

The Neural Chronicles

VOLUME 2

ISSUE 1

AI

ML

*DEPARTMENT OF ARTIFICIAL
INTELLIGENCE AND
MACHINE LEARNING*

Message from the Principal



It gives me great pleasure to give my best wishes to the editorial committee of the Department of Artificial Intelligence and Machine Learning, New Horizon College of Engineering. The students and faculty of the department are always proactive in taking initiative in all kinds of events. I congratulate all the achievers, contributors, and students for bringing out such an informative newsletter. I hope this newsletter reflects all activities of the department and inspires others to do their best.

Thanking you,

Regards

~Dr. Manjunatha

Letter from the HOE



Greetings to all !!

Learning is a lifetime opportunity, while we sail in the ocean of knowledge we strive for excellence and strength. This is the third issue of "The Neural Chronicles".

I take this column of space to appreciate the collective efforts of students, faculties and the department of AI & ML to have done a great job in achieving heights. The department encourages more activities TOWARD excellence.

I WISH all the best to the budding innovators to do more in the time ahead. Your stupendous achievements HAVE doubled the strength of understanding the dynamics of this field of Artificial Intelligence and Machine Learning.

The articles and idea insights shared in this newsletter DEPICT the common interests IN this field.

With best wishes,
Dr N V Uma Reddy
Professor and Head
AI & ML, NHCE

About the Department



The Department of Artificial Intelligence and Machine Learning at New Horizon College of Engineering was established circa 2020, and it offers a program at the UG level. The institution in all its grandeur is accredited by National Board of Accreditation (NBA) and by The National Assessment and Accreditation Council (NAAC) with the coveted “A” grade.

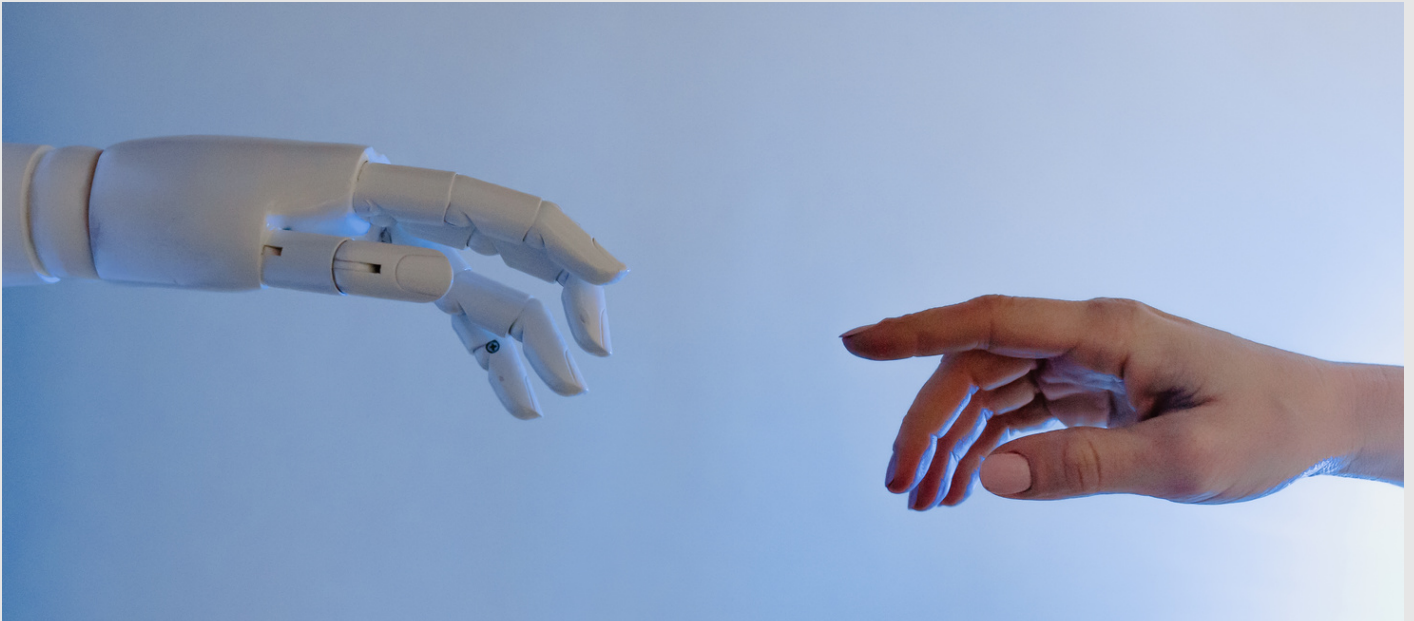
Artificial Intelligence is consistently clawing itself deeper into various industries and possesses great potential in the current market. It would be best described as an amalgamation of Data Science and Machine Learning. For the average Joe, Data is an elephantine amount of information with great scope for elaborate analytics.

The department of AI&ML here at NHCE quintessentially focuses on the five pillars of AI technology- Data Science, Machine Learning, Deep Learning, Big Data Analytics, and Visualization & Deployment of the predictive model. The caliber of any department is intrinsically defined by the professors it nourishes. Our department boasts a competent fraternity of ardent, motivated, and experienced professors striving to equip their students with the skills to provide smarter solutions to the problems, existing and forthcoming, paving the way for a brighter future, in the modern world.

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Vision and Mission



Vision:

To develop an outstanding AI and ML professionals with profound practical, research & managerial skills to meet ever changing Industrial Social and Technological needs of the Society.

Mission:

- To disseminate strong theoretical and practical exposure to meet the emerging trends in the industry.
- To promote a freethinking environment with innovative research and teaching-learning pedagogy.
- To develop value based socially responsible professionals with high degree of leadership skills will support for betterment of the society.

Workshops

Student Induction Program

The department of Artificial Intelligence and Machine Learning recently organised a Student Induction Program to welcome their new third-semester students. The aim was to help them feel comfortable in their academic journey and provide valuable information about what to expect in the upcoming session. And boy, did they deliver!

The event started with a warm and friendly welcome from a senior who shared their own experiences and advice for navigating the challenges of college life. It was a great way to break the ice and make the students feel at ease.

Next up was the cynosure of the event by our esteemed HOD, who gave the audience an enlightening speech. She went into detail about the syllabus, exam system, internal marks, program outcomes and credits for the upcoming subjects. She answered every question the students had and provided them with a clear understanding of what was to come.



After this, the seniors organised fun games for the students with exciting rewards with the aim of helping them bond with their peers and build teamwork skills. After the lunch break, the students reconvened for the Principal's speech. Being the dynamic and inspiring speaker that he is, lit a fire in the bellies of the would-be engineers.

All in all, the student induction program was a huge success. The Department of Artificial Intelligence and Machine Learning proved once again that they are committed to providing their students with a top-notch education and fun-filled college experience. Welcome to the world of AI and machine learning folks! Get ready for the time of your lives.

Parents Teachers Meeting

The AI & ML Department hosted its inaugural Parent-Teacher Meet for the odd semester of the Academic Year 2022-23 at IBM lab, attracting an impressive attendance of over 85 parents. Dr. N V Uma Reddy, the esteemed HOD, delivered a comprehensive presentation outlining various department initiatives, including the credit system and the curriculum.

The presentation was followed by an engaging open discussion, during which parents raised queries and concerns about internships and the credit system. Dr. Uma Reddy, in her inimitable style, provided clear, concise, and positive responses that left the parents reassured and confident. Afterward, the parents were directed to meet with their ward's mentors in person, further enhancing their engagement with the department.



To ensure continuous improvement, the department also collected feedback forms from the parents. The high tea provided afterwards created a convivial atmosphere that offered parents a chance to network and engage with one another.

In summary, the Parent-Teacher meeting was an overwhelming success, an excellent opportunity for the department and parents to forge a strong relationship and collaborate towards the best education and opportunities for the students. The department remains committed to providing an excellent education that prepares students for a future in the rapidly changing field of AI & ML.

Power BI Workshop

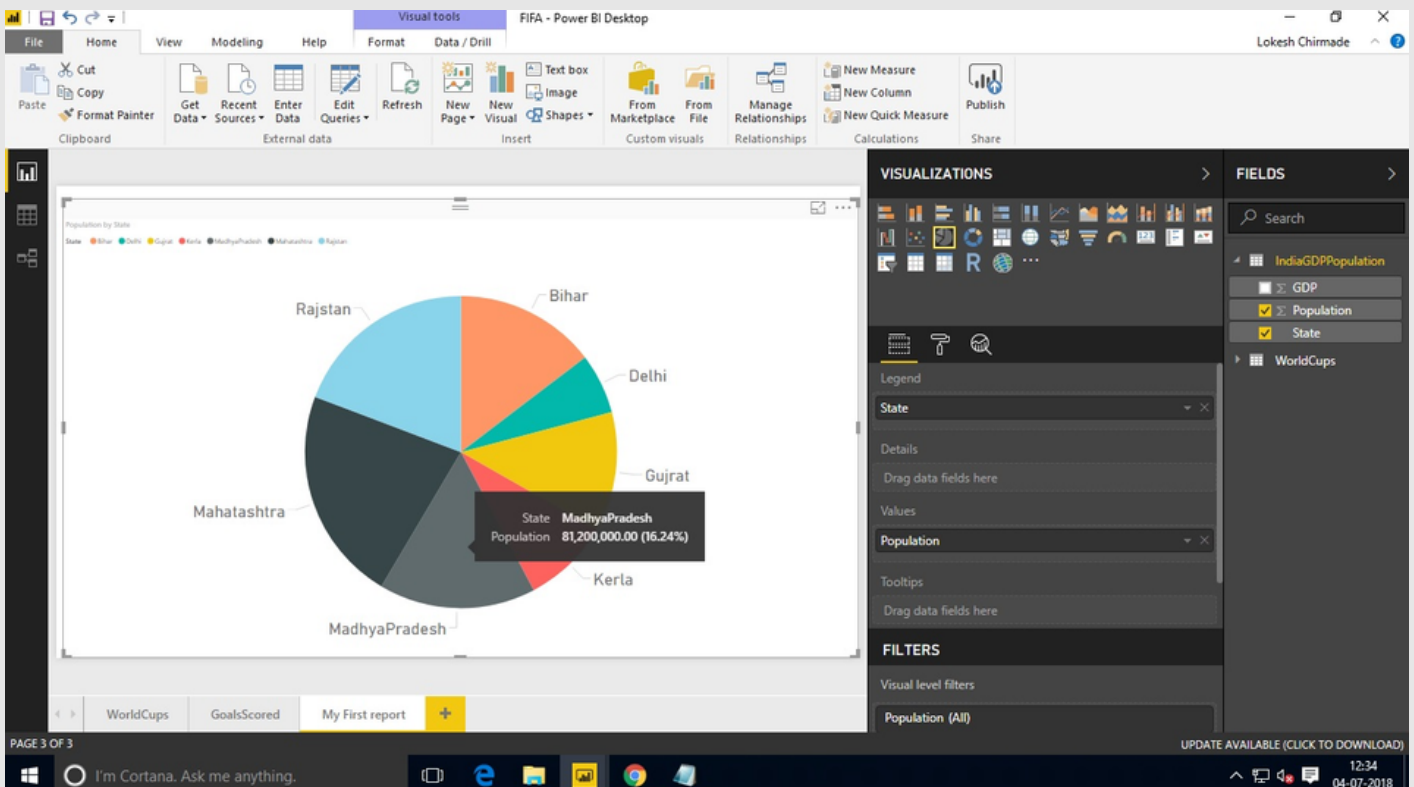
The Department of AI & ML at NHCE conducted a three-day virtual workshop on **Power BI** from 22nd to 24th August 2022. The workshop, led by **Mr. Bhargava R, Sr. AP**, AI&ML, NHCE, focused on **data analysis and visualization**, essential skills for today's market.

On day one, students were introduced to various BI tools, with a focus on Power BI, and learned the importance of visualization in data analytics. Mr. Bhargava R also explained visualization charts, enabling students to select the right visualization depending on the data.

On day two, students were taught advanced visualization techniques, including custom charts. Mr. Bhargava R emphasized thinking from a business analyst's perspective and the difference between cleaned and incomplete data.

On day three, students were given an incomplete dataset and learned a new programming language, **DAX**, to generate data from existing data.

The workshop was a success and provided a great learning opportunity for the students. The Department of AI & ML plans to conduct more workshops to help students develop their skills and excel in the field.



Faculty Development Program

The Department of AI & ML hosted a Faculty Development Program titled "**Metacognitive Teaching Learning Process Using ICT Tool**" in collaboration with QASDC from September 19th to September 21st, 2022, at IBM CoE. The FDP was inaugurated by Dr. Uma Reddy N.V, HOD, Dept of Artificial Intelligence and Machine Learning in the presence of Dr. Sanjeev Sharma, Dean QASDC.

The program kicked off with an introductory session on the need for ICT tools in the teaching learning process, which was conducted by **Dr. Kendaganna Swamy**, the resource person. Faculty members were given a hands-on experience on how to create their own websites using Google Sites for their respective subjects, which included uploading of documents like lesson plans and CIE question papers.

The second session focused on generating QR codes and tiny URLs for course websites, and using Edted tool to watch videos and attempt quiz activity based on the video. Additionally, faculty members learned how to upload videos in the course website.

On day two, participants were taught how to create game activities using Jeopardy labs and upload them to the course website. They were also given a practical demonstration of Thinglink tool, which enables the inclusion of videos inside an image, and Debut software, which records video lectures. Furthermore, faculty members learned how to design certificates and logos using Canva tool, and generate certificates using mail merge with extension.



Industrial Visit

“Scientists study the world as it is; engineers create the world that has never been.” The essence of this is what the students of NHCE wish to emulate. The most important step to create the next generation of engineers who can create the world that has never been is for them to stand on the shoulders of giants who came before them.

The students of 5th semester got one such opportunity on 20th December of last year when the department of Artificial Intelligence and Machine Learning organised an Industrial Visit to **BEML(Bharat Earth Movers Limited)** campus.



BEML is a public sector company under the Ministry of Defense which manufactures a wide range of heavy equipment used in various industries such as rail, power, mining, and infrastructure. BEML primarily manufactures bulldozers, excavators, dump trucks, wheel loaders and rail coaches. Apart from manufacturing heavy equipment, BEML also provides services such as refurbishment and overhaul spare parts supply and leasing of equipment. BEML is a significant player in India’s industrial landscape and its products and services have contributed significantly to the development of the country’s core sectors. It is also committed to sustainable development and has implemented various initiatives to reduce its carbon footprint, conserve water and preserve the environment.

During the visit the students toured the campus and were instructed about the uses of the various machinery they saw and gained a basic understanding of the industry. Then they were encouraged to apply their skills in Artificial Intelligence and Machine Learning to solve the problems currently facing the industry.

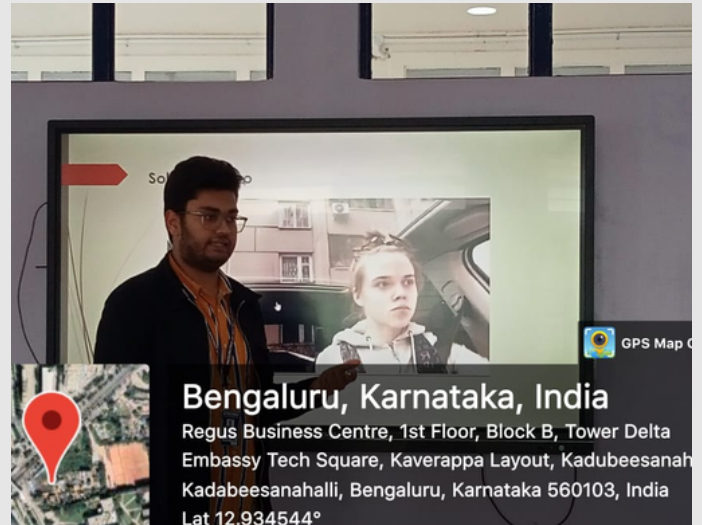
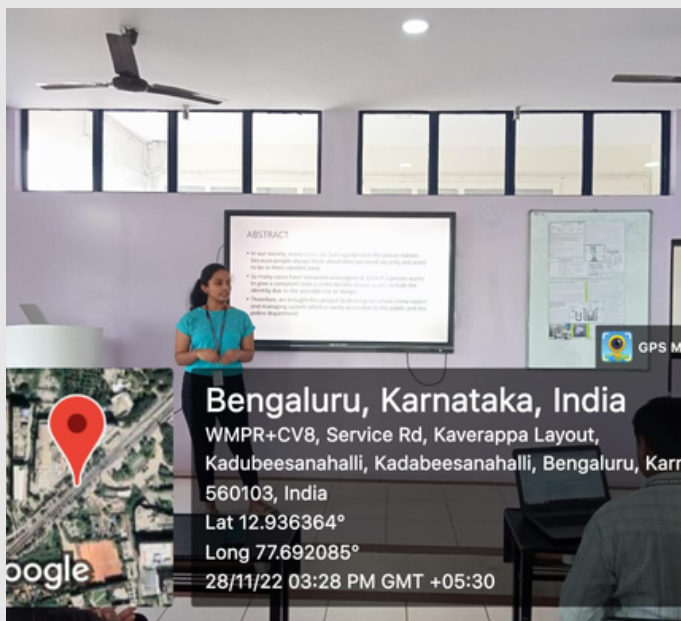
The visit inspired some students to come up with creative ideas for their projects. The students shared their experiences from the visit and it was clear that their enthusiasm for engineering had been reignited after this visit.

In conclusion, the students as well as the professors had a fun and informative experience at BEML while also giving them a clear scope of the challenges the industry faced ahead and the need to employ ever growing number of skills to solve them.

Intra Institutional Idea Competition - 1

Organizing an “Intra Institutional Idea Competition and Rewarding Best Ideas Managing through YUKTI-NIR”

The New Horizon College of Engineering, Bangalore, organized the "Intra Institutional Idea Competition and Rewarding Best Ideas- Managing through YUKTI-NIR" on the 28th of November, 2022 with the aim of facilitating the development of great ideas and helping those ideas find fulfilment through YUKTI-NIR.



The event was attended by 27 students and 5 faculty members. It was graced by esteemed panel members, Dr. A Sujin Jose, Innovation Ambassador, Associate Professor, Department of Automobile Engineering, NHCE, Dr. K Gopal, Innovation Ambassador, Associate Professor, Department of Mechanical Engineering, NHCE, and Dr. Prithviraj P, Innovation Ambassador, Associate Professor, Department of Electronics & Communication Engineering, NHCE.

The Innovative Idea Competition encouraged the generation of innovative new products, services, and technologies. The ideas, startups, business models uploaded in Yukti portal were presented by the students, and the panel members reviewed the innovation ideas and suggested their thoughts so that they can improve further in their implementations.

The event witnessed a great turnout, and the participants showcased their innovative ideas and received constructive feedback from the panel members. The competition was judged on the basis of innovation, feasibility, sustainability, and market potential. The winners were felicitated and received rewards.

In conclusion, the event was a great success, and it served as an excellent platform for students to showcase their creativity and innovation. The competition not only helped the students to develop new ideas but also provided them with an opportunity to receive feedback and improve their ideas. It was a valuable experience for everyone who attended the event.

Intra Institutional Idea Competition - 2

On January 20th, 2023, the Institution's Innovation Council in association with the Department of Artificial Intelligence & Machine Learning organized a session entitled **“Achieving problem-solution fit and product-market fit”**. The session was focused on the concept of problems and solutions in entrepreneurship and was witnessed by various dignitaries including Dr. Agalya V, IIC 5.0 President, NHCE, and Mr. Piyush Kumar Soni, Consultant, R&D Head, NHCE.

The session was inaugurated by Dr. Agalya V, IIC 5.0 President, and felicitated the resource person **Dr. Y Muralidhar Reddy, co-founder, ZATA solutions/CLAP Pvt. Ltd, Bengaluru** by a token of affection. Dr. Reddy then conducted the session, which included an introduction to the concept of problems and solutions, benefits of becoming an entrepreneur, and how to overcome problems for a successful venture.

Dr. Reddy elaborated on achieving problem-solution fit and product-market fit by explaining the concept of ‘product life cycle’ and other related terms. He also showed students some short video clips of various entrepreneurs who created innovative solutions to problems.

In an interactive activity, Dr. Reddy distributed small common objects such as glue sticks, pencils, compass, tissue box, etc. and called students onto the stage to creatively advertise the product. This activity made the session more enjoyable and engaging for the students.

Mr. Piyush Kumar Soni, Consultant R&D Head, NHCE, spoke briefly about the importance of entrepreneurship in society and the benefits and risks associated with it. Dr. Agalya V, IIC 5.0 President, NHCE, also interacted with the students about how problems and solutions are related to each other.

The session concluded with a vote of thanks, and students gained knowledge regarding problem-solution fit and product-market fit. Overall, the session was a great success, and the students left with valuable insights that will help them in their entrepreneurial journey.



Data Analytics Workshop

Department of Artificial Intelligence & Machine Learning organized a “**Data Analytics**” workshop on 1st December 2022. The Workshop was inaugurated by Dr. N.V. Uma Reddy, HoD, Department of AIML, and the welcome speech was proposed by Prof. Shruthi S. Assistant Professor. The HoD felicitated the resource person, Dr. Suresh Arumugam, Consultant Cloud Architect, uGDX Institute of Tech, Bengaluru.



The workshop was divided into two sessions – the first session depicted the importance of various job opportunities as a Data Engineer following the demonstration of the Apache Ambari tool. This session also included a hands-on Session in which students learned the complete tool. The second session highlighted the demonstration and installation of the Apache spark tool following an explanation by the speaker on the three ways of platforms on which the age of Apache spark tool will be done.

The outcome of the complete workshop comprised of Students installing the Apache Ambari tool and learning the managing and monitoring of Apache Hadoop Clusters. By the end of the session, students installed the Apache spark tool and learned how to execute it using machine learning codes on Apache spark.



Hardware and Network Troubleshooting Workshop



The importance of educating an emerging software engineer with the fundamentals of its hardware is paramount. To encourage just that, the AIML department organised a workshop about ‘Basic Hardware and Networking/ Troubleshooting’ on the 11th and 12th of November 2022, for students of the 3rd semester. The enthralling session was conducted by Mr. Melvin Raja A, Lab Instructor, AIML department, and he aimed to equip the students with necessary knowledge about hardware, networking and peripherals.



The entire workshop was greatly interactive as much as it was informative, which included multiple discussions and Q&A sessions. This enabled students to grasp a boatload of practical knowledge and facts throughout the day. The highlight of the workshop was students enjoying a fun hands-on experience while they teamed up and assembled real CPUs under the guidance of Melvin Sir. A quiz was also conducted amidst the workshop.

At the end of the fruitful session, the students of the 3rd semester acquired the basic understanding of computer hardware and peripherals for installation, PC assembly, and troubleshooting. They were also made aware of TCP/IP networks, the Internet and the Intranet. The session indeed motivated students to dive deeper into the vast scope of hardware.

AI/ML Systems Workshop

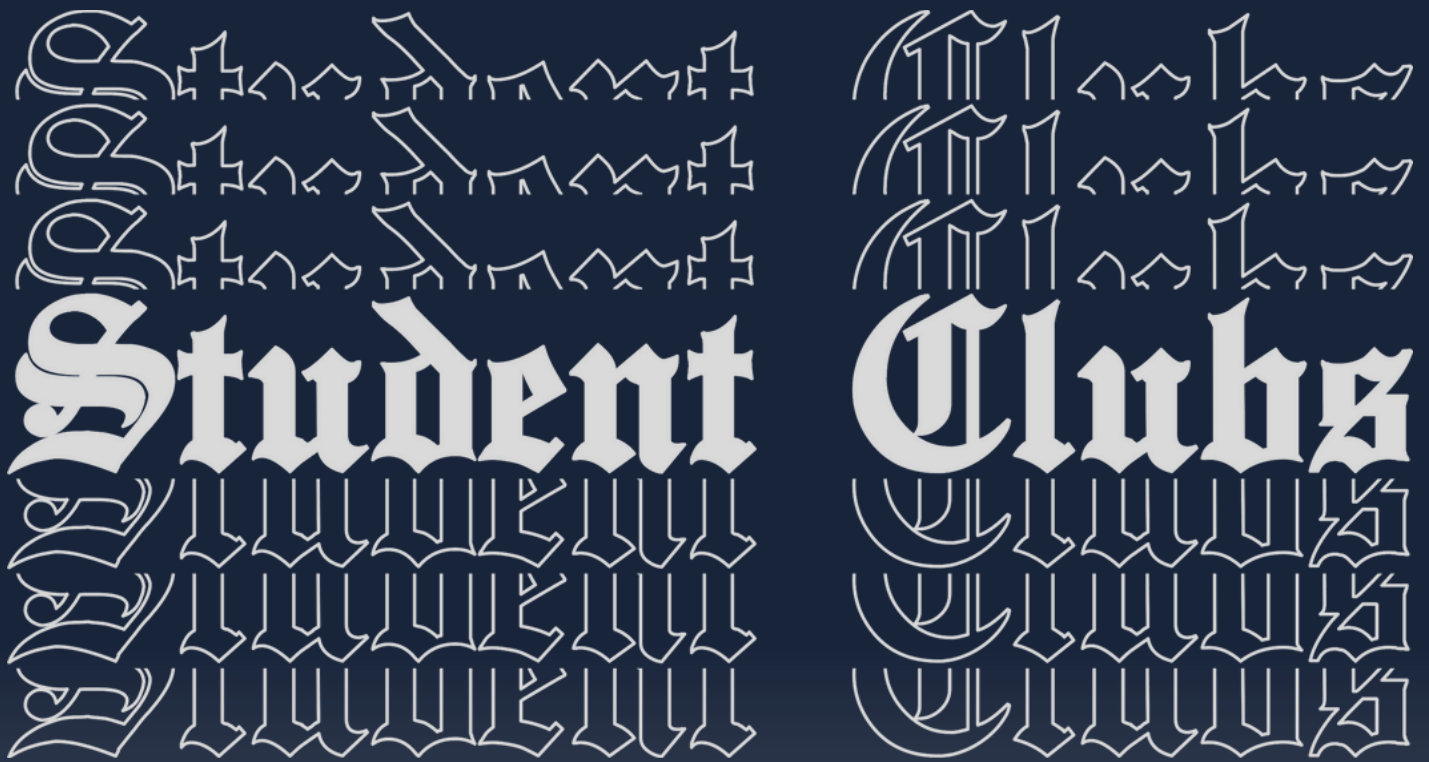
“Our intelligence is what makes us human, and AI is an extension of that quality” holds for the industrial talk held on 19/10/2022 to gain a better understanding of Artificial Intelligence and Machine Learning systems. The industrial talk was organized for students that are aspiring to make a career in the field of artificial intelligence and machine learning.

The industrial talk commenced after a welcome address by Ms.Bhoomika.S, III year student followed by Dr.N.V.Uma Reddy, HoD Department of Artificial Intelligence and Machine Learning welcomed the participants and highlighted the significance of this Industrial talk by Mr. Prasad Chitta, the guest speaker. He is a Decision Intelligence & ML Ops Practice Lead in TCS Bangalore and started his presentation by showcasing his experience in the domain following a brief outlook on artificial consciousness and artificial general intelligence. He explained how the functional capabilities of artificial intelligence (AI) systems extend far beyond human capacities. He also enlisted the reasoning capacities of AI systems which extend far beyond the already remarkable computational abilities of digital systems.

At the end of the session, students interacted with the expert through a Q&A session and clarified their doubts regarding “AI/ML Systems”. This industrial talk proved to be extremely helpful for all the students pursuing the emerging domain of artificial intelligence and machine learning.



New Horizon College of Engineering has more than 50 student-run clubs, that include technical, cultural awareness groups, extra-curricular activities clubs, performing groups, sports and fitness clubs, and other co-curricular clubs. Student clubs are developed at the Institute with the goals of assisting students in pursuing their interests and hobbies as well as bringing people together.



Students can discover their abilities, such as the ability to multitask, organise, build a team, lead, and have a service-minded attitude. They can expand their skill set by learning new ones. The clubs assist in continuing an old interest. Opportunities for networking are a key advantage. Members of the club form bonds with one another that advance their professional careers. Association with groups among students aids in presenting one's area of interest and striking a balance between work and play.



Deep Learning: The Next Frontier in Artificial Intelligence

Deep Learning falls under the vast umbrella of Artificial Intelligence it involves the use of AI neural networks to solve complex problems. In contrast to the traditional machine learning algorithms that require hands-on engineering features deep learning models automatically learn hierarchical representations of data through multiple layers of abstraction. This allows deep learning models to achieve a superlative performance, in a plethora of real-time applications with record-breaking results in fields such as image analysis, speech recognition, natural language, etc.

At its core, deep learning is a type of machine learning that involves training Artificial neural networks to recognize patterns in large amounts of data. Artificial neural networks are composed of layers of interconnected nodes, or “neurons”, that process and transform input data to produce output.

The “deep” in Deep Learning refers to the fact that these networks can have many layers, allowing them to learn increasingly complex features and patterns in the data.

The potential of Deep learning is unfathomable, due to its versatile applications and convenient usage, it can be used to improve performance in multiple applications, Increased Accessibility, Enhance Interoperability, and Improved Explainability which helps in visualizing and interpreting the internal workings of deep learning models, and New Applications, as deep learning continues to **EVOLVE**, we can expect to see a wave of potential areas that we can’t imagine today such as personalized medicine, climate modelling, music, and art generation. The possibilities are truly endless, and the future of deep learning is bright.

~**Chandan Abhishek (1NH20AI123),
EVOLVE.AI Board Member**



Revolutionizing Communication: The Power of Natural Language Processing in AI

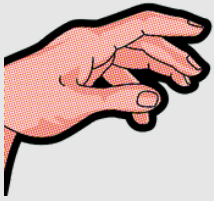
Natural language processing is one of the most fascinating and quickly developing areas in artificial intelligence (NLP). NLP is a branch of artificial intelligence that focuses on how computers can comprehend and produce natural language, such as the language that people use in speech and writing. The creation of chatbots and virtual assistants is one of the most important uses of NLP. NLP algorithms are used by virtual assistants like Siri and Alexa to comprehend user queries and provide relevant responses. These digital assistants are capable of being taught to carry out a variety of duties, like making lists, playing music, and even placing grocery orders.

On the other hand, chatbots are created to mimic communication with human users. Chatbots are frequently employed in customer service because they can assist in resolving typical problems and enquiries without involving a person. In the healthcare industry, chatbots can be used to book appointments for patients and give them general medical guidance. Sentiment analysis is one of NLP's key applications.

Sentiment analysis is the process of identifying the sentiment or emotion conveyed in vast amounts of text data, such as social media posts and customer reviews, using NLP algorithms. Sentiment analysis can be used to track brand reputation, measure consumer sentiment, and spot new consumer behaviour patterns. Language translation has benefited from the usage of NLP. Although machine translation has been known for a while, the accuracy and fluency of these translations have been substantially enhanced by NLP algorithms. A precise translation can make or break a trade or a relationship, which has significant ramifications for international commerce and communication.

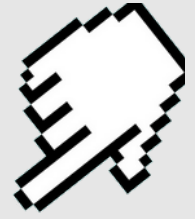
In conclusion, natural language processing is an intriguing area of artificial intelligence that is fast developing. A few examples of how NLP is altering how humans communicate with machines and one another include chatbots and virtual assistants, sentiment analysis, and language translation. Future NLP applications are anticipated to increase as NLP algorithms continue to advance.

**~Gowtham M N (1NH21AI035),
Brainiacs Board Member**



Event 1

INCEPTION



The co-curricular club of the AIML department, EVOLVE.AI conducted an event, Inception, which was an Inter-Department level event consisting of multiple technical and non-technical rounds. The event was based on general and technical knowledge to test the acumen, mettle, and dancing skills of all the participants. The event aimed to enhance analytical thinking and took place on November 16th, 2022 from 10:00 AM to 4:00 PM

Round 1

"**Get Rekt**", was an offline questionnaire with 25 pop culture and 10 technical questions. The top 30 participants based on time and scores advanced to Round 2.

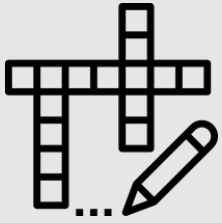
Round 2

"**Hall of Fame**", involved teams of two answering rapid-fire questions on celebrities, TV shows, and movies. Teams had two minutes to answer, and the top 5 teams advanced to Round 3 based on the number of questions answered.

Round 3

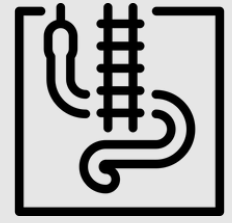
"**Rab ne Bana di Jodi**", featured a relay-style game where pairs of participants had to run around sheets of paper while tied together, with a quiz played after each round. The last two teams played a final relay with a hidden clue, and Prathik Joel D'souza and Prasanna Kotyal emerged as the winners.





Event 2

DOWN 'N ACROSS



The EVOLVE.AI club of the AIML department recently hosted an inter-departmental event, Down n' Across, on January 3rd, 2023. This event aimed to test the knowledge, efficiency, and competency of participants in various technical rounds based on general and technical knowledge. The event was designed to enhance analytical thinking and logical problem-solving skills among students.



ROUND 1:

"Decryptic": This round was a crossword-based challenge, where six sets of crosswords were prepared. Each set consisted of seven columns, and players had to find the answers based on seven clues provided. Upon finding the answers, players needed to identify a horizontal final seven-lettered answer. The top 12 participants with the highest scores qualified.

ROUND 2:

"Venom-verse": The second round was a snakes-and-ladders based challenge for the top 12 participants from the previous round. The players were divided into three tables of four players each, with each player competing against each other on a 7x7 snakes and ladders board. The game ended with one winner per board.

The winners of the event:

1st place: Vinay V Badigar

2nd place: Sharath Ram

3rd place: Karthik Koyyalamudi



Event 1

CYBER PSYCHO

The technical club of the AIML department, Brainiacs conducted the event, CyberPsycho, which was an Inter-Department level event consisting of multiple technical rounds. One of the rounds in this event were inspired by the algorithms used in machine learning and how neural network systems work. The motive of this event was to familiarise people even out of the AI department with how neural networks work. Event was conducted on 17th November 2022 from 10:00am to 4:00pm.



ROUND 1

Participants were divided into 4 groups, each with 2 data nodes, a name node, and a failover controller. The name node, blindfolded, had to select a data node and respond to two questions. Participants were ranked based on their performance.

ROUND 2

Participants were shown images from Google Street View and had to guess the location based on geographical features, such as landmarks or signs. The teams were scored based on how close their guess was to the actual location.



ROUND 3

Teams of two played a word-guessing game with a stick figure drawn on a rope. They guessed a 5-letter word, with wrong guesses resulting in added features to the stick figure. Six wrong guesses ended the round. The team with the most wins, won.



Event 2

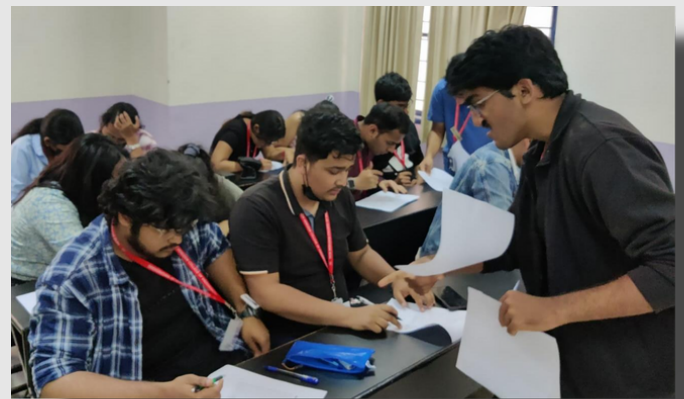
BREAKPOINT

The Brainiacs club of the Artificial Intelligence and Machine Learning Department recently organized an event named Breakpoint, which aimed to showcase the capabilities of Artificial Intelligence and its applications. The event consisted of two rounds, SnapDat and Pandora's Box, and was held on January 5, 2023, from 10:00 am to 4:00 pm.

Round 1:

SnapDat:

In the SnapDat round, participants were asked to replicate pictures of objects around the campus as closely as possible. The pictures were judged using an AI similarity CNN model, and the top five teams qualified for the second round. Participants displayed a great deal of creativity and attention to detail in their photographs.



Round 2:

Pandora's Box:

The second round, Pandora's Box, was a puzzle-solving competition that required teams to solve mazes and a simplified Finite State Machine (FSM) word search. This round aimed to test the teams' problem-solving skills and their understanding of AI concepts.



Breakpoint attracted participants from various disciplines who were excited to test their skills and learn more about AI. Overall, the event was a big success and provided a platform for students to showcase their abilities and knowledge of AI.

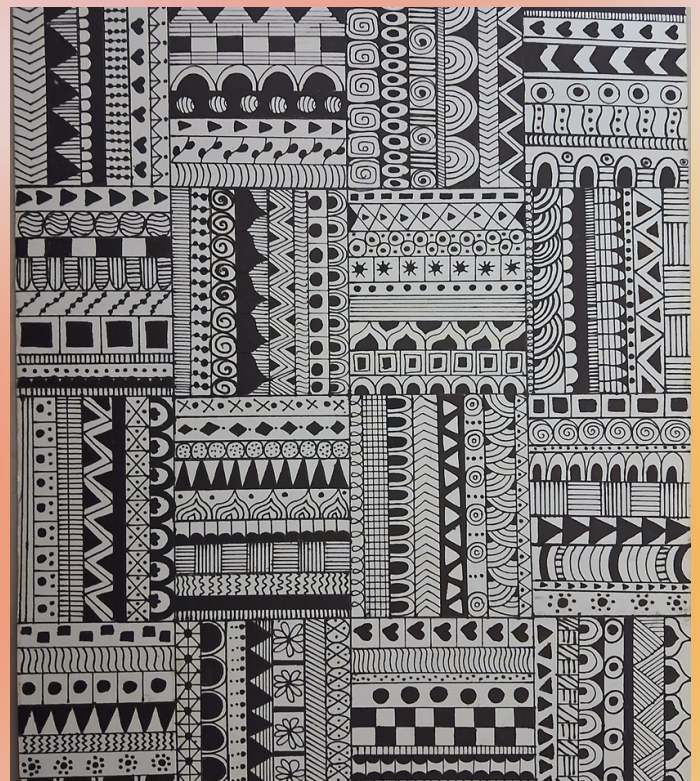
Students Corner



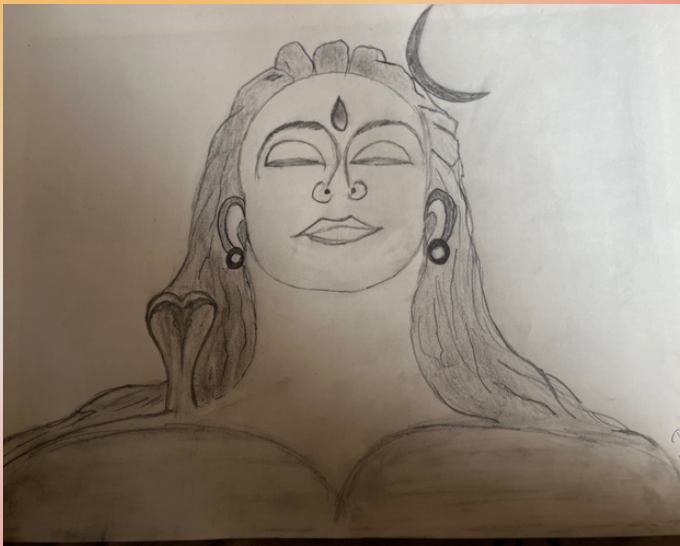
Sooryendhu P
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Jayashree M Gadwal
[1NH20AI034]



Shreya Yadav G
1st Sem, B013



Priyanka S
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Exploring The World of AI in Medicine

The eminent founder and ex-CEO of Amazon Inc, Jeff Bezos said, “AI is in a ‘golden age’ and is solving problems that were once in the realm of sci-fi”.

Life as we know it today, has just begun to revolve around the vast applications of AI, that could potentially take human survival to new dimensions. The interference of artificial intelligence in our day-to-day life is prominent, right from navigating our way around the city, to scrolling through those Instagram reels, to the momentary joy we get when Spotify recommends the perfect playlist, the list just goes on and on. One such breakthrough that is possible with AI, is most certainly the application of new-age technology in the healthcare and medical sector. Although the current developments in this field are yet in the nascent stage, it might just boom sooner than we can anticipate it. For example, the World Economic Forum, in its annual meeting estimated that by 2030, AI will be able to ‘access multiple sources of data to reveal patterns in disease and aid treatment and care’. Now, that poses a huge relief to humankind because, in sharp contrast, it has also been estimated that by 2035, there might be a ‘global deficit of about 12.9 million skilled health professionals’. AI, as we understand it now, can aid big-time to bridge the gap between an overworked doctor and a patient anticipating quality healthcare.

There can be innumerable ways to accomplish just that. Let me take you through some of them. For instance, AI is perfect to automate administrative tasks such as writing prescriptions, ordering clinical tests and informing treatment plans by using natural language processing (NLP) technology. Another example is to accelerate ‘image analysis’ or analysing scans. An MIT-led research team has developed a machine-learning algorithm that can analyse 3D scans upto a thousand times faster than what is possible today. AI can thus play a big part to improve the next generation of radiology tools. One such application that stands out from all, seems like it’s come straight out of a movie. AI-assisted robotic surgeries seem closer to reality than a dream, because trials on these have shown very promising results. Robots can use data from past operations to aid a surgeon in more complex and precise surgeries. Robot-assisted surgeries, upon surveys, have shown a 21% reduction in patients’ hospital stay, as these surgeries are considered to be ‘minimally-invasive’. This means that patients can heal quicker, with comparatively smaller cuts. Moreover, there are numerous such applications in the vast field of medicine and research is in full swing. That being said, AI has massive potential to become a game changer in the future of healthcare, and revolutionise this noble field for the generous cause it has.

~ **Vibha Joshi, [1NH21AI117]**

Stable Diffusion

The world we live in today has seen an immense escalation in the field of artificial intelligence and machine learning. One such deep-learning model that took everyone's breath away is Stable Diffusion. It converts text to high-resolution images. It was first developed by the CompVis group at LMU Munich. The basic idea behind the working of this model is to train the model on a large dataset of text-image pairs so that it can learn to associate certain words with specific visual features. These models when trained try to minimize the difference between the generated images and the corresponding ones using various optimization techniques. Now for generating a new image the model first encodes the text into a numerical representation and then decodes this into an image output. The generated image may not be the exact replica of the given text but captures the description's essence. Stable diffusion has numerous applications, such as creating illustrations, generating visualizations, data analysis, or helping people with visual impairments to better understand textual information.

DALL-E2 is another model that converts mere prompts by the user into mind-blowing images. This is a similar model to stable diffusion launched by OpenAI one of the leading AI foundations in the world. Models like these will soon take over many employment opportunities belonging to illustrators and designers but not anytime soon because everything has pros and cons. There are several controversies revolving around the copyrights for the images created as the model does not claim any credits for the generated images. There are truanicies in the generation of the exact same content. Hence, AI can improve the world but only when used wisely.

~ **Harshitha Ravani, [1NH21AI039]**



Reasons Behind Conflict in Yemen

Yemen has the largest humanitarian crisis in the world, with more than 24 million people needing assistance. This crisis is mainly affecting children - children are continuously being killed and maimed in the conflict, while the damage and closure of schools and hospitals has disrupted access to education and health services, leaving children even more vulnerable and robbing them of their futures. In this present situation, nearly 2.3 million children under the age of five in Yemen are projected to suffer from acute malnutrition in 2021 (February analysis).

Yemen has had 3 civil wars in the last 20 years - North and South Yemen were unified as Yemeni in May 22, 1990 and Ali Abdullah Saleh being the 1st president having full support of Saudi Arabia. Saudi Arabia and Iran have been an external force and play an important role in the Yemen Crisis.

It all began from the Arab spring for the power of democracy and the turning point was after the suicide of Mohamed Bouazize in 2010 at Tunisia.

After Saleh left office in 2012 as a part of a mediated agreement between the Yemeni Government and opposition groups, Abdrabbuh Mansur Hadi struggled to unite the fractious political landscape of the country and fend off threats that had been waging protracted insurgency in the north for years. In September 2014, the Houthi insurgency transformed into a full-blown civil war as Houthi fighters swept into the capital of Sana'a and forced Hadi to negotiate a "unity government" with the other political factions.

Due to continuous pressure, Hadi resigned with his ministers in January 2015. The following month, the Houthis declared themselves in control of government, dissolving parliament and installing an Interim Revolutionary Committee. Hadi declared to remain as Yemen's legitimate president. On 27 March 2015, the BBC (The British Broadcasting Corporation) reported that Hadi had "fled rebel forces in the City of Aden" and subsequently arrived in Saudi Arabia's capital Riyadh as Saudi authorities began airstrikes in Yemen. The conflict has displaced many lives since it escalated in March 2015, the country has become a living hell for children.

~ **Priyanka S, [22CO028]**

DystopAI

The recent surge of Artificial Intelligence applications at a break-neck pace is reminiscent of the smartphone's meteoric rise, with innumerable inventions paving the way for the modern smartphone at a rate comparable to modern AI research.

The invention of touchscreens, mobile cameras, etc. facilitated this paradigm shift in human technology, making it easier to access information and communicate with others in ways never before imagined.

However, with the rapid integration of AI into our daily lives, many are beginning to question whether or not we are becoming over-reliant on these synthetic tools.

As with any new technology, concerns about its impact on humanity are inevitable. While some may argue that AI has the potential to make our lives easier and more efficient, others fear that we are becoming too dependent on machines to do tasks that we used to do ourselves.

This begs the question: Have we already become over-reliant? Will we be crippled without our synthetic overlords?

Is humanity just the sensory nerve of the machine world? Will humanity be spared in the end?

While these concerns may seem unreasonable, history has shown us that every new tech fad is accompanied by dystopian notions of the future.

However, the progress of every new technology stagnates after reaching a milestone and plateaus in performance and scope. For instance with smartphones, it was well established that they couldn't handle highly intensive applications, the performance of smartphones has plateaued after two decades owing to this fact and might remain so for several years until groundbreaking new transistor materials are discovered.

However, for AI, there doesn't seem to be a performance milestone yet, and even the most conservative estimates for AI growth and prospects conclude that Singularity and the dissolution of man and machine might not be too far away. Does this mean that the dystopian visions of an AI dominated world are not entirely unfounded?

To the dismay of many technophiles however, it seems far more likely that this radical concept will remain unreachable in their lifetimes. It is very likely that huge corporations with vested interests in transforming dopamine in our brains into marketable businesses might allocate resources into AI research with a focus instead on gentrification and clip its proverbial wings.

We can already see this with AI being implemented to get people hooked to instant gratification algorithms. These huge companies shell out huge sums of money to optimize these algorithms. Resources better spent elsewhere.

In conclusion, it remains that both the proponents and detractors of AI subscribed to either side of an extremist ideology might be sorely disappointed. It is up to us to strike a balance and use AI as a tool to enhance our lives, rather than let it dominate and control us.

~ **Manish K, [1NH20AI038]**

Faculty Publications

Research publications (Journal)

- "Stability Results of Thermal Control System with Time-Dependent Delays and Perturbations of Nonlinearity", Advances in Materials Science and Engineering, SCIE: 1.726-Q2
- Dr.S.Umamaheswaran
- "Comprehensive Review on Graphene FET bio-sensors and their emerging application in DNA/RNA sensing & rapid covid-19 detection", Measurement, SCIE: 5.131-Q1
"Advances in neuromorphic devices for the hardware implementation of neuromorphic computing systems for future artificial intelligence applications: A critical review", Microelectronics journal, SCIE: 1.99-Q2
"Ferroelectric Field Effect Transistors(FeFETs):Advancements, challenges and exciting prospects for next generation Non-Volatile Memory(NVM) applications.", Materials Today Communications, SCIE: 3.662-Q2
- Dr.Sreejith
- "Multi-Faceted Clustering with Enhanced Multi-channel Allocation for Optimal Path Selection in Wireless Sensor Network", Wireless Personal Communications, SCIE: 2.017-Q2
- Prof. Gurupriya
- "Autonomous Vehicle Traffic Recognition Based on Artificial Intelligence", Journal of Pharmaceutical Negative Results , SCIE: Q4
- Prof.Sonia Maria D'Souza
- "SEXPACVO-Hybrid Deep learning: Exponential Anti Corona Virus Optimization enabled Hybrid Deep learning for tongue image segmentation towards diabetes mellitus detection", Biomedical Signal Processing and Control, SCIE: 5.076-Q1
- Prof. Jimsha K Mathew

Research publications (Conference)

- "A General Regression Neural Network based Blurred Image Restoration", IEEE
- Dr.Sreejith
- "Analytical Model for security in 5G Network", ICMCCT-2022
- Dr.Prianka RR
- "An analysis of smart clinical trial investigation methods in research medicine industries", IEEE
"Artificial Intelligence for 5G Advanced wireless Networks", ICMCCT-2022
- Prof. Sonia Maria D'Souza
- "A practical IoT-based PM2.5 Air Contaminant Tracking Mechanism with Suitable Machine Learning Support", CISCON-2022
- Prof. Gunasekhar

Research publications (Book)

- Full Stack Development
- Prof Sonia Maria D'souza
- Artificial Intelligence
- Dr. Uma Reddy N V

Book Chapter

- *The Role and Impact of Federated Learning In Digital Healthcare: A Useful Survey in Perspectives on Technical, Privacy and Security Challenges in A Modern World*
- Prof. Rajashree RS

Student Achievements



JAYAVIBHAV N K

[1NH20AI035]

Udaan : Finalist

Won 1600 Dollars for exemplary participation in Ethforall hackathon

Builders camp hackathon powered by Intel and AWS : 2nd place

Hackzon 2022 Hackathon, NHCE : Winner

Patents published : 1

DHARSHAN A N

[1NH20AI026]

Udaan : Finalist

Builders camp hackathon powered by Intel and AWS : 2nd place

Hackzon 2022 Hackathon, NHCE : Winner



Student Achievements



**PRANIT PRAKASH
PRABHU**
[1NH20AI078]

Design Committee Lead Bangalore Section
Student Activities Committee
Jan 2023- Dec 2023

ADHITHYA B N
[1NH20AI003]

Student Representative
IEEE Young Professionals Bangalore
Section
Jan 2023- Dec 2023



A SHARATH RAM
[1NH20AI001]

Secured 970/1000 in Microsoft Azure certification course. Invited to the Microsoft Future Ready Technology Summit presided over by Mr. Satya Nadella, CEO of Microsoft.



Student Achievements



Sai Tejeshwar

[1NH21AI063]

UDAAN FINALIST

Idea : Garstup (Student community)

Darshan A N [1NH20AI026]
Jayavibhav N K [1NH20AI035]
K Manish [1NH20AI038]

UDAAN TOP 10

Idea : TL;DWR
(Summarization Tool)



Darshan A N [1NH20AI026]
Jayavibhav N K [1NH20AI035]

BUILDER'S CAMP BY
AWS & INTEL
2nd Place

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