Title: Generative AI from Historical Perspectives

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Generative AI models (GenAIs) have been making headline news because of their wide variety of applications. Some of these applications include query responses, language translation, text to images and videos, composing stories, essays, creating arts and music, generating programs, etc. It will be noted that the large-scale applications of GenAI and their successes are now possible due to exponential advances in hardware (computational power, storage capacity), cloud computing and related operational layers of software. Because of GenAIs rapid growth and business potential, these models are receiving both praise and criticism for their far-reaching implications. Such as untrusted code generation, hallucinations/misinformation, perpetuating harmful biases, infringing copyrights, containing security vulnerabilities, etc.

This talk will provide an historical background of Generative AI techniques and how these have been evolved over the years. There are two major types of Generative AIs: Neural Network-Based LLMs and the Specialized GenAI-Models, while NN-Based LLMs are currently dominant in practice. It is expected that Artificial General Intelligent (AGI) models with integration of other AI models will provide flexibility, robustness, and context-aware responses. This talk will highlight the benefits of Generative AI technologies and their limitations/challenges in order to use them responsibly and ethically.

Biosketch:

Dr. Dipankar Dasgupta is a Full Professor of Computer Science at the University of Memphis. Dr. Dasgupta's pioneering research spans across computational intelligence, including AI and machine learning, with a focus on intelligent solutions. His notable works in digital immunity, negative authentication, cloud insurance modeling, dual-filtering and adaptive multi-factor authentication demonstrated the effective use of various AI/ML algorithms.

With a substantial publication (including 5 Best paper awards, 6 patents) of +300 record and over 21,000 citations on Google Scholar, Dr. Dasgupta's influence within the research community is undeniable. His remarkable achievements include receiving the prestigious 2011-2012 Willard R. Sparks Eminent Faculty Award, the highest honor conferred on a faculty member by the University of Memphis. Currently, Dr. Dasgupta holds the esteemed William Hill Professorship at the University of Memphis and received Lifetime research achievement award in 2022. He is an IEEE Fellow, NAI Fellow and the recipient of the 2014 ACM SIGEVO Impact Award. Dr. Dasgupta served as an ACM Distinguished Speaker (2015-2020) and currently serving as an IEEE Distinguished Lecturer.