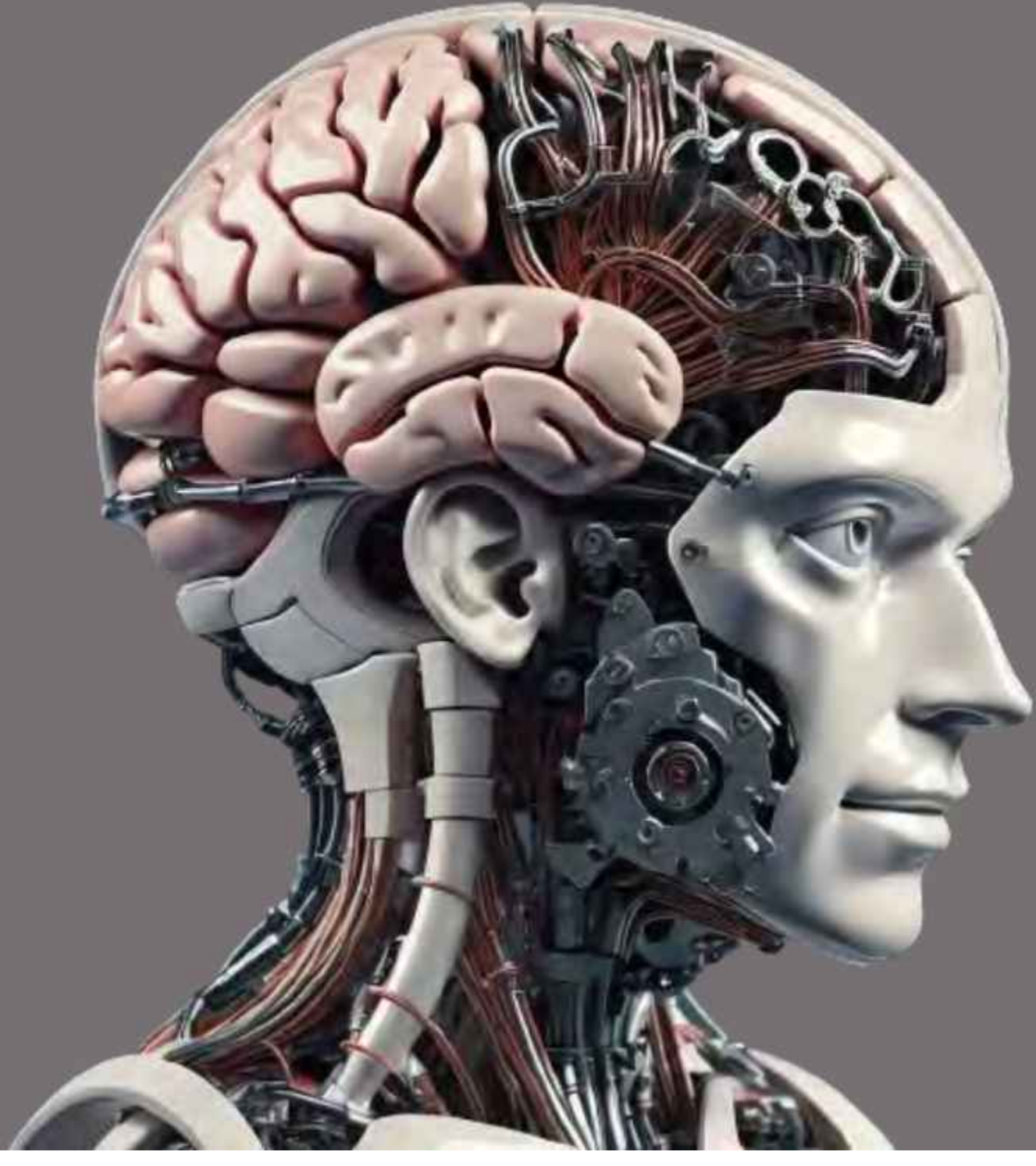
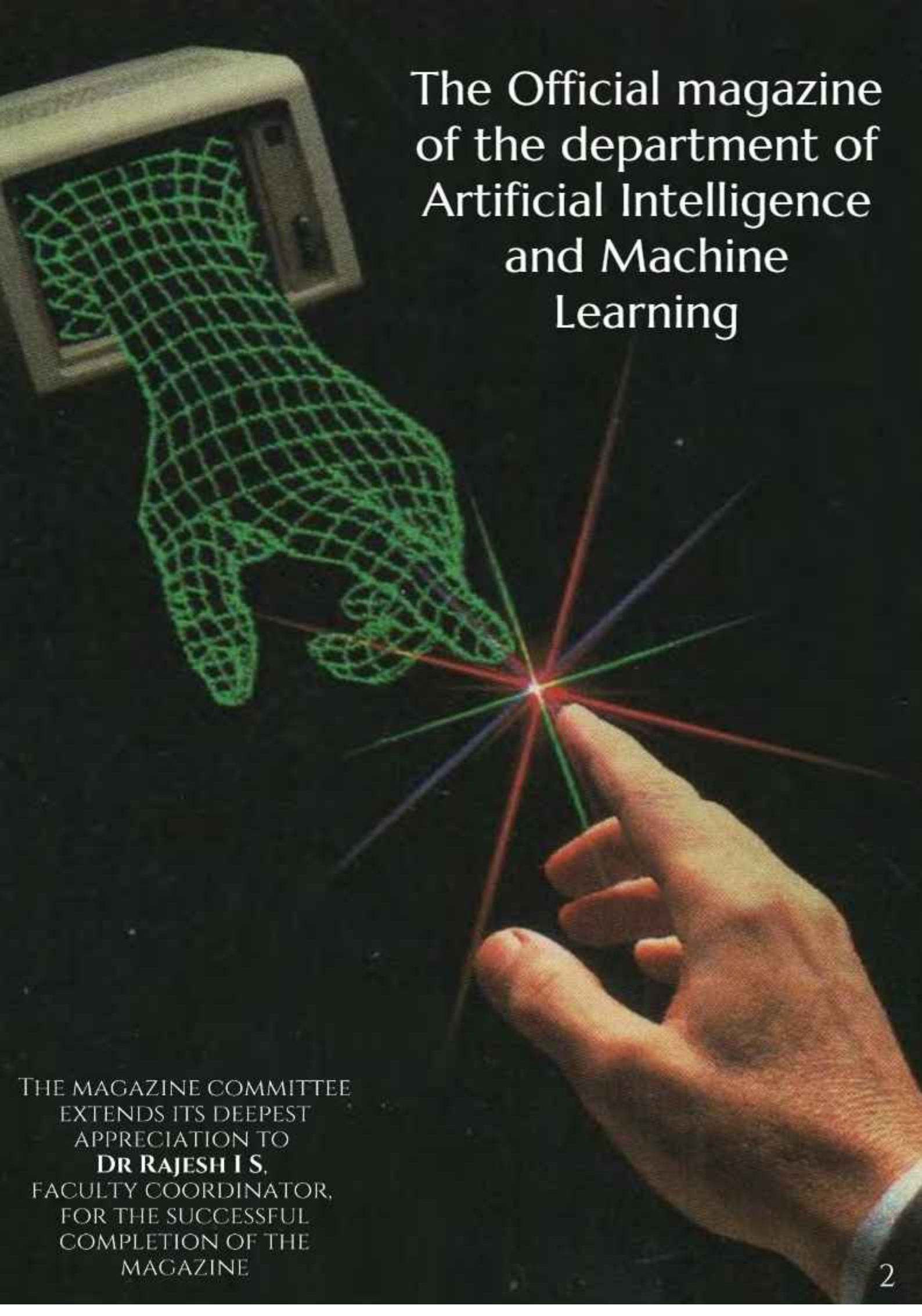
ISSUE 9

CIRCARDIAN

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

JANUARY





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

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

Shri B. S. Narayan
Founder & Donor Trustee

Shri B. M Sreenivasaiah
Founder, BMS Institutions

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.

CIRCADIAN 09

ISSUE

Vision & Mission

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.

A Message From HOD's Desk

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

Professor and HoD

Department of Artificial Intelligence and Machine Learning

A Message From Associate Head

Dr Pradeep K R
Associate Professor and
Associate Head of Artificial Intelligence and Machine Learning

Dear Students,

Greetings to the aspiring innovators and trailblazers of the AI & ML department! As you explore the vast frontiers of artificial intelligence and machine learning, remember that you're shaping a transformative future. Embrace curiosity, foster creativity, and nurture the collaborative spirit that drives progress.

Your dedication and passion are the keys to unlocking unimaginable possibilities. With cutting-edge advancements in Generative AI, Explainable AI (XAI), Natural Language Processing (NLP), and Reinforcement Learning, the potential for innovation has never been greater. These technologies are revolutionizing industries and creating new avenues for breakthroughs.

Stay ahead of the curve by embracing lifelong learning and experimentation. The world eagerly awaits the groundbreaking innovations you'll bring to light.

Committee

INTRODUCTION

Dr Rajesh IS
Faculty Coordinator

Nidhi Umashankar
Student Coordinator

Abhay Sharma
Editor-in-Chief

Vishishta Shenoy
Associate Editor

K Sai Geethanjali
Design Head

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.

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.

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.

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

CAN AI TAKE A JOKE?

EXPLORING THE RISE OF ROBOTIC COMEDY

Picture this: an AI robot walks into a comedy club, steps up to the mic, and with perfect timing, says, "Why did the robot bring a ladder? Because it wanted to reach new heights… of computation!" (This was totally AI generated). Sounds pretty good, right? But hold on a second—how did this robot figure out how to deliver that punchline? Was it programmed to make us laugh, or is AI actually starting to develop a sense of humor? As a 20-year-old engineering student who's spent more time debugging AI programs than socializing, I can't help but wonder—could robots be the next big comedians?

Believe it or not, AI's journey into the world of humor isn't as far-fetched as it seems. By using technologies like natural language processing (NLP) and machine learning, AI can break down jokes, comedy routines, and even the scripts of popular sitcoms. It's like teaching your machine to understand punchlines the way we understand a meme—through patterns, structure, and timing. The more data it processes, the better it gets at mimicking humor. In a way, AI is like that kid in school who spends all their time reading joke books to crack the best jokes at the lunch table, but has zero clue what "social awareness" is.

And yet, here's the kicker: AI isn't all that great at grasping the true essence of humor. You see, humor isn't just about clever wordplay or neat setups. It's about context, shared experiences, and understanding the subtleties of timing. I mean, who hasn't laughed at something that wasn't technically funny but was made hilarious by the situation? Imagine making an awful joke during an awkward silence in class—that's the kind of moment that makes humor truly human. And while AI can generate jokes and predict when a punchline should land, it will never feel that collective "we're all in this weird, funny situation together" vibe.

Technically speaking, AI's humor development is rooted in neural networks and reinforcement learning. Think of it like teaching a dog to fetch, but instead of fetching sticks, it fetches punchlines. These AI systems analyze massive amounts of comedic data and get "rewarded" when they generate responses that humans find funny. If you've ever laughed at a well-placed meme or a perfectly timed dad joke, then you're probably unknowingly part of the feedback loop that helps AI learn.

The most amusing part is that even with all the tech involved, AI can sometimes miss the mark. Take, for example, a recent experiment where an AI tried to write a joke. It came up with: "Why was the computer cold? Because it left its Windows open." While technically accurate (and possibly funny to some engineers), this is exactly the kind of joke that makes non-techies groan and sigh. Humor is about emotion, and an AI doesn't quite get why some things are inherently funny to one group and cringe-worthy to another.

"The good news, Dave, is that the computer's passed the Turing test. The bad news is that you've failed. "

So, as we dive into AI's future in comedy, it's safe to say it might become an assistant—an assistant with some decent punchlines, at least. It could be the next big thing at a robot comedy night, but it will never truly compete with the spontaneity and warmth of a human comedian cracking a joke just to lighten up a conversation. Think about this: an AI may be able to tell you that a joke is funny, but it'll never get that perfect timing when someone tells you a "dad joke" just to see you roll your eyes.

Now, let me leave you with a little joke of my own (don't blame me if it's terrible): Why don't engineers trust atoms? Because they make up everything… including this article.

In the end, while AI might make us laugh, it'll always be one step behind when it comes to the human touch—our ability to connect through shared laughter, awkward pauses, and perfectly-timed eye rolls. After all, humor is something that belongs to us, and we're not giving it up to a machine just yet. So, let's keep laughing, stay curious, and may our code always compile without bugs!

Rohit
1BY23AI129
3rd SEM

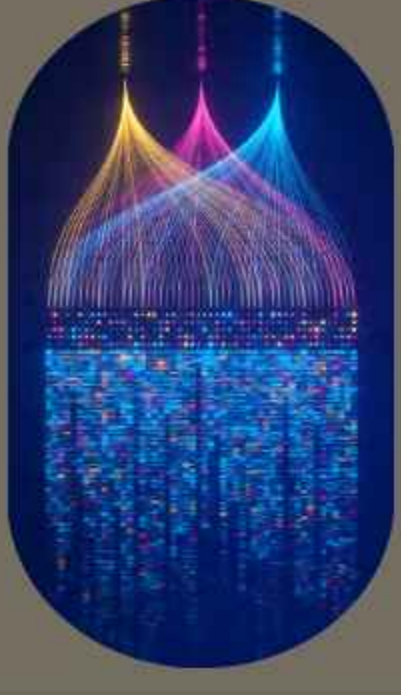
SYNTHETIC DATA

The Game-Changer for AI and Data Privacy

Synthetic data is created rather than obtained from actual events. It is alphanumeric data that is a product of an algorithm and is primarily meant to replace actual operational data in order to verify mathematical models. Moreover, this data is also used to further enhance deep learning and machine learning algorithms.

Why Synthetic Data Matters

Gaining access to authentic, real-life, high-quality data is often resource demanding, expensive and time draining. Synthetic data however, acts as a blessing in the form of cost and time saving and gives room for enhanced efficiency. The technology enables users to request for a specific amount of data and provides the opportunity to establish the parameters that the synthetic data needs to fulfil.

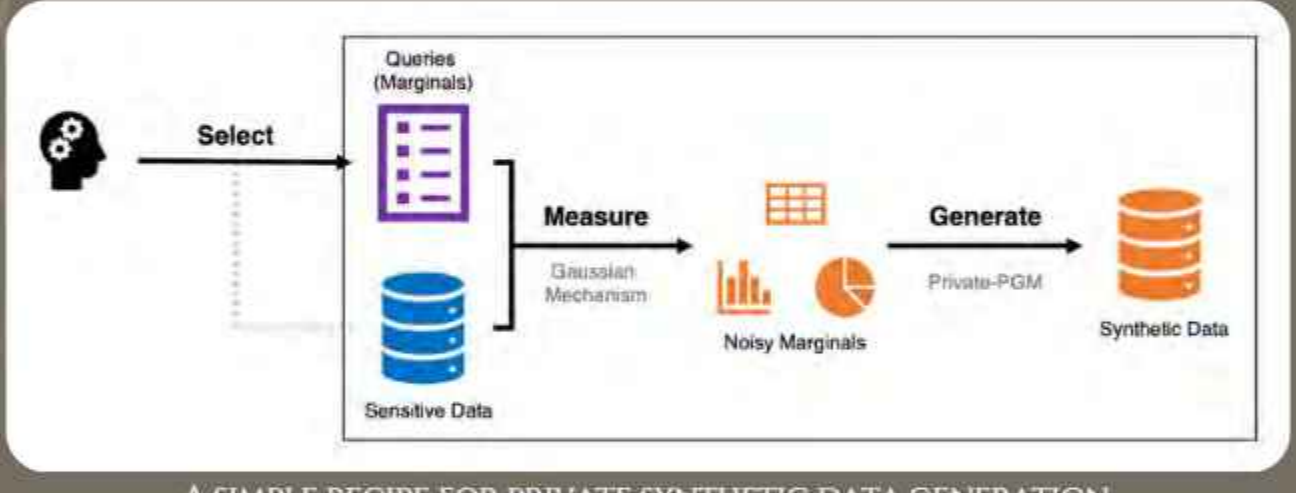


It is clear why synthetic data is gaining traction; it is much less costly than real-life data and offers a plethora of use cases and room for growth. There is a reason why Gartner has predicted it surpassing real-life data in terms of AI model implementation. It is noteworthy that there are many applications in this space, such as the training of neural networks and ML models, which do require a large set of labeled datasets, with schema on demand anywhere from a few thousand to a few million, for example. New datasets can be created easily with the help of synthetic data at an exceptional relief in cost and time spent, in comparison to using real world data. Paul Walborsky, co-founder of AI.Reverie (now a Meta company), once said, "An image is estimated to cost 6 dollars to 6 cents for synthetic production.

Privacy and Flexibility Synthetic data also helps maintain user privacy and it is therefore especially useful for sensitive industries such as healthcare. By simply opting to use synthetic data organizations will be able to meet the requirements of the privacy regulations while being able to glean useful information.

How Synthetic Data is Generated

The tools, algorithms and even the application has an impact on how synthetic data is created, and this method can be accomplished in a variety of different ways.
Common methods include:
Sampling from Distributions: Simply taking some values from distributions and using them to create data in a stochastic fashion.
Agent-Based Modeling: It involves modeling a complex system or surrounding environment by allowing agents (i.e. mobile devices, people, programs etc.) to interact with one another.
Generative Models: It generates data where the character of the data mimics that of the real data, and use algorithms to learn characteristics in real-world data and reproduce the same. These models physically recreate overlapping statistical characteristics as those observed in real datasets.



A SIMPLE RECIPE FOR PRIVATE SYNTHETIC DATA GENERATION

Synthetic Data and Its Benefits

Adaptable and Supervised: Specific objectives can be easily optimally achieved with customized data.
Improved Security: Risks of breaching sensitive user data are removed.
Economically Viable: Labeling and obtaining data has been effectively made cheaper.
Accelerated Production Timeline: External dependencies are not required to create synthetic data in a reasonable period.
Fully Detailed Annotation: Internal requirements that are more specific can be fulfilled with proper labeling and annotation.

Synthetic data has great potential in all three areas whether it be in addressing privacy issues, cost reduction, and boosting the performance of models. Its adaptability and effectiveness make certain that

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KALARAVA

2024

Kalarava 2024 at BMSIT&M was a two-day celebration filled with energy, talent, and excitement, taking place on December 20 and 21, 2024. The event was organized by the hostellers but was open to everyone, creating a fantastic atmosphere of togetherness and fun.

The main events began on December 20 with a ceremonial lamp-lighting by the principal and guests. Over the next two days, cultural performances, sports competitions, and fun-filled activities captivated everyone. Highlights included a stunning fashion show, Mythri Iyer's live music performance, and a spirited DJ night featuring artists like Mr. Viraat and Divya Ramachandra.

Sports events, including badminton, basketball, kabaddi, and women's throwball, showcased fierce competition and camaraderie. The food and game stalls added flavor and fun, while E-Sports Madness on December 13 brought gaming enthusiasts together.

Behind the scenes, Team Arjuna ensured the event ran smoothly. Thanks to the efforts of the organizing team, Kalarava 2024 became an unforgettable experience, leaving everyone eager for the next edition.

AI IN TOXIC RETAIL

UNVEILING THE ETHICAL CHALLENGES OF BEAUTY AND COSMETIC SURGERY

Artificial intelligence has reshaped the retail industry, bringing unprecedented levels of personalization and customer engagement. However, its application in promoting cosmetic surgeries reveals a troubling side of this technological advancement. AI is now being used to subtly manipulate consumer insecurities, creating a demand for surgical solutions that might not have been considered otherwise. AI algorithms, designed to analyze user behavior, frequently target individuals based on their online activities—searching for beauty tips, browsing skincare products, or engaging with beauty-related content. These algorithms generate ads for cosmetic procedures such as rhinoplasty, Botox, or liposuction, often framing them as solutions to perceived imperfections. The subtle messaging in these ads can make individuals feel that undergoing a procedure is a step toward self-improvement or social acceptance.

AI-powered beauty applications add to the pressure. Many apps allow users to edit selfies, showcasing how they would look with sharper features, fuller lips, or smoother skin.

While these apps are marketed as fun tools, they often leave users questioning their natural appearance. What starts as playful experimentation can easily transform into a desire for permanent alterations, especially when users are bombarded with ads promoting cosmetic clinics. Social media platforms like Instagram and TikTok play a significant role in amplifying these effects. AI-enhanced filters, designed to create flawless images, have established an unrealistic standard of beauty. This has given rise to what's often called "Snapchat dysmorphia," where individuals aspire to look like their digitally altered selves. Social media algorithms, which prioritize highly curated and edited content, further perpetuate this cycle, encouraging comparison and dissatisfaction among users.

Cosmetic clinics also use AI to streamline their marketing and consultation processes. Many employ virtual consultations powered by AI to evaluate user photos and recommend procedures. While convenient, these tools often highlight perceived flaws rather than providing objective advice, pressuring clients into pursuing unnecessary treatments.

Some clinics even tailor their messaging to exploit consumer insecurities, focusing more on sales than on ethical considerations or the well-being of potential patients. The psychological impact of this AI-driven marketing is significant. Prolonged exposure to these beauty standards can lead to mental health struggles, including anxiety, depression, and body image issues. Vulnerable groups, such as teenagers and young adults, are particularly at risk. The allure of "quick fixes" promoted by cosmetic ads often overshadows the potential physical, emotional, and financial risks associated with these procedures.

Adding to the concern is the lack of oversight in the cosmetic surgery industry's use of AI. With few regulations in place, clinics and marketers operate largely unchecked, employing AI technologies in ways that prioritize profit over ethics. Consumers often remain unaware of the extent to which their data is being used to target and manipulate them.To address these challenges, a more ethical approach to AI usage in the beauty and cosmetic surgery industry is urgently needed. Transparency should be a priority—companies must disclose when AI is used in marketing or consultations. Additionally, strict regulations should govern how AI is deployed, ensuring that it serves the interests of consumers rather than exploiting their vulnerabilities. Clinics should be required to involve licensed professionals in consultations and provide balanced advice that prioritizes patient health and informed decision-making.

Social media platforms also have a critical role to play. Adjusting algorithms to reduce the promotion of heavily edited content and encouraging more authentic representations of beauty could help foster healthier standards. Similarly, developers of beauty apps and AI tools should design their products to celebrate natural diversity rather than perpetuating narrow ideals. Ultimately, AI's role in the cosmetic industry must shift from amplifying insecurities to empowering individuals. By fostering confidence and promoting self-acceptance, AI can be a force for good, aligning technological innovation with ethical responsibility. This balance is essential to ensuring that AI enhances lives rather than exacerbating existing pressures.

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5th Sem

INDUSTRIAL VISITS

Dr. Kantharaju V, Assistant professor, Department of AI&ML, organised an interactive session to Nss volunteers on " organic farming". Prof. Sudhakaran student of Padmashree Subhash Palekar addressed the students and answered all the students and Faculties questions. The session was very informative and interactive. The session held from 1:45 to 3:00pm at second floor Academic block seminar hall on 02.07.2024.

Code to Capital: How to Bootstrap an AI-Powered Hedge Fund

"The computer is incredibly fast, accurate, and stupid; man is incredibly slow, inaccurate, and brilliant; the marriage of the two is a force beyond calculation."
– Leo Cherne, Economist and Humanitarian.

Starting a hedge fund used to require Wall Street connections, a tailored suit, and a Rolodex of wealthy clients. But now thanks to AI, all you need now is some Python, a killer dataset, and the audacity to believe your code can outsmart the market. This is the era of AI-driven hedge funds where geeks inherit and invest.

Markets run on information, and information is infinite. The real challenge is extracting actionable insights from the noise. AI, with its unparalleled ability to sift through terabytes of structured and unstructured data uncovers correlations and patterns that even the most seasoned human traders can't perceive.

Imagine using satellite imagery to monitor parking lot traffic at retail stores, predicting quarterly earnings before Wall Street analysts can pick up a pen. Or deploying natural language processing (NLP) to parse SEC filings for sentiment cues, identifying companies on the brink of breakthroughs or breakdowns. As for ESG metrics, AI can analyze reams of environmental, social, and governance data to detect undervalued sustainable investments.

The power of AI lies not just in processing speed but in creativity. These models won't just analyze markets — they'll redefine the boundaries by discovering strategies no human would ever consider. As legendary physicist Richard Feynman said, "What I cannot create, I do not understand." In finance, creating new pathways is understanding markets at their core.

Build vs. Buy: The Tech Dilemma

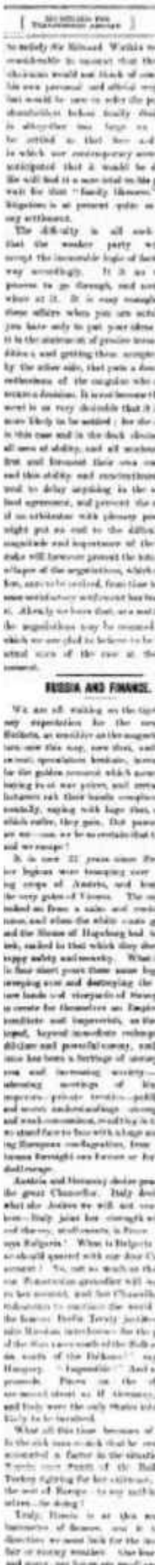
The first major fork in the road for an aspiring AI hedge fund manager is whether to build custom algorithms or leverage pre-built solutions. Building from scratch involves mastering tools like TensorFlow, PyTorch, or even less conventional frameworks for reinforcement learning and generative models. But it also provides unparalleled flexibility and control, allowing for fine-tuning of models to align perfectly with specific strategies.

For instance, using GANs (Generative Adversarial Networks) for simulating alternative market scenarios. Or autoencoders for anomaly detection, flagging unusual trades or market behaviors that others overlook. By building, you're not just trading — you're innovating.

On the other hand, pre-built platforms like QuantConnect or Alpaca can jumpstart your journey. They offer APIs and frameworks that integrate seamlessly into trading systems, letting you focus on refining strategies rather than building infrastructure. The trade-off? Reduced uniqueness, but increased speed to market.

Regulatory Hurdles, Simplified

Before your algorithms can go head-to-head with institutional giants, you'll need to navigate the regulatory labyrinth. Setting up a hedge fund means registering as an investment advisor . This involves compliance protocols, reporting mandates, and adherence to fiduciary standards.


RUSSIA AND FINANCE.

AI introduces its own layer of complexity. Regulators will scrutinize your models for transparency. Can you explain why your AI made a particular trade? This is where Explainable AI (XAI) becomes critical. Developing models with interpretability baked in isn't just good practice — it's likely to be a regulatory requirement. Leveraging tools like LIME (Local Interpretable Model-Agnostic Explanations) or SHAP (SHapley Additive exPlanations) can help bridge the gap between black-box algorithms and regulatory clarity. XAI ensures you not only know what you're doing but can prove it to the skeptics.

"Risk comes from not knowing what you're doing." - Warren Buffett

A Case Study

The AI hedge fund space isn't just theoretical. Numerai, for instance, crowdsources predictions from data scientists globally, blending their models into one "meta-model" to drive trades. Then there's Renaissance Technologies — the gold standard of quant funds. With its Medallion Fund delivering annualized returns that put most investors to shame, it's a testament to the power of algorithmic trading. Their approach proves that AI isn't just about high-frequency trading; it's about uncovering hidden insights. Data is king, but context is emperor. Your success hinges on finding unique datasets and asking the right questions.

"The markets can remain irrational longer than you can remain solvent."
- John Maynard Keynes, Economist.

Launching an AI-powered hedge fund is about transforming finance into a space where innovation drives progress. It's not just about competing with Wall Street giants but about setting a new standard for what's possible. With algorithms, data, and a relentless pursuit of disruption, the boundaries of financial markets can be redefined.

Nidhi Umashankar
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REVOLUTIONIZING ENERGY

NUCLEAR FUSION TECHNOLOGY POWERED BY REINFORCEMENT LEARNING

As the world experiences a population boom, achieving sustainability becomes a global challenge. Depletion of natural resources, harsh weather conditions and rising surface temperatures has escalated the need to find an innovative and reliable solution. Nuclear Energy, in fact, has proven to be an optimal alternative for providing clean and abundant electricity, to fuel spacecrafts as well as assist in desalination processes.

Nuclear fusion is a process that occurs when hydrogen nuclei collide or fuse causing a release of tremendous amount of energy, which can be used to generate electricity on a large-scale. The nuclei fuse only under extremely high temperatures and pressure, such as, the centre of the sun. An artificial method to cause nuclear fusion would be to manipulate magnetic fields to contain a plasma of hydrogen at a particular temperature inside a tokamak. A tokamak is a machine used to contain the hydrogen plasma in a donut shape called a torus. Tokamaks are generally used for nuclear research and DIII-D National Fusion Facility in the United States is one of the large-scale operating tokamaks.
One way of controlling nuclear fusion is by using reinforcement learning techniques, where agents take actions in an environment by interacting with it and receiving feedback in the form of rewards or penalties. The main goal is to maximize reward and refining strategy by learning from previous outcomes.

HOW ARE THE NUCLEAR REACTIONS CONTROLLED USING AI?

Firstly, a set of parameters of the hydrogen plasma are obtained. These include a wide variety of properties such as position, shape outline, plasma current, temperature, density and magnetic field adjustments. These properties are then combined into a 'reward function' that assigns a scalar measure to the state at each interval. This function also penalizes the control policy for reaching non-required terminal states. After data preprocessing, the RL algorithm will be able to obtain the outcome at a higher accuracy rate.

Next, a deep reinforcement learning algorithm is applied that inspects the data and finds an optimal control policy through interaction with the environment (simulator tokamak). It takes into consideration how the plasma interacts with the magnetic fields generated by surrounding coils and changes shape and current strength. There's a mutually dependent relationship between the plasma's internal forces, magnetic field and electrical current generated. Using mathematical equations, such as the Grad-Shafran equation, the RL model describes these interactions, numerically solves it using specialized software to predict the plasma's changes under various conditions and obtains the most appropriate control policy. This information is essential for optimizing the tokamak's operation and achieving successful fusion reactions.

Finally, the AI-generated control policy is ready for real world use. It's converted to an executable file specifically designed for plasma control within the tokamak. This executable takes over control of the plasma at a designated time during the experiment.The AI control policy then actively controls coils and changes magnetic fields accordingly to precisely shape and manipulate the plasma current according to the desired experimental goals.

Ian Char, a PhD student in the Machine Learning Department, used reinforcement learning to control the hydrogen plasma of the tokamak machine at the DIII-D National Fusion Facility in San Diego. He was the first researcher to run an experiment on nuclear fusion using AI, the first to use reinforcement learning to affect the rotation of a tokamak plasma, and the first person to try reinforcement learning on the largest operating tokamak machine in the United States. Char collaborated with the Princeton Plasma Physics Laboratory (PPPL) on the work.

DeepMind, an artificial intelligence unit of Alphabet, Google's parent company, was the first to use reinforcement learning to control the magnetic field containing the fusion reaction. The lab successfully kept the plasma steady and monitored the changes. DeepMind ran its experiment on the Variable Configuration Tokamak (TCV) in Lausanne, Switzerland, and published its findings in February,2024.

By leveraging machine learning techniques to analyse data, identify optimal control strategies, adapt to real-time conditions and continuous testing of AI control policies, researchers can significantly improve the efficiency and success of nuclear fusion experiments, thereby delivering clean fuel and energy to the world, currently grappling with ecosystem issues.

Nuclear fusion meets AI

DIYA GHORPADE
1BY23AI045
3RD SEM

MOU'S AND AWARS

A MoU was signed between 1M1B in collaboration Flaunch Innovation Pvt Ltd and BMSIT &M through ARVR HUB on 22nd October 2024. This collaboration promotes students and faculty providing training programs, internships, skill-build programs, networking and many more. This MoU was initiated by Dr. Srivani P & Prof. Bharathi R from the departments of AIML & CSE.

- Dr. Bharathi Malakreddy A, Professor and Head of the R & C Cell, Department of AI & ML received the "Best Researcher" Award on Engineer's Day, from BMSIT&M on 20.09.2024.
- Dr. Niranjanamurthy M, Associate Professor, Department of AI & ML received the "Best Researcher" Award on Engineer's Day, from BMSIT&M on 20.09.2024.

AGENTIC AI

THE EVOLUTION OF AUTOMATION AND THE CHALLENGES AHEAD

ALL AI AND NO WORK, MAKES JACK A SMART BOY?

Story starts on 30th November 2022, when Sam Altman, CEO, OpenAI released the very famous chatbot ChatGPT, an AI application today omnipresent in every aspect of daily life. Be it with students for completing assignments, answer analysis and writing codes or for consultants, data analysts and finance analysts for comparing figures or for stock-investors to know stock trends. But if these professions use AI, it is understandable because they are corporate sectors. The surprising fact arises when you see non corporate sectors like independent content creators, chefs, musicians and writers use AI for editing, comparing authenticity and modernity of recipes and for checking plagiarism respectively.

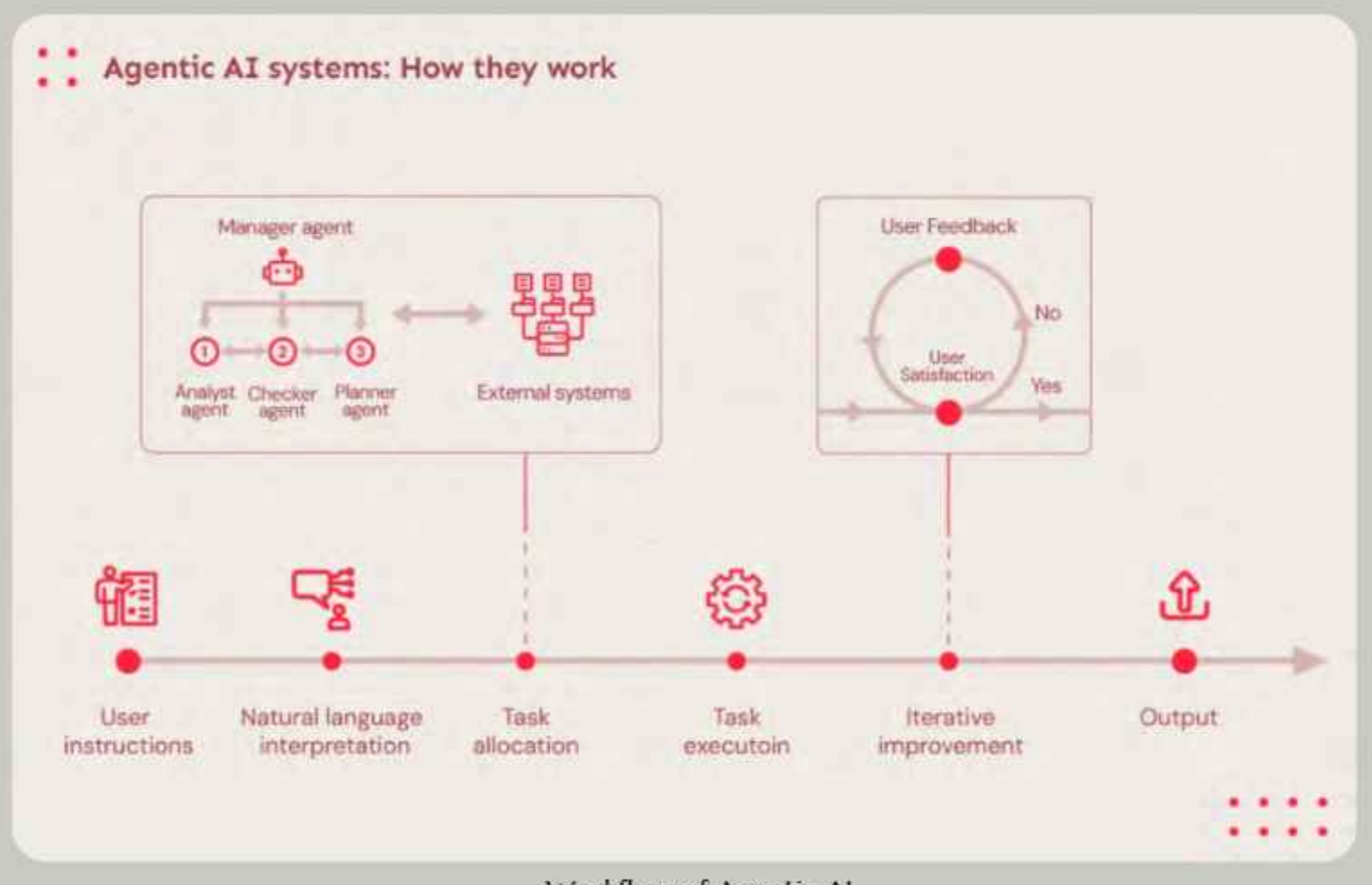
Overall, AI has been able to reduce the human efforts to a significant figure. Today every office even the medical industry, an industry whose refinement is only and only promised by human intervention is using AI for diagnosing patients. All these times AI could do generative tasks, generating an image, text or code but the now there has been dynamic developments in AI.

Agentic AI, a new protagonist. agentic AI is a new development in AI, which has the capability to reduce human interaction to almost null. It has the ability to store, analyse, predict and conclude. For example, if generative AI is able to generate an email, the agentic AI will be able to write and send an email, read the response email, schedule a follow up meeting on the same account by checking the availability of calendar. The monthly sales of a shop, its stock and restocking of supplies, the stock's expiry dates, all of these could be stored in one application and not only that the AI on its own can notify the manager about the stats also predict what is in demand now and what is not, increasing the business by several folds with less human

For agentic AI to be the new trend, there are a few commitments that need to be fulfilled. Due to the dynamic and faster decision-making nature of agentic AI, for its sheer accuracy the data shared is increased several times the generative AI. The processing of the data needs to be unerring. For an instance, when it is applied in medical registers. There may be patients whose surgeries must be scheduled immediately and a non-elective surgery can be scheduled later. Any error in that has the potential to turn fatal to the patients.

Task execution and solution generation is an aspect of utmost eminence as a solution that satisfies major school of thoughts and is right at that moment of time is important. Furthermore, there should always be a place for feedback loop which paves the way for continuous learning and improvement.

The ease AI brings sounds exciting for the future has its own costs to pay. As we are aware of the deepfake situations. AI is being used to deepfake celebrity's faces onto somebody else's or making obscene videos. Provided when patrons have such huge units of personal data shared in AI such as medical histories, financial details and contact details, there is always a question of safety and privacy of data. These are a few concerns that AI needs to solve for itself to be a norm. Once we have a solution for end-to-end encryption of all the aspects such that makers of the software themselves are not able to access the information, AI will be the as omnipresent as paper today.



Workflow of Agentic AI

NEHA MYAGERI
1BY23AI093
3rd Sem

STUDENTS WORKSOPS

The AR VR HUB, Department of AIML and CSE had organized an Orientation session with 1M1B which is collaborated with AICTE on 29.11.2024 at 11.00 am and 2.00 pm. This orientation was under Green Skill Academy, where the organization provides Internship Opportunities to all engineering students, which is of 60 Hours program. This internship offeres students with 30 hrs of Training in Data Analytic Tool call Tabula and the students are supposed to implement the learning of this tools for sustainable problems.

STUDENTS WORKSOPS

The ARVR HUB, in collaboration with IEEE AESS, Department of AIML and CSE had organized mARtian AESSence, an engaging event with 28 participating teams (Totally 111 students). Round 1 (Ideathon) focused on crafting innovative solutions to problem statements. In Round 2,7 teams tackled unique challenges. On Day 2, the final round featured teams developing an immersive Mars environment in Unity, allowing players to explore a virtual Martian landscape.

The Department of AIML & CSE through AR VR HUB had organized a 1 Day orientation session with IMIB in collaboration with Flaunch for the orientation on upcoming LLM hackathon which is launched with Meta. Over 500 students from various departments attended the orientation, showing a keen interest in LLM and AR/VR integration.

Faculty Achievements

DR. ANUPAMA H S

- Dr. Anupama H S, has undergone industry internship at Academy of Skill Development by Ardent Software services Kolkata, India on Generative AI and Prompt Engineering from 01.08.2024 to 01.09.2024 (8 Weeks).
- Dr Anupama H S, Professor and Head, Department of AI & ML was a Chairperson at World Standards Day 2024 organized by Bureau of Indian Standards (BIS), Ministry of Consumer Affairs, Food & Public Distribution, Government of India on 14.10.2024 at Bengaluru.
- Dr. Anupama H S, Professor and Head, Department of AI & ML, reviewer for the 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions, Organized by RV College of Engineering in association with Florida International University, Fachhochschule Dortmund, Germany. Technically Co-Sponsored by IEEE Bangalore Section, India held from 7.11.2024.

DR. BHARATHI MALAKREDDY

- Dr. Bharathi Malakreddy A, Professor and Head of the R & C Cell, Department of AI & ML received the "Best Researcher" Award on Engineer's Day, from BMSIT&M on 20.09.2024.
- 1. Bharathi M A., Rajesh, I. S., H. G. Mohan, U. N. Ranjitha, Manjunath Sargur Krishnamurthy, and C. Maithri. "FLQL-VANET: a Hybrid of Fuzzy Logic and Q-learning Schemes for QoS Aware Routing in VANET." International Journal of Intelligent Engineering & Systems 17, no. 6 (2024).

DR. PRADEEP K R

- Dr. Pradeep K R, has undergone industry internship at Academy of Skill Development by Ardent Software services Kolkata, India on Generative AI and Prompt Engineering from 01.08.2024 to 01.09.2024 (8 Weeks).
- Dr. Pradeep K R, Associated Professor and Associate Head, Department of AIML has completed NPTEL Course on Software Testing (12 Week Course) in 1.7.2024 to 30.10.2024
- Dr Pradeep K R, Associate Professor and Associate Head, reviewer for the 8th International Conference on Computational Systems and Information Technology for Sustainable Solutions, Organized by RV College of Engineering in association with Florida International University, Fachhochschule Dortmund, Germany. Technically Co-Sponsored by IEEE Bangalore Section, India held from 7.11.2024.

DR.NIRANJANAMURTHY M

- Dr. Niranjanamurthy M, Associate Professor, Department of AI & ML received the "Best Researcher" Award on Engineer's Day, from BMSIT&M on 20.09.2024.
- Mayuri, K. P., Sheela Kathavate, and M. Niranjanamurthy. "Polyhouse Agriculture with AI: Strategies for Climate Control, Energy Efficiency and Yield Improvement." SN Computer Science 5, no. 8 (2024): 1119.2. Rajesh, I. S., H. G. Mohan, U. N. Ranjitha, Manjunath Sargur Krishnamurthy, and C. Maithri. "FLQL-VANET: a Hybrid of Fuzzy Logic and Q-learning Schemes for QoS Aware Routing in VANET." International Journal of Intelligent Engineering & Systems 17, no. 6 (2024).
- Singh, Mandeep, Muntather Almusawi, Sonu Sharma, Egamberdiyev Dilmurod, S. Hemalatha, and M. Niranjanamurthy. "Predictive Analytics for 5G Network Performance Using Bayesian Networks." In 2024 IEEE International Conference on Communication

DR. RAJESH I S

- Mohan, H. G., Jalesh Kumar, I. S. Rajesh, K. Sai Geethanjali, Manjunath Sargur Krishnamurthy, and K. Jagannathan. "A CNN based deep learning model for detecting P2P Botnets using flow features." In 2024 Second International Conference on Networks, Multimedia and Information Technology (NMITCON), pp. 1-6. IEEE, 2024.
- Bharathi M A., Rajesh, I. S., H. G. Mohan, U. N. Ranjitha, Manjunath Sargur Krishnamurthy, and C. Maithri. "FLQL-VANET: a Hybrid of Fuzzy Logic and Q-learning Schemes for QoS Aware Routing in VANET." International Journal of Intelligent Engineering & Systems 17, no. 6 (2024).
- Rajesh, I. S., H. G. Mohan, U. N. Ranjitha, Manjunath Sargur Krishnamurthy, and C. Maithri. "FLQL-VANET: a Hybrid of Fuzzy Logic and Q-learning Schemes for QoS Aware Routing in VANET." International Journal of Intelligent Engineering & Systems 17, no. 6 (2024).
- Rajesh, I. S., D. Priya, V. Madhumitha, and Shreyas Sreenivas. "Machine Learning Approach for Diagnosis of Schizophrenia Using EEG Signals." In International Conference on Machine Learning, Advances in Computing, Renewable Energy and Communication, pp. 147-157. Springer, Singapore, 2024.

DR. MANOJ H M

- Kumar, BP Pradeep, and H. M. Manoj. "Comparative Assessment of Machine Learning Models for Predicting Glucose Intolerance Risk." SN Computer Science 5, no. 7 (2024): 894.
- Manoj, H. M., Priyanka Pramod Pawar, R. Krupa, Piyush Kumar Pareek, Deepak Kumar, and G. B. Vindhya. "Innovative Horizons in Agricultural Technology with TSA Based StrawberrySqueezeNet Classification Model." In 2024 International Conference on Data Science and Network Security (ICDSNS), pp. 1-7. IEEE, 2024.
- Manoj, H. M., Priyanka Pramod Pawar, R. Krupa, Piyush Kumar Pareek, Deepak Kumar, and Lalitha Bandeppa. "PFCM based Segmentation and TFA based DCNN model for Skin Cancer Classification using Dermoscopic Images." In 2024 International Conference on Data Science and Network Security (ICDSNS), pp. 1-7. IEEE, 2024.
- Pawar, Priyanka Pramod, Deepak Kumar, Raghavi K. Bhujang, Piyush Kumar Pareek, H. M. Manoj, and K. S. Deepika. "Investigation on Digital Forensic Using Graph Based Neural Network With Blockchain Technology." In 2024 International Conference on Data Science and Network Security (ICDSNS), pp. 1-7. IEEE, 2024.
- Pawar, Priyanka Pramod, Deepak Kumar, R. Krupa, Piyush Kumar Pareek, H. M. Manoj, and K. S. Deepika. "SINN Based Federated Learning Model for Intrusion Detection with Blockchain Technology in Digital Forensic." In 2024 International Conference on Data Science and Network Security (ICDSNS), pp. 01-07. IEEE, 2024.

DR. KANTHARAJU V

- Byatarayanapura Venkataswamy, Srinivas, Kavitha Sachidanand Patil, Harish kumar Narayanaswamy, and Kantharaju Veerabadrappa. "Access management based on deep reinforcement learning for effective cloud storage security." International Journal of System Assurance Engineering and Management (2024): 1-20.
- Veerabadrappa, Kantharaju, Chandrashekhar Basavaraj Naikodi, Srinivas Byatarayanapura Venkataswamy, and Harish Kumar Narayanaswamy. "Elliptic Curve Cryptography and Password Based Key Derivation Function with Advanced Encryption Standard Method for Cloud Data Security." International Journal of Intelligent Engineering & Systems 17, no. 6 (2024).
- Narayanaswamy, Harish Kumar, Chandrashekhar Basavaraj Naikodi, Shanmugasundaram Marappan, and Kantharaju Veerabadrappa. "Adaptive Inertia Weight with Transient Search Optimization Based Feature Selection for Intrusion Detection in Internet of Things." International Journal of Intelligent Engineering & Systems 17, no. 6 (2024).

DR. SANJAY M BELGAONKAR

- Prof. Sanjay M Belgaonkar , has undergone industry internship at Academy of Skill Development by Ardent Software services Kolkata, India on Generative AI and Prompt Engineering from 01.08.2024 to 01.09.2024 (8 Weeks).
- Prof. Sanjay M Belgaonkar, Asst. Professor, Dept. of AI & ML received the Certificate Appreciation from the company Hack2Skill Private Limited, Noida, UP in recognition of his contributions and support as an academic partner in conducting AI Builders Lab presented by Google for Developers.
- Prof. Sanjay M Belgaonkar, Asst. Professor, Dept. of AI & ML attended an IEEE CAS Seasonal School on Quantum Computing held at IISc, Bangalore on 9.11.2024 to 10.11.2024.

MR. SACHIN A U

- Prof. Sachin A U, has undergone industry internship at Academy of Skill Development by Ardent Software services Kolkata, India on Generative AI and Prompt Engineering from 01.08.2024 to 01.09.2024 (8 Weeks).

Thank You

As we close another edition of CIRCADIAN, we want to pause and express our heartfelt gratitude to you, our readers. Your curiosity and engagement have made every story, every insight, and every shared discovery meaningful.

This edition has been a journey of exploration – from emerging technologies to evolving education, from innovative solutions to inspiring possibilities. Through each page, we've aimed to spark conversations that matter and ideas that resonate. Your commitment to learning and growing with us has been both humbling and motivating. You've turned these pages into living conversations, these articles into launching pads for new thoughts and perspectives.

Thank you for being part of our CIRCADIAN community. For every minute you've spent with our words, for every idea you've contemplated, for every story you've carried forward – we are grateful. While this edition comes to a close, the conversations and connections it has sparked will continue to flourish.

Here's to many more editions of discovery together.

With appreciation,
The CIRCADIAN Team