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Webinar of Computational Social Science Laboratory (CSSL@CUHK)

Calibrating GenAI for Simulation and Inference in Business Research

28 July 2026 (Tuesday), 09:30 - 11:00 (UTC+8, HKT)

Abstract

Large language models offer business researchers two forms of leverage: synthetic decision-makers for social simulations, and predictive labels for large-scale empirical analysis. Yet AI outputs are systematically biased, rarely meeting rigorous statistical or theoretical standards. Calibration, I argue, turns abundant-but-imperfect AI into trustworthy research artifacts, illustrated at two stages of the empirical pipeline. For pre-hoc simulation, we translate behavioral theory into structured LLM prompts, calibrate them against limited human data, and validate alignment at outcome and reasoning levels; calibrated agents reproduce the behavioral hypotheses of observational learning and the 11-20 money-request game and generalize out-of-sample. For post-hoc inference, calibrated LLM-augmented double machine learning (Aug-DML) fuses sparse experimental labels with abundant LLM pseudo-labels, reducing causal estimation MAPE by up to 32% over standard DML at 1% labeled data while preserving nominal 95% coverage. Together, they trace an agenda: AI serves business research best not as a replacement for theory or experiments, but as a calibrated complement at well-chosen points in the empirical pipeline.



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Biography

Renyu (Philip) Zhang is an Associate Professor at CUHK Business School. His recent research studies how AI and data science reshape decision-making in digital platforms and marketplaces. He is an economist and Tech Lead at Kuaishou, and serves as Associate Editor for Operations Research and Manufacturing & Service Operations Management, and Senior Editor for Production and Operations Management.



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