

## Under the Hood: The Math, the Magic, and the Messy Reality of Large Language Models



You've used ChatGPT. You've probably been amazed, and maybe a little unsettled, by what it can do. But what is actually happening when you hit send? On **Monday, April 13, 4pm, Olin 301**, Todd Hendry (Whitman '00, Partner Software Engineer at Microsoft) pulls back the curtain on large language models, explaining how they are trained on vast corpora of text, what "learning" actually means mathematically, and why building and evaluating these systems at scale is harder than it looks. We will touch on the core ideas, including transformers, loss functions, and reinforcement learning from human feedback, without requiring anything beyond calculus and curiosity. Todd will share what it is like to work at the intersection of Microsoft and OpenAI, along with the kinds of problems that researchers and engineers are actively working on.

**Bio:** Todd Hendry is a Partner Software Engineer at Microsoft, where he works on large language model training and evaluation as part of Microsoft's close partnership with OpenAI. A member of Whitman's class of 2000, he graduated with a BA in Mathematics

and Computer Science while studying under some of the same faculty who are here today. He later earned a BS in Computer Engineering and an MS in Computer Science from the University of Washington. Over his career, he has worked at the frontier of machine learning infrastructure, and today he is directly involved in building and assessing the models that power some of the world's most widely used AI products. He returns to Whitman to share what is really going on behind the chat interface and how software engineering has fundamentally changed.