SVCE| SRI VENKATESWARA COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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VISION OF THE DEPARTMENT

To excel in offering value based quality education in the field of Electronics and Communication Engineering, keeping in pace with the latest developments in technology through exemplary research, to raise the intellectual competence to match global standards and to make significant contributions to the society.

MISSION OF THE DEPARTMENT

- To provide the best pedagogical atmosphere of highest quality through modern infrastructure, latest knowledge and cutting edge skills.

- To fulfill the research interests of faculty and students by promoting and sustaining in house research facilities so as to obtain the reputed publications and patents.

- To educate our students, the ethical and moral values, integrity, leadership and other quality aspects to cater to the growing need for values in the society.

Program Educational Objectives (PEOs)

PEO1: Create value to organizations as an EMPLOYEE at various levels, by improving the systems and processes using appropriate methods and tools learnt from the programme.

PEO2: Run an organization successfully with good social responsibility as an ENTREPRENEUR, making use of the knowledge and skills acquired from the programme.

PEO3: Contribute to the future by fostering research in the chosen area as an ERUDITE SCHOLAR, based on the motivation derived from the programme.

Program Specific Outcomes (PSOs)

PSO-1: An ability to apply the concepts of Electronics, Communications, Signal processing, VLSI, Control systems etc., in the design and implementation of application oriented engineering systems.

PSO-2: An ability to solve complex Electronics and communication Engineering problems, using latest hardware and software tools, along with analytical and managerial skills to arrive appropriate solutions, either independently or in team.

FACULTY ARTICLE

Open AI Models and ChatGPT – An Overview
Mrs.S.Kalyani, Assistant Professor - Department of ECE,
Sri Venkateswara College of Engineering, Sriperumbudur.

In a world driven by technological advancements, Artificial Intelligence (AI) stands as one of the most transformative innovations of the century. OpenAI has emerged as a pioneer, pushing the boundaries of what AI can achieve while advocating for its responsible and ethical development. OpenAI began its journey with a mission to ensure that artificial intelligence benefits all of humanity. Established by luminaries in the tech industry, including Elon Musk and Sam Altman, Greg Brockman, Ilya Sutskever, Wojciech Zaremba, and John Schulman the organization aimed to foster an environment where AI could be harnessed for the collective good, innovation, and progress. One of the defining features of OpenAI is its commitment to openness and collaboration. The organization believes in the power of sharing knowledge and resources to accelerate AI research and development. This commitment has led to the creation of tools and frameworks that promote transparency, fairness, and accountability in AI systems, mitigating potential risks associated with unchecked advancements in technology.

One of the groundbreaking achievements of OpenAI is the development of GPT (Generative Pre-trained Transformer) series which includes models like GPT-1, GPT-2 and GPT-3. It revolutionized natural language processing, enabling tasks such as language generation, translation, summarization, and question-answering. The other notable achievements of OpenAI are

DALL-E:
DALL-E is another groundbreaking project by OpenAI, showcasing the potential of AI in image generation. It generates unique images from textual descriptions, demonstrating an understanding of concepts and creating visual content based on the provided input.

CLIP (Contrastive Language-Image Pre-training):
A model that learns visual concepts from natural language supervision, understanding images based on paired text descriptions, enabling tasks like image recognition and understanding.

OpenAI Gym:
An open-source platform providing a suite of tools for developing and comparing reinforcement learning algorithms, facilitating AI research and experimentation.

OpenAI API:
A commercial API offering access to powerful language models like GPT-3 for developers to integrate AI capabilities into various applications.

Codex (Formerly GitHub Copilot):
An AI-powered code generation tool developed in partnership with GitHub, assisting developers by suggesting code completions based on natural language prompts and context.

Robotics:
OpenAI has ventured into the realm of robotics, aiming to create AI systems that can learn to perform physical tasks in the real world. Their work in robotic manipulation involves training AI agents to manipulate objects in simulated environments, with the goal of eventually translating these capabilities into real-world applications.

RL (Reinforcement Learning):
Reinforcement learning lies at the heart of OpenAI's efforts to create AI that can learn and adapt through interaction with its environment. They have worked on projects exploring how AI systems can navigate complex environments, play games, control robotic systems, and make decisions by learning from trial and error.

Safety and Ethics in AI:
OpenAI emphasizes the importance of safety and ethical considerations in AI development. The organization actively researches and advocates for approaches that ensure AI systems are deployed responsibly, considering potential risks and societal implications.

ChatGPT:
ChatGPT is a specific implementation of OpenAI's language generation models, particularly designed for conversational interactions. It's part of the GPT (Generative Pre-trained Transformer) series and is tailored for generating human-like text in a conversational context. It is a state-of-the-art language model that has revolutionized natural language processing by generating human-like text with context and coherence, enabling new possibilities for human-AI interaction [1]. ChatGPT's advanced language modelling capabilities have the potential to

transform the way we interact with computers and machines by enabling more natural and intuitive communication [2]. ChatGPT's ability to learn from both structured and unstructured data makes it a highly flexible and versatile conversational AI tool [4].

ChatGPT was developed through a two-phase process involving unsupervised pretraining followed by supervised fine-tuning [3]. During the pre-training phase, the model was trained on a massive corpus of text utilizing unsupervised learning techniques, including language modeling and masked language modeling. The primary objective of this phase was to enable the model to acquire a comprehensive understanding of the structure of natural language and the complex interrelationships between words and sentences. Following the pre-training phase, the model was subject to fine-tuning various downstream tasks such as text completion, question-answering, and dialogue generation. The fine-tuning process encompassed the model's training on labeled datasets comprising task-specific input-output pairs. The model's parameters were iteratively adjusted to minimize the discrepancies between the model's predicted outputs and the proper labels for the given tasks.

ChatGPT is a generative AI model that utilizes deep learning methods to process and produce natural language text. The model is trained on vast amounts of text data, enabling it to capture human language patterns, nuances, and complexities. The training corpus includes various sources, such as books, articles, reviews, online conversations, and human-generated data, allowing the model to engage in nontrivial dialogues and provide accurate information on diverse topics.

Conclusion:

Artificial Intelligence and APIs go hand in hand. APIs essentially function as the nervous system, while AIs and Machine Learning make up the brain. Programs like OpenAI are going to keep being increasingly important as AI gets closer and closer to attaining sentience. In essence, OpenAI stands as a beacon of innovation, advocating for a future where AI serves as a force for good, augmenting human capabilities, and enhancing the quality of life for people worldwide. The organization's work continues to shape the future of artificial intelligence, influencing diverse industries and paving the way for responsible and impactful AI applications.

References:

1. Brown, T.B.; Mann, B.; Ryder, N. "Language Models are Few-Shot Learners", arXiv 2020, arXiv:2005.14165.

2. Wahde, M.; Virgolin, M. "Conversational agents: Theory and applications", arXiv 2022, arXiv:2202.03164.

3. Radford, A.; Wu, J.; Child, R.; Luan, D.; Amodei, D.; Sutskever, I. "Language Models Are Unsupervised Multitask Learners", OpenAI Blog. 2019.

4. Wei, J.; Bosma, M.; Zhao, V.Y.; Guu, K.; Yu, A.W.; Lester, B.; Du, N.; Dai, A.M.; Le, Q.V. "Finetuned language models are zero-shot learners", arXiv 2022, arXiv:2109.01652.

ACHIEVEMENTS

FACULTY PARTICIPATION
(Seminar/FDP/STTP/Workshop/Online Course/Conference):

- Dr T.J.Jeyaprabha participated in the International Webinar Series on Reconfigurable Antennas for Future Wireless Communications organized by IETE Chennai Center on 4th November 2023.

- Dr T.J.Jeyaprabha participated in the International Webinar Series on ERP-Global Opportunities and Challenges organized by IETE Chennai Center on 7th November 2023.

- Dr T.J.Jeyaprabha completed AICTE-FDP-NPTEL course on Cyber Security and Privacy (Aug-Oct 2023) 12 Week Course with ELITE Certification during November 2023.

- Mrs.S.Mary Cynthia completed a 12 Weeks NPTEL course on Machine Learning and Deep Learning-Fundamentals and Applications (Jul-Oct 2023) during November 2023.

- Mr.L.K.Balaji Vignesh completed an Eight Week online course on Module 5 (Technology Enabled Learning & Life-Long Self Learning) conducted by NITTT, Chennai, and secured 90% during November 2023.

- Dr. R.Priyadharshini has attended PALS Faculty Development Program by Industry Experts on Emerging Technologies and Real-World Applications from 22nd November 2023 to 24th November 2023.

- Mr.L.K.Balaji Vignesh participated in the International Webinar on the topic of "Research Challenges in Bio Medical Antenna Design" organized by Study World College of Engineering, Coimbatore on 24th November 2023.

- Mrs.S.Mary Cynthia attended FDP on "COMPUTER VISION, MACHINE LEARNING AND DEEP LEARNING", organized by Panimalar Engineering College, Chennai from 27th November 2023 to 01 December 2023.

- Mr.L.K.Balaji Vignesh participated in International Webinar on the topic of "ICT Technologies for Renewable

Energy Sources and Hybrid Systems" organized by Study World College of Engineering, Coimbatore on 29th November 2023.

- Mr.L.K.Balaji Vignesh completed an Eight Week online course on Module 3 (Communication Skills Modes & Knowledge Dissemination) conducted by NITTT, Chennai, and secured 82% during November 2023.

STUDENT ACHIEVEMENTS:

- Ms.K.Jeevitha and his team members have been shortlisted for Final Round of Smart India Hackathon 2023.

FACULTY ACHIEVEMENTS:

- Dr.A.Prasanth served as Resource Person for the webinar and delivered a lecture titled "Research Opportunities in Integration of IoT and Blockchain for Smart Applications", organized by Madanapalle Institute of Technology & Science, Andhra Pradesh, held on 22nd November 2023.

REVIEWER/EDITORIAL BOARD MEMBER:

- Dr.T.J.Jeyaprabha acted as Reviewer for the International Conference on Ambient Intelligence, Knowledge Informatics and Industrial Electronics (AIKIIE-2023) organized by Rao Bahadur Y. Mahabaleswarappa Engineering College (RYMEC), Ballari, Karnataka on 02 & 03 November 2023.

- Dr.T.J.Jeyaprabha acted as a Reviewer for the IEEE International Conference on Integrated Intelligence and Communication Systems (ICIICS–2023) organized by Sharnbasva University, Kalaburagi on 24 & 25 November 2023.

- Dr.T.J.Jeyaprabha acted as Reviewer for the IEEE International Conference on Mobile Networks and Wireless Communications ICMNWC-2023 @ SSIT, Tumkur.

PALS:

- 04 Faculty Members have attended PALS Faculty Development Program by Industry Experts on Emerging Technologies and Real-World Applications on 22nd November 2023 to 24th November 2023.

- 01 Faculty Member have participated in Faculty Development Program on Virtual Labs conducted on 15th November to 17th November 2023.

MOU SIGNED WITH INDUSTRIES:

- MoUs were signed with two industries, viz., M/s Qmax Systems India Private Limited, Chennai and HCL Technologies Limited, Chennai during November 2023 to carry out collaborative activities involving students and faculty members in association with the industries.

INDUSTRIAL VISIT:

- Around 50 Students from third-year ECE "A" and 02 Faculty Members have undergone an Industrial visit to NLC India Limited, Neyveli on 06.11.2023.

Programme Offered By Department of Electronics and Communication Engineering

- B.E – Electronics and Communication Engineering
- M.E – Communication Systems
- Ph.D / MS (by Research)

Approved as a research center by Anna University, Chennai. (More than 48 Scholars doing their doctoral studies through our research center)

TOP RECRUITERS