BRIGHAM AND WOMEN'S HOSPITAL
HARVARD MEDICAL SCHOOL

181 Longwood Avenue
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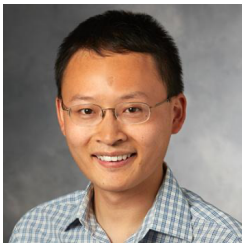
Department of Medicine
Channing Division of Network Medicine

Channing Methods Seminar

February 13 (Tuesday), 2024, 11AM (ET)

MCP 5th-floor conference room & Zoom:
https://us02web.zoom.us/j/579497999?pwd=cHNlWHMzWUlFUUVJTG1EeVJmY05aQT09
Meeting ID: 579 497 999
Passcode: 844168



James Zou
Stanford University

Graph neural networks and generative AI for spatial biology and pathology.

Abstract: I will discuss some recent advances in using graph neural networks (GNN) and generative AI to model and study spatial biology. I will first give an overview of the new technologies for measuring spatially resolved gene expression and protein abundances. Then I will present SPACE-GM, a flexible and general graph deep learning framework for analyzing spatial omics data. We applied SPAGE-GM to several diseases, including 658 head-and-neck and colorectal cancer tissue samples, to discover spatial cellular motifs that predict patient response to cancer treatments. Analysis of these motifs reveals biological insights into tumor-immune interactions that could affect patient outcomes. Finally, I will discuss how we built a visual-language model (PLIP) from Twitter data to help scientists interpret pathology images.

Bio: James Zou is an associate professor of Biomedical Data Science, CS and EE at Stanford University. He is also the faculty director of Stanford AI4Health. He works on both improving the foundations of ML—by making models more trustworthy and reliable—as well as in-depth scientific and clinical applications. Many of his innovations are widely used in tech and biotech industries. He has received a Sloan Fellowship, an NSF CAREER Award, two Chan-Zuckerberg Investigator Awards, a Top Ten Clinical Achievement Award, several best paper awards, and faculty awards from Google, Amazon, Tencent and Adobe. His research has also been profiled in popular press including the NY Times, WSJ, and WIRED.

Hosted by Yang-Yu Liu