

February 9, 2026
2:00pm-3:00pm
KAP 414

Dr. Haosheng Zhou
(UCSB)

**A Stackelberg Game Model for Inverse Learning:
Experimental Design for Optimally Revealing Adversary Intent**

Abstract: Inverse learning seeks to recover an agent's intent, encoded in its cost functionals, from its observed behavior, an interesting yet challenging task that is inherently ill-posed. In this talk, we propose a Stackelberg game formulation of inverse learning, in which a leader aims to infer a follower's latent intent parameter via maximum likelihood estimation. Within the game, the follower tracks the leader's trajectory using a randomized optimal policy. Anticipating the follower's response, the leader strategically designs a path-dependent control to maximize estimation efficiency while simultaneously accomplishing a primary task. We derive semi-explicit solutions to the resulting Stackelberg game, establish well-posedness results, and develop machine learning algorithms to compute the leader's optimal experimental design. Numerical experiments demonstrate the effectiveness of the proposed control design, highlighting the practical value of our framework for adversarial strategic inference. This is joint work with Daniel Ralston, Xu Yang and Ruimeng Hu.

Zoom Link: USC Math Finance Colloquium

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