



BME SEMINAR SERIES

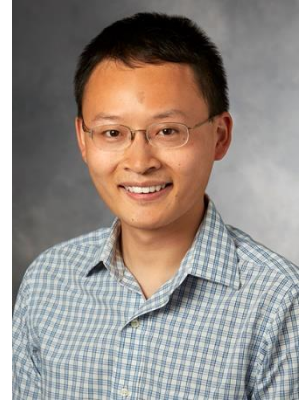
James Zou, Ph.D.

Assistant Professor of Biomedical Data Science
Stanford University

Date: Monday, September 21st, 2020

Time: 1:30 p.m.

Location: Virtual – Zoom



Faculty Host: Jeremias Sulam, PhD

Computer vision to deeply phenotype human diseases across physiological, tissue and molecular scales

Bio: James Zou is an assistant professor of biomedical data science, CS and EE at Stanford University. He is also a Chan-Zuckerberg investigator and the faculty director of Stanford AI for Health. James develops novel machine learning algorithms that have strong statistical guarantees and that are motivated by human health challenges. Several of his methods are widely used by tech, biotech and pharma companies. He also works on questions important for the broader impacts of AI—fairness, accountability, interpretations, and robustness. He has received several best paper awards at top CS venues, the 2019 RECOMB best paper award, a NSF CAREER Award, a Google Faculty Award, and a Tencent AI award.

Abstract: I will present new computer vision algorithms to learn complex morphologies and phenotypes that are important for human diseases. I will illustrate this approach with examples that capture physical scales from macro to micro: 1) video-based AI to assess heart function (Ouyang et al Nature 2020), 2) generating spatial transcriptomics from histology images (He et al Nature BME 2020), 3) learning morphodynamics of immune cells, and 4) making genome editing safer (Leenay et al Nature Biotech 2019). Throughout the talk I'll illustrate the general principles and tools for human-compatible ML that we've developed to enable these technologies