

CLEAR CENTER WEBINAR

Large Language Models: A Conceptual Introduction

Speaker: Dr. Trevor Cohen



Monday
June 9, 2025
2-3pm PST

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Summary of talk: Instructible Large Language Models (LLMs), such as OpenAI's GPT-4 series, are a focus of research and public attention on account of their unprecedented abilities to generate and interpret language. As research tools, LLM's ability to perform a range of natural language processing tasks upon request provide an appealing alternative to models that require large amounts of labeled training data to fulfil even a single specialized function. In clinical practice, these models underlie a range of commercial products that are already being piloted and deployed in healthcare systems across the country, motivated by in part by LLM's potential to alleviate documentation burden and reduce physician burnout. On account of their size and complexity (with "large" typically referring to models of a billion interconnected trainable parameters or more) the mechanisms underlying specific LLM responses are not fully understood, and this output cannot be fully controlled, presenting risks and challenges for their deployment both in research and at the point of care. However, the fundamentals of neural language models are far more accessible, and an understanding of these essentials can inform the judicious application of LLMs in accordance with their strengths and limitations. To this end, this talk will provide a conceptual introduction to LLMs, with a focus on the mechanisms underlying the language they generate and how both the linguistic capabilities and pitfalls of LLMs follow from them, with examples drawn from ongoing research.

Bio: Trevor A. Cohen, MBChB PhD FACMI is a Professor of Biomedical Informatics and Medical Education and an Adjunct Professor of Psychiatry and Behavioral Sciences at the University of Washington, Seattle. Prior to his research career, he trained and practiced as a physician with a clinical interest in mental health. His research focuses on computational models of language and their biomedical applications, with application areas including literature-based discovery, post-marketing surveillance, plain language summarization, debiasing of deep learning models, and detection of linguistic indicators of psychiatric and neurodegenerative conditions. Dr. Cohen is an editor of a textbook on AI in medicine, and recently co-led the UW Medicine Large Language Models Workgroup, which drew together stakeholders and content experts to develop institutional guidance for the deployment of generative AI tools in clinical settings. He is also a co-editor of the recent JAMIA focus issue on Large Language models.

