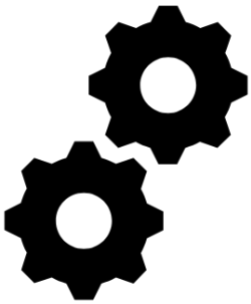
CHANDIGARH
ENGINEERING COLLEGE
CGC, LANDRAN, MOHALI

Building Careers. Transforming lives.



MECHNOTIMES

NEWSLETTER

VOLUME-7

ISSUE-I

JULY-SEPTEMBER 2022

VISION OF THE CHANDIGARH ENGINEERING COLLEGE-CGC

To become a leading institute of the country for providing quality technical education in a research based environment for developing competent professionals and successful entrepreneurs.

MISSION OF THE CHANDIGARH ENGINEERING COLLEGE-CGC

1. To provide state of the art infrastructure and engage proficient faculty for enhancing the teaching learning process to deliver quality education.
2. To give a conductive environment foe utilising the research abilities to attain new learning for solving industrial problems and societal issues.
3. To collaborate with prominent industries for establishing advanced labs and using their expertise to give contemporary industry exposure to the student and faculty.
4. To cater opportunities for global exposure through association with foreign universities.
5. To extend choice based career options for students in campus placements, entrepreneurship and higher studies through career development program.

DEPARTMENT OF MECHANICAL ENGINEERING

Vision of the Department

To emerge as centre of quality education for creating competent mechanical engineers catering to the ever-changing needs of industry and society.

Mission of the Department

M1: To provide quality education by constantly updating departmental resources and using effective teaching learning methodology.

M2: To promote research practices in the field of mechanical engineering in pursuit of academic excellence and for the benefit of society.

M3: To establish industrial collaborations for imparting contemporary knowledge to keep pace with the technological challenges in the interdisciplinary and core areas of mechanical engineering.

M4: To provide opportunities to the students for global exposure through international collaborations.

M5: To nurture students through pre-placement training programs to succeed in campus placements and to provide guidance for entrepreneurship and higher studies.

EDITOR'S COLUMN

A newsletter mirrors a department-Its vision and mission. It also highlights events, activities and academic prowess and achievements. The journey of mechanical engineering is an ongoing quest to create a better world. By embracing innovation and sustainability, we can drive positive change and leave a lasting impact on society. As readers and contributors to this magazine, you are part of this transformative journey, and we look forward to witnessing the exciting advancements that lie ahead. We feel extremely overjoyed to share glimpses of the activities taken by our zealous students under the guidance of their faculty as their sailors during the period.

AISHNA MAHAJAN

EDITOR-IN-CHIEF

MECHNOTIMES

FROM EDITORIAL'S BOARD

Welcome to our latest edition of Mechnotimes of Mechanical Department Newsletter of Chandigarh Engineering Colleges-CGC,Landran for month JANUARY-MARCH 2023. As we delve into the world of engineering and technology, we are reminded of the boundless opportunities and responsibilities that lie ahead. In this editorial, we emphasize the importance of embracing innovation and sustainability to drive progress in the mechanical world. Innovation is the beating heart of the engineering field. From the steam engine to the modern electric vehicle, innovation has shaped the way we live, work, and interact with the world. As mechanical engineers, we are at the forefront of this dynamic transformation, continuously pushing the boundaries of what's possible. The reader will definitely be able to see to paragon vision of the department. We hope that this Culture of releasing the newsletter continue forever and may become quoted example for all to follow.

ANURAAG GILHOTRA (2102424), SEM III

PRATEEK RANJAN (2003076), SEM V

KAUSTUBHA SRIVASTAVA (1902851), SEM VII

FOURTH INTERNATIONAL CONFERENCE ON CONTEMPORARY ADVANCES IN MECHANICAL ENGINEERING 2022

The Department of Mechanical Engineering, Chandigarh Engineering College, organized the "4th International Conference on Contemporary Advances in Mechanical Engineering (ICCAME-2022)" during September 15-16, 2022. The event was inaugurated by the Chief Guest, Prof. Dr. R.K. Garg, former Director NIT Arunachal Pradesh and Director In charge NIT Jalandhar, in the presence of Guests of Honor, Prof. Dr. Inderdeep Singh, Head, Department of Design, IIT, Roorkee and Dr. Sanjay Sood, Associate Director, C-DAC, Mohali. Extending their best wishes to the audience on the occasion of Engineers' Day, the speakers shared their thoughts on the theme of the conference. They also highlighted the contributions being made by the engineering community in nation-building. This conference witnessed an overwhelming response from the students, researchers, academicians and industry professionals as more than 240 research articles were submitted to this conference out of which 107 have been recommended for publication in Elsevier's Materials Today: Proceedings (Scopus Indexed International Journal) after rigorous peer review process. The participants presented their research findings through 8 technical sessions and had constructive discussions with the peer group. Best Paper Presentation Awards were also presented to 08 Participants. The participants' during the feedback session applauded the sincere efforts of the organizing team of ICCAME-2022.

SEMINAR ON ENTREPRENEURSHIP

This conference witnessed an overwhelming response from the students, researchers, academicians and industry professionals as more than 240 research articles were submitted to this conference out of which 107 have been recommended for publication in Elsevier's Materials Today: Proceedings (Scopus Indexed International Journal) after rigorous peer review process. The participants presented their research findings through 8 technical sessions and had constructive discussions with the peer group. Best Paper Presentation Awards were also presented to 08 Participants. The participants during the feedback session applauded the sincere efforts of the organizing team of ICCAME-2022.

In addition to these personal motivations, entrepreneurship can also have a positive impact on society as a whole. By bringing new products and services to market, entrepreneurs can create jobs, stimulate economic growth, and contribute to the overall well-being of their communities. Many entrepreneurs are driven by a desire to make a difference in the world, and see business ownership as a way to do so.Overall, entrepreneurship offers a wide range of potential benefits and rewards for those who are willing to take on the challenges and risks of business ownership. Whether motivated by passion, financial gain, or a desire for personal growth, individuals who choose to become entrepreneurs have the opportunity to create something new and make a lasting impact on the world around them.

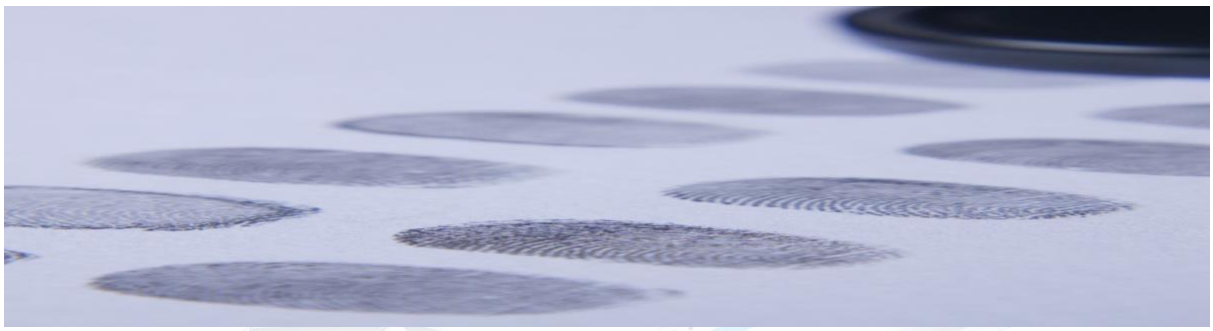
SEMINAR ON "BASICS OF INTELLECTUAL PROPERTY RIGHTS"

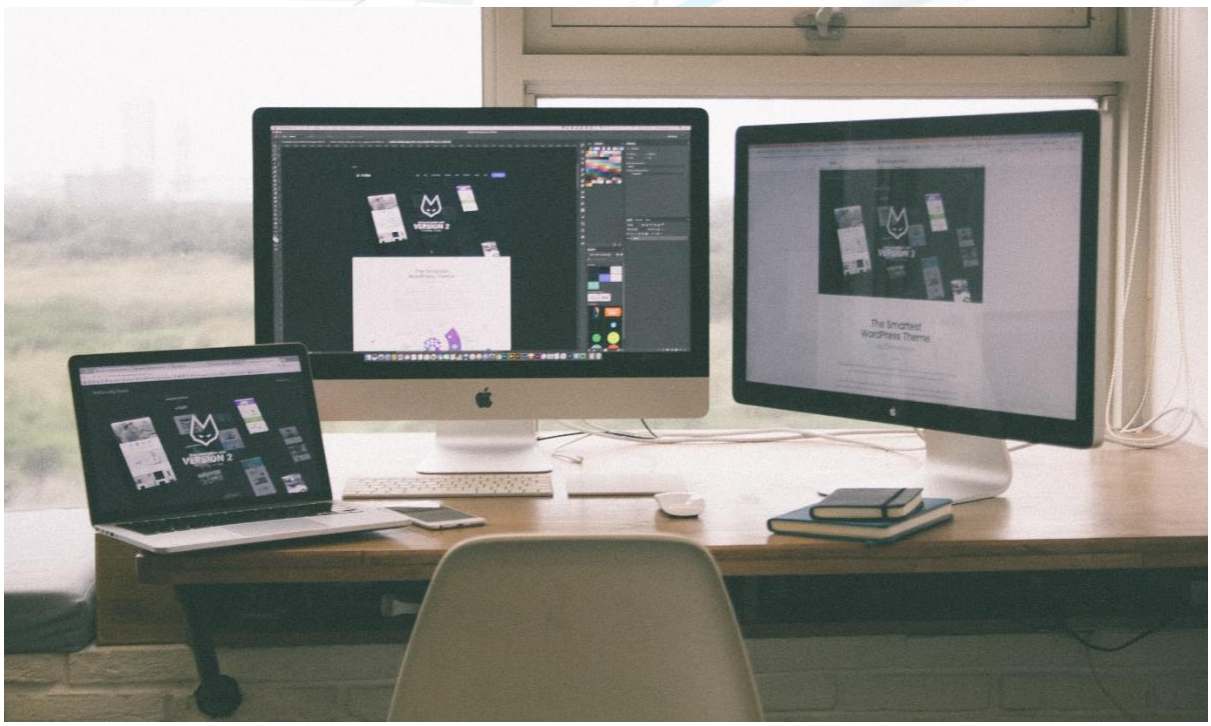
The Department of Mechanical Engineering organized a Seminar on Basics of Intellectual Property Rights on August 28, 2022. This seminar was conducted by Mr. Khushal Juneja, General Manager IP & Operations, Ennoble IP. This seminar helped the students to learn about the concept and intricacies of Intellectual property and Intellectual Property Rights. The students were apprised about the importance of IPR with respect to businesses and startups.

Intellectual property rights can help you generate business through the licensing, sale and even commercialization of the products and services protected under IPRs. This will ultimately improve the market share and helps in raising profits. Having registered and protected intellectual property rights can also raise the business' value in case of sale, merger or acquisition. Ideas have little value on their own but registering ideas under intellectual property rights can help you turn it into commercially successful products and services. Copyrighting or licensing the patents can lead to a steady stream of royalties and additional income.

BIOMETRIC SEAT CAPABILITIES

Biometric seat capabilities improve a driver's personal experience in vehicle. The technology collects data from a driver's face and palms. The information measures anxiety levels and advice the driver when to take the break. This help to avoid fatigue and enhance a driver's performance on the road. Biometric seats are designed to monitor stress level by using sensors. These sensors are installed in the steering wheel and seat belts, which triggers automatic speed limit, audio warning, and ability to dial the emergency services. Rise in production of vehicle integrated with increasing safety standards across the globe, is likely to propel the automotive biometric seat technology market. Rise in integration of sensors in vehicles to monitor the psychological state of the driver, including breathing rate, helps detect the stress level.





Written by: Sandeep Mishra(2003081), Sem V

HARNESSING THE POWER OF INNOVATION IN MECHANICAL ENGINEERING

The Mechanical engineering is a dynamic and constantly evolving field, driven by advancements in technology and the growing demands of society. As a discipline, mechanical engineering plays a critical role in addressing some of the world's most pressing challenges, such as the development of sustainable energy sources, the improvement of transportation systems, and the creation of advanced manufacturing processes. At the heart of mechanical engineering is a focus on innovation, with engineers constantly seeking new and creative solutions to complex problems whether it's through the development of cutting-edge technologies, the optimization of existing systems, or the creation of entirely new products, mechanical engineers play a vital role in shaping the future. One of the key drivers of innovation in mechanical engineering is the increasing use of computational tools and digital technologies. With the growth of simulation and modeling software, engineers can now test and validate their designs in virtual environments, reducing the need for physical prototypes and speeding up the development process. Another exciting area of innovation in mechanical engineering is the development of robotics and automation systems. With advances in machine learning and artificial intelligence, robots are becoming increasingly capable of performing tasks that were once only possible for humans. This has the potential to revolutionize the manufacturing process, improving efficiency and reducing costs.

Despite these exciting advancements, there are also challenges facing the mechanical engineering community. For example, the growing demand for sustainable energy sources requires engineers to find new and innovative ways to reduce the carbon footprint of energy production and transportation. Additionally, the increasing complexity of technology means that engineers must continuously develop their skills and knowledge to stay ahead of the curve. As mechanical engineers, we are proud to be part of a discipline that is making a positive impact on the world and driving innovation. We look forward to continuing to push the boundaries of what is possible and to working together to address the challenges of the future.

Written by:Prateek Ranjan (2003076), Sem V

RICH DAD, POOR DAD

“Both men offered me advice, but they did not advise the same things. Both men believed strongly in education but did not recommend the same course of study.”

“Although both dads worked hard, I noticed that one dad had a habit of putting his brain to sleep when it came to money matters, and the other had a habit of exercising his brain. The long-term result was that one dad grew stronger financially and the other grew weaker.”

“My poor dad would also say, ‘I’m not interested in money,’ or ‘Money

doesn’t matter.’ My rich dad always said, ‘Money is power.’”

“Most of the time, life does not talk to you. It just sort of pushes you around.

Each push is life saying, ‘Wake up. There’s something I want you to learn.’”

“Or if you’re the kind of person who has no guts, you just give up every time life pushes you. If you’re that kind of person, you’ll live all your life playing it safe, doing the right things, saving yourself for some event that never happens.”

“I’ll bet you that I earn more than your dad, yet he pays more in taxes.”

“They work very hard, for little money, clinging to the illusion of job security, looking forward to a three-week vacation each year and a skimpy pension after forty-five years of work.”

“Let me finish the other emotion, which is desire. Some call it greed, but I prefer desire. It is perfectly normal to desire something better, prettier, more fun or exciting.”

“The main cause of poverty or financial struggle is fear and ignorance, not the economy or the government or the rich. It’s self-inflicted fear and ignorance that keeps people trapped.”

Written by: Nishant Thakur (1902875), Sem VII

ANTI-LOCK BRAKING SYSTEM

In a vehicle, wheel speed sensors are located on the wheels that monitor the speed of each wheel. The electronic control unit (ECU) reads the signal from each sensor. After the speed sensors detect that the speed of any of the wheel(s) is reducing drastically compared to others, the ECU sends the signal to the valves of the respective wheel(s) to reduce the brake pressure, and the valves get closed.

After this, the wheels start to accelerate again, and the signal is sent to the ECU one more time, which in turn sends the signal to open the valve and increase the brake pressure, and hence, brakes are applied.

When an ABS works, the brakes are applied and released numerous times in one second, and hence, the system ensures that the wheels do not lock up under hard braking. The vehicle slows down while maintaining its grip, and the available traction also allows the driver to give steering inputs. This helps the driver steer the vehicle to avoid an accident. The advanced Anti-Locking Braking System hence offers significant benefits over normal brakes.

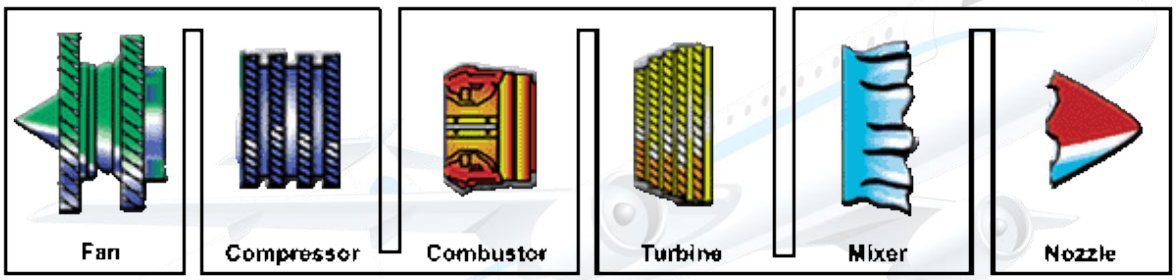
Written By: Mukesh (1902869), Sem V

HOW A JET ENGINE WORKS

Jet engines move the airplane forward with a great force that is produced by a tremendous thrust and causes the plane to fly very fast.

All jet engines, which are also called gas turbines, work on the same principle. The engine sucks air in at the front with a fan. A compressor raises the pressure of the air. The compressor is made with many blades attached to a shaft. The blades spin at high speed and compress or squeeze the air. The compressed air is then sprayed with fuel and an electric spark lights the mixture. The burning gases expand and blast out through the nozzle, at the back of the engine. As the jets of gas shoot backward, the engine and the aircraft are thrust forward. As the hot air is going to the nozzle, it passes through another group of blades called the turbine. The turbine is attached to the same shaft as the compressor. Spinning the turbine causes the compressor to spin.

Parts of a Jet Engine



Fan - The fan is the first component in a turbofan. The large spinning fan sucks in large quantities of air. Most blades of the fan are made of titanium. It then speeds this air up and splits it into two parts. One part continues through the "core" or center of the engine, where it is acted upon by the other engine components.

The second part "bypasses" the core of the engine. It goes through a duct that surrounds the core to the back of the engine where it produces much of the force that propels the airplane forward. This cooler air helps to quiet the engine as well as adding thrust to the engine.

Compressor - The compressor is the first component in the engine core. The compressor is made up of fans with many blades and attached to a shaft. The compressor squeezes the air that enters it into progressively smaller areas, resulting in an increase in the air pressure. This results in an increase in the energy potential of the air. The squashed air is forced into the combustion chamber.

Combustor - In the combustor the air is mixed with fuel and then ignited. There are as many as 20 nozzles to spray fuel into the airstream. The mixture of air and fuel catches fire. This provides a high temperature, high-energy airflow. The fuel burns with the oxygen in the compressed air, producing hot expanding gases. The inside of the combustor is often made of ceramic materials to provide a heat-resistant chamber. The heat can reach 2700°.

Turbine - The high-energy airflow coming out of the combustor goes into the turbine, causing the turbine blades to rotate. The turbines are linked by a shaft to turn the blades in the compressor and to spin the intake fan at the front. This rotation takes some energy from the high-energy flow that is used to drive the fan and the compressor. The gases produced in the combustion chamber move through the turbine and spin its blades. The turbines of the jet spin around thousands of times. They are fixed on shafts which have several sets of ball-bearing in between them.

Nozzle - The nozzle is the exhaust duct of the engine. This is the engine part which actually produces the thrust for the plane. The energy depleted airflow that passed the turbine, in addition to the colder air that bypassed the engine core, produces a force when exiting the nozzle that acts to propel the engine, and therefore the airplane, forward. The combination of the hot air and cold air are expelled and produce an exhaust, which causes a forward thrust. The nozzle may be preceded by a **mixer**, which combines the high temperature air coming from the engine core with the lower temperature air that was bypassed in the fan. The mixer helps to make the engine quieter.

Written by: Yuvraj (2003092), Sem V

THE UNPRECEDENTED RISE OF AI

Introduction

In recent years, the world has witnessed an unparalleled revolution in artificial intelligence, with one remarkable example being the creation of ChatGPT, an AI language model developed by OpenAI. As an integral part of the GPT-3.5 architecture, ChatGPT has played a transformative role in shaping the way humans interact with machines. This article delves into the fascinating journey of ChatGPT, from its humble beginnings to its meteoric rise, and explores the significant impact it has had on various industries and aspects of modern life.

Inception and Development

ChatGPT's inception can be traced back to the collective efforts of brilliant minds at OpenAI. The development team utilized deep learning techniques, particularly transformer-based neural networks, to create a language model that excels at understanding context, contextually generating text, and responding coherently to user input. The model was trained on vast datasets, including books, articles, websites, and other text sources, enabling it to learn from an extensive pool of information.

Early Challenges and Milestones

Like any groundbreaking technology, ChatGPT faced its fair share of challenges during its early days. Fine-tuning the model's capabilities and preventing biases in its responses were paramount concerns. OpenAI diligently addressed these issues through continuous refinement and feedback from users, promoting a safe and inclusive environment for all interactions.

ChatGPT's first milestone came with its public release, which enabled users worldwide to experience the power of conversational AI. Initially launched as a research preview, the platform quickly gained popularity, attracting a diverse user base ranging from professionals to students, hobbyists to entrepreneurs.

Applications in Various Industries

The versatility of ChatGPT has made it an invaluable tool across numerous industries. In customer support, it has revolutionized interactions by providing efficient and automated responses to queries, reducing response times, and enhancing overall user satisfaction. Moreover, ChatGPT has found applications in content creation, aiding writers, bloggers, and marketers to generate engaging and informative content effortlessly.

In the realm of education, ChatGPT has emerged as a valuable tutor, offering personalized learning experiences to students and assisting educators in developing interactive lesson plans. Additionally, researchers have benefited from the model's ability to comprehend complex scientific literature, aiding them in their quest for new discoveries and advancements.

Ethical Considerations and Safeguards

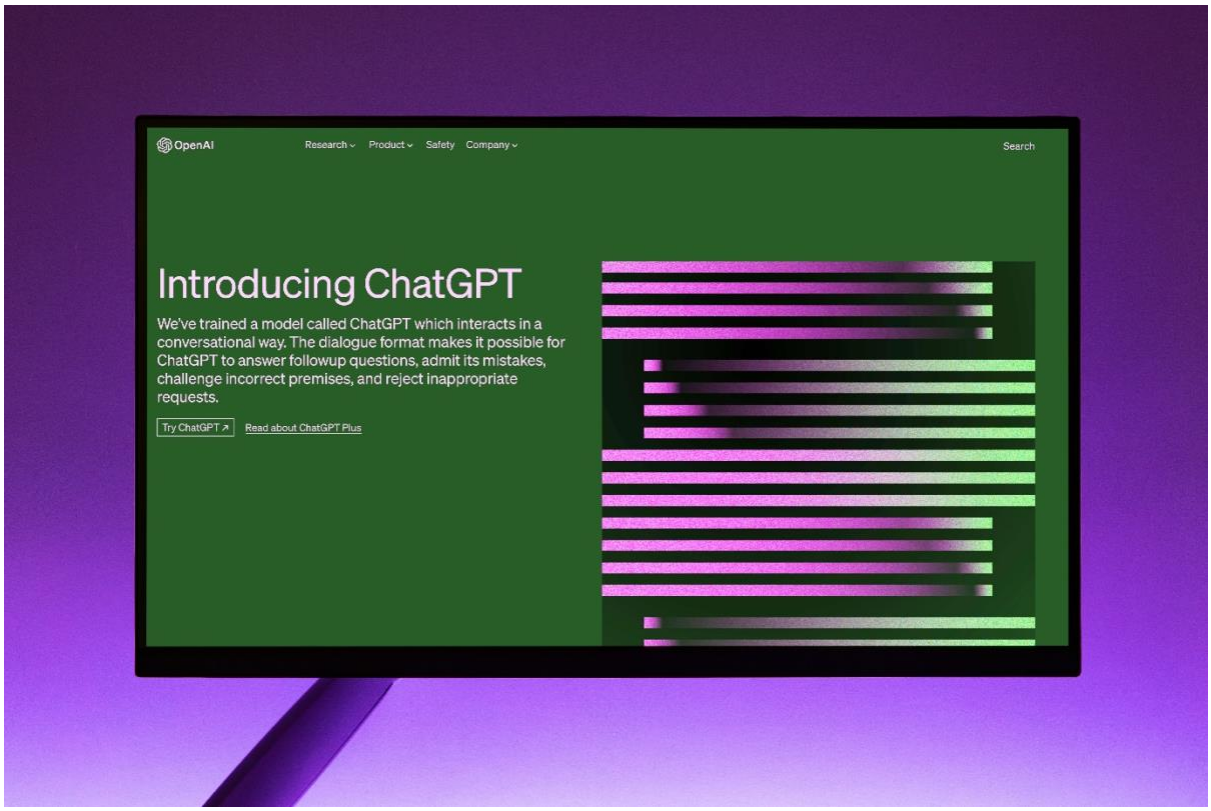
With its ever-growing capabilities, ChatGPT has sparked discussions about ethical considerations in AI development. OpenAI has remained committed to addressing concerns regarding bias, misinformation, and potential misuse of the technology. Striking a balance

between fostering AI innovation and ensuring its responsible deployment has been an ongoing commitment for OpenAI.

Moreover, user privacy and data security have been at the forefront of ChatGPT's development. Stringent measures have been put in place to protect user data and maintain confidentiality during interactions.

Future Prospects

The success of ChatGPT has laid the foundation for even more advanced AI language models, opening doors to exciting future prospects. As AI technology continues to evolve, it is likely that ChatGPT will undergo further improvements, becoming even more adept at understanding and responding to human needs. The possibilities are limitless, and the impact on industries such as healthcare, finance, and entertainment is poised to be profound.



Conclusion

ChatGPT's remarkable journey from its inception to widespread adoption is a testament to the incredible strides made in the field of artificial intelligence. As this AI language model continues to empower users across various sectors, it reinforces the importance of responsible AI development, ethics, and privacy. With its ever-increasing capabilities, ChatGPT serves as a harbinger of a future where AI and humans collaborate harmoniously, revolutionizing the way we live, work, and interact with technology.

Written by: Anuraag Gilhotra (2102424), Sem III