Mechanical & **M**aterials **E**ngineering
Pierson Graduate Seminar

Decoding Language Models: Unveiling Challenges in Building Intelligent Applications

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In this talk, Dr. Hasan will explore the challenges of utilizing generative artificial intelligence (AI) language models (LMs) as a general-purpose substrate for designing intelligent applications. With rapid advancements, the LMs have emerged as a novel avenue to scaffold AI for domain-specific applications, boasting extensive knowledge about the world, adept problem-solving abilities, and engaging open-domain dialogues. Dr. Hasan will critically examine the intelligence of state-of-the-art LMs, questioning their ability to "think", pondering whether their learning extends beyond surface-level statistics, and exploring their capacity to construct causal world models. This talk will not only highlight the strengths of LMs but also scrutinize their limitations, addressing concerns such as biases, hallucinations, reliability issues, and the absence of embodied knowledge. In the second part of the talk, Dr. Hasan will delve into the challenges faced in utilizing LMs for designing personal AI, focusing on the complexities of enabling these models to learn from longitudinal experiential data. He will share insights from his research in the HumanFirst AI Lab (HAL 2.0), shedding light on innovative approaches to address these challenges and reshape the landscape of personal AI applications.

BIO: Dr. Hasan earned his Ph.D. in Computing and Information Systems from the University of North Carolina at Charlotte (UNCC) in 2014. Before reincarnating in the realm of artificial intelligence, Dr. Hasan pursued Theoretical Physics and obtained a Bachelor of Science and a Master of Science degree in Physics. Dr. Hasan's research is focused on modern AI methods such as machine learning and deep learning. His current research at HumanFirst AI Lab (HAL 2.0) is dedicated to designing a novel personal AI system for enhancing human capabilities. Dr. Hasan's interdisciplinary projects are supported by the National Science Foundation and UNL Grand Challenges.

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