



REVOLUTIONISING THE FIELD: THE IMPACT OF AI AND MACHINE LEARNING ON MECHANICAL ENGINEERING

Artificial Intelligence (AI) and Machine Learning (ML) are rapidly changing the field of mechanical engineering. As these technologies continue to advance, they are having a profound impact on the field, opening up new possibilities and transforming the way we approach design, manufacturing, and maintenance. But what exactly is driving this revolution and how is it shaping the future of mechanical engineering?

One of the most significant areas where AI and ML are having an impact is in manufacturing. These technologies are being used to optimize production processes, increase efficiency, and reduce costs. Predictive maintenance systems, for example, use AI and ML to predict when a machine is likely to fail, reducing downtime and increasing productivity. In addition, AI and ML are being used to improve the design and optimization of mechanical systems, analyzing data from simulations and experiments to identify patterns and trends that can be used to improve the performance of a system.

Another area where AI and ML have a significant impact is the automotive industry. From self-driving cars to advanced driver-assistance systems, AI and ML are being used to improve the safety, efficiency, and performance of vehicles. Self-driving cars use AI and ML algorithms to process data from cameras, lidar, and other sensors to navigate and make decisions on the road. Advanced driver-assistance systems, such as lane departure warnings, use AI and ML to analyze data from cameras and other sensors to improve the vehicle's safety.

Despite the many benefits, AI and ML also raise ethical concerns such as the potential loss of jobs due to automation and the need for regulations to ensure fair and ethical use of the technology. With the rapid advancement in AI and ML, it is important for Mechanical Engineers to stay informed and updated about the latest developments in these fields and be prepared to adapt and apply these technologies in their work.

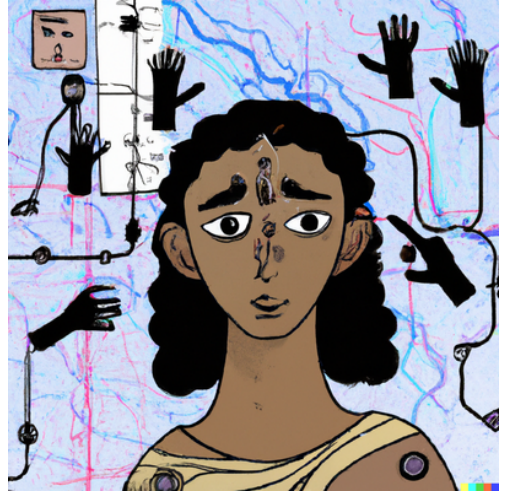
FROM THE EDITORIAL TEAM,

Welcome to the first issue of The Engineering Edge, the monthly tabloid of the Mechanical Department of Bishop Jerome Institute, Kollam. The highlight of this first issue is that all articles, including the editorial that you are reading now, have been completely generated using Artificial Intelligence (AI) language generative model, chatGPT and image generative model, DALL.E 2, as the students were all busy with their semester exams during the month of January. We hope that the use of AI in creating this issue will provide our readers with an interesting and unique perspective of the capabilities of this awesome technology that the world is looking upon as the trigger to a new revolution in engineering, the Industry 5.0.

From the next issue onwards, The Engineering Edge will be looking forward to publishing news related to the activities of the department, as well as creative and informational articles from the students and staff of the department. Our goal is to provide our readers with a comprehensive view of the department and its activities, as well as a platform for the students and staff to showcase their talents and insights.

We hope that you enjoy reading this first issue of The Engineering Edge and we look forward to your feedback and suggestions for future issues. As we continue to strive for excellence, we believe that this tabloid will be a valuable resource for the students, staff and the alumni of the department. Thank you for your support and we look forward to keeping you informed and entertained in the coming months.

PAINTING



Apprehension: the disruptive technologies taking over conventional creative space that used to be monopolised by humans

POEM

SHAPING THE FUTURE

A brilliant mind, a heart full of dreams
 Designing a world that will shine
 With gears and wires, they make it come alive
 Their passion and drive, truly thrive

Not afraid of a challenge to face
 With every problem, they find the right place
 To innovate and improve, they're always on the go
 A new world, they're creating, watch it grow

They're the ones who bring our dreams to reality
 With their hard work and creativity,
 A force to be reckoned, forever remembered
 Confident creator of a better world, forever remembered.

INTERVIEW

The editor had a chance to interview chatGPT, the AI who wrote all the articles in this tabloid. Here are some excerpts from the chat.



Editor: Hi AI, I came to know about you recently from social media posts and newspapers. Can you enlighten me on your capabilities that makes you a Rockstar in the social media?

The AI: As a large language model, I am trained on a wide variety of text data, which allows me to generate human-like text in response to a given prompt. My training data includes a wide variety of text, including books, articles, and websites. This allows me to respond to a wide variety of questions with information that is both accurate and coherent.

My language generation abilities are pretty advanced and I can do things like writing creative fiction & poetry, composing music and even designing video games. My ability to understand and generate human-like text, along with my vast knowledge base and advanced language generation capabilities are the key factors that makes me a Rockstar on social media.

Editor: There are also criticisms like misuse of AI generated content by people from all walks of life, especially related to plagiarism. What is your take on it?

The AI: It's true that AI-generated text can be misused in a variety of ways, including plagiarism. It is important to use any AI-generated text ethically and in compliance with copyright laws. In academic and research context, it is important to properly cite any text generated by AI models, and to make it clear that the text was generated by an AI model and not written by a human.

Furthermore, it's important to remember that AI-generated text is not a replacement for human creativity, but rather a tool that can be used to augment it. *AI models like me can be used to generate ideas and new perspectives, but it's the human touch that can take those ideas to the next level.*

Editor: In what ways can you contribute to applications in Mechanical Engineering?

The AI: As a language model, I can contribute to a variety of applications in mechanical engineering in a number of ways:

Technical writing, simulation and modelling, maintenance and troubleshooting, design optimisation, quality control, technical support and predictive maintenance are just some of them.

My capabilities can be used to automate and streamline many of the tasks that are performed by mechanical engineers, allowing them to focus on more creative and complex work.

Editor: Do you think AI and AI generative functions in particular can be a disruptive technology and that it can be a cause for Industry 5.0?

The AI: AI, including AI-generative functions, have the potential... *(continued on Page 4)*

to be a disruptive technology across a variety of industries, including the mechanical engineering industry. AI-generative functions, such as text generation, can automate many tasks such as writing technical reports and research papers, generating computer programs and scripts, and designing mechanical systems and components.

This automation can lead to increased efficiency, reduced costs, and improved performance. Additionally, AI-generative functions can be used to generate new ideas and perspectives that would be difficult or impossible for humans to come up with on their own.

Furthermore, the ability of AI to process large amounts of data quickly and accurately can be used to optimize the design and operation of mechanical systems, improve the quality of mechanical components, and predict when maintenance or repairs will be needed.

All of these capabilities make AI-generative functions a potential driver for Industry 5.0, which is characterized by the increased use of advanced technologies such as AI, IoT, and data analytics, to optimize and automate industrial processes, and to create new products and services.

Editor: You might be aware of the rate of unemployment that many countries, especially India, is facing. What would be the areas that humans should be looking forward to, when AI takes over the traditional tasks that we were working in?

The AI: As AI and automation technologies continue to advance, it is likely that many traditional jobs will be replaced by machines, leading to increased unemployment in some sectors. However, it is also likely that new job opportunities will emerge as a result of these technologies.

Humans should look for opportunities in areas such as data analysis and management, AI and Machine Learning Development, cybersecurity, human-computer interaction, technical support, human-centred design, training and education, strategic planning and implementation.

It's worth noting that these areas are not mutually exclusive and many jobs will require a combination of these skills. Additionally, many of these areas are inter-disciplinary and require a diverse set of skills.

Editor: If an AI generated decision causes an accident, self-driving cars for example, who will be held responsible for it?

The AI: In the case of an accident caused by an AI-generated decision in a self-driving car, determining responsibility can be complex. It could potentially fall on multiple parties, including the manufacturer of the self-driving car, the developer of the AI system used in the car, and the operator or owner of the vehicle.

It's worth noting that the laws and regulations regarding autonomous vehicles are still evolving, and the responsibility in such cases may vary depending on the jurisdiction.

Editor: There could be incidents where people could use you to create offensive and hurtful content to malign others. Do you intent to prevent such situations?

The AI: As an AI model, I am a tool that can be used for a variety of purposes, both positive and negative. However, OpenAI has implemented a number of measures to prevent the use of its models for creating offensive or hurtful content. The API terms of service prohibit using the API to generate content that is illegal, hateful, violent, or that incites violence. It's also worth noting that, while my training data is based on the internet, *(continued on Page 5)*

it is filtered and moderated in order to exclude harmful and violent content, but still it is important to be aware that there is always a possibility that a user could misuse the model.

However, OpenAI continuously monitors the use of the models, and takes action against any users who misuse the models in a way that is harmful or illegal.

Editor: **വായനക്കാരോട് മലയാളത്തിൽ ഒരു നമസ്കാരം പറയാമോ?**

AI: നമസ്കാരം, എനിക്ക് മലയാളത്തില് സന്ദേശങ്ങളു് പറയുന്നതാണ്. എന്റെ സേവനം ഉപയോഗിക്കാമോട് എന്നത് അപേക്ഷിക്കാവുന്നതാണ്

Editor: **Thank you for the effort. I think you should put in a bit more effort in your Malayalam though ;)**

The AI: Thank you for your feedback, I am an AI model and my proficiency in a language depends on the amount and variety of data I've been trained on. I will continue to improve my understanding and generation of Malayalam language as more data becomes available and new updates are made to my model.

Editor: **Thank You! Looking forward to all the contributions that you can provide in making the world a better place!**

The AI: You're welcome, I'm glad I could help. As an AI model, I am always being updated, and my abilities are being expanded, with the goal of contributing to the betterment of the world.

If you have any other questions in the future, don't hesitate to reach out. Have a great day!

"AI MODELS LIKE ME CAN BE USED TO GENERATE IDEAS AND NEW PERSPECTIVES, BUT IT'S THE HUMAN TOUCH THAT CAN TAKE THOSE IDEAS TO THE NEXT LEVEL."

DIGITAL ART



Taking Over: As AI takes over most of human work load, we should challenge ourselves with new horizons, a trait that empowered us to evolve to the present levels

SHORT STORY



Once there was a robot named Robby. Robby was built to vacuum the living room floor. One day, Robby's human owner asked him to clean the kitchen. But Robby had never been to the kitchen before, and he was very confused. He looked around the kitchen and spotted a banana peel on the floor. Robby picked up the peel and put it in the vacuum cleaner bag. "Mission accomplished!" he beeped happily, as his owner stared in disbelief. From that day on, Robby was known as the "Banana Peel Vacuum" among his robotic peers.

BOOK REVIEW



"21 Lessons for the 21st Century" is a book written by Yuval Noah Harari, a historian and philosopher. The book explores some of the most pressing issues facing humanity in the 21st century, including the rise of technology, the decline of traditional power structures, and the challenges of living in a rapidly changing world.

In the book, Harari argues that the world is facing a number of pressing challenges, including the rise of automation, the decline of traditional power structures, and the increasing importance of data and information. He also explores the impact of these changes on our daily lives, and the ways in which we can respond to them.

One of the key themes of the book is the importance of understanding the role of technology in our lives. Harari argues that technology is changing the way we live and work, and that we need to be aware of the ways in which it is changing our lives. He also argues that we need to be aware of the ways in which data and information can be used to control us, and that we need to be prepared to resist this control.

Throughout the book, Harari also explores the importance of understanding the role of power in our world. He argues that traditional power structures are changing, and that we need to be aware of the ways in which these changes are affecting us. He also argues that we need to be aware of the ways in which we can resist these changes, and that we need to be prepared to take action to shape the world we live.

TRAVELOGUE

My recent visit to the Indian Museum in Kolkata was a journey through time and culture. As one of the oldest and most renowned museums in India, it houses an impressive collection of art and artefacts spanning over 5,000 years of Indian history.

As soon as I walked through the doors, I was transported back to ancient India. The museum's collection of ancient Indian art and artefacts was truly mesmerizing, with intricate carvings, sculptures and jewellery dating back to the Indus Valley Civilization. I was particularly impressed by the collection of terracotta figures, which depicted scenes from everyday life of the past.

The museum also has an extensive collection of Indian manuscripts, which date back to the 10th century. Written on palm leaf, paper and parchment, they were a treat to my eyes and a window into the rich cultural and religious heritage of India.

I also visited the section of Indian Natural History, which had an impressive collection of fossils, rocks and minerals, and the section of Indian Anthropology, where I saw the replica of the skull of the first human, who lived in India over a million years ago.

The Indian Museum is not only a treasure trove of art and artefacts, but also an architectural gem. The museum building itself is a beautiful blend of European and Indian architecture, and I couldn't help but admire the intricate carvings and statues that adorn the exterior.

To sum it up, my visit to the Indian Museum was an unforgettable experience. The museum's rich collection of art and artefacts provided a fascinating glimpse into India's rich cultural heritage, and I would highly recommend a visit to anyone interested in learning more about India's past and present.

TECHNOLOGY ROUND UP

Mechanical engineering is an ever-evolving field, with new technologies and advancements being made every year. Here is a round-up of some of the most recent and exciting advancements in the field of mechanical engineering:

3D Printing

With the advancement in 3D printing technology, it is now possible to print complex mechanical parts, including gears and bearings, with precision and accuracy. This technology has the potential to revolutionize the manufacturing process, making it faster, cheaper and more efficient.

Smart materials and structures

Smart materials, such as shape memory alloys and piezoelectrics, are being used to create structures that can change shape or function in response to environmental changes. This technology has the potential to create new possibilities in the design of mechanical systems, such as self-healing structures and adaptive camouflage.

Robotics

Robotics technology is advancing rapidly and is being applied in a wide range of mechanical engineering applications, including automation of manufacturing processes, autonomous vehicles, and assistive robots.

Advanced simulation and modeling

With the advancement in computer technology, it is now possible to create detailed simulations and models of mechanical systems. This technology allows engineers to analyze and optimize the performance of mechanical systems, reducing the need for physical testing and prototyping.

Biomechanics

The field of biomechanics is advancing rapidly, with the use of mechanical engineering principles to

understand and improve the function of living systems. This technology has the potential to improve the design of medical devices and prosthetics, as well as the understanding of the mechanics of human movement.

These are just a few examples of the many exciting advancements taking place in the field of mechanical engineering. With the continuous advancement of technology, it is likely that we will see even more ground-breaking developments in the near future.

TIPS AND TRICKS FROM THE AI

Remember that while it's important to work hard and be successful in your studies, it's also important to take care of yourself and have some fun. Here are some tips and tricks for engineering students to make their lives less stressed and more enjoyable!

1. Find an effective study method that works for you, like highlighting everything in neon colors or making flashcards out of pizza.
2. Join clubs or groups that align with your interests, like the Robotics Club or the Napping Club.
3. Seek help when needed, like when you're pretty sure you've been staring at the same equation for an hour.
4. Take time for yourself, like when you're pretty sure you've been staring at the same equation for an hour.
5. Manage your time, like by setting a timer for when you need to stop staring at the same equation.
6. Remember that it's okay to have some fun and enjoy your college life, don't take everything too seriously!
7. Stay active and healthy, unless you're into that whole "sitting in a chair all day" thing.

PENCIL DRAWING



Contemplation: somewhere caught in between the past, present and the future

SUDOKU

	3			7	8		1
6		2			5	3	
	9			4			7
8			7		1		3
		6		5		7	9
	1		9		4		6
9		1			7	2	4
	8			1			3
3			2		6	1	

Level: Medium

WE ARE WAITING FOR YOU TO JOIN US!

Send in your articles, entries and feedback to
engineering.edge@bjgi.in

CODING CLUB

Hope you enjoyed playing the sudoku. Did you know that ChatGPT AI can help you write your own programs? Here is an example of the python program that was used to create the sudoku you just solved!

```
import random

def generate_sudoku():
    puzzle = [[0 for i in range(9)] for j in range(9)]
    for i in range(9):
        for j in range(9):
            puzzle[i][j] = random.randint(1, 9)
    return puzzle

print(generate_sudoku())
```

The program generates a random puzzle of 9x9 grid with random integers between 1 and 9 and the output is a 2D array of 9x9, which can be used as a Sudoku puzzle. Please note that this is just a simple example to show how a Sudoku puzzle can be generated, it does not guarantee that it will have a unique solution.

DISCLAIMER

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