Ruihan Yang

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Education

- **Fudan University** Shanghai, China
  Ph.D. in Statistics (In Progress) *Sep. 2021 - Present*
  Relevant Coursework: Causal Inference, Statistical Principles of Machine Learning, Numerical Optimization, Advanced Mathematical Statistics

- **Fudan University** Shanghai, China
  B.S. in Mathematics and Applied Mathematics *Sep. 2017 - Jun. 2021*
  Relevant Coursework: Advanced Algebra, Probability Theory, Real Function Theory, Functional Analysis, Partial Differential Equations, Deep Learning

Skills and Languages

- **Programming Skills (Proficient)**: Python, R , Matlab
- **Simulation Environment Setup | Data Processing & Mining**: Numpy, Pandas, Scikit-learn, Pytorch, Tensorflow

Publications

- "Dynamic neural reconfiguration for distinct strategies during competitive social interactions"
  Ruihan Yang, Yina Ma, Bao-Bao Pan, Meghana A. Bhatt, Terry Lohrenz, Colin F. Camerer, Qiang Luo
  NeuroImage (First Author; IF = 7.4) https://doi.org/10.1016/j.neuroimage.2022.119585

- "Enhancing Decision-Making in Simulation Environments: Leveraging Objective Trees for Superior Strategy Formulation"
  Ruihan Yang, Siyu Yuan, Jiangjie Chen, Deqing Yanng, Bodhisattwa Prasad Majumder, Kyle Richardson
  In Preparation

- "From Persona to Personalization: A Survey on Role-Playing Large Language Model Agents"
  Xintao Wang, Rui Xu, Wei Shi, **Ruihan Yang**, Jiangjie Chen, Yanghua Xiao, Deqing Yang
  In Preparation

Research Experiences

- **Abstract Target Decomposition | Auction Arena Simulation Environment** Fudan University
  Supervisor: Deqing Yang *Jun. 2023 - Present*
  - Participated in the development of the Auction Arena simulation environment. https://auction-arena.github.io/
  - Enhanced agent decision-making abilities in complex auction tasks using goal trees and prior knowledge.

- **Behavioral Decision Modeling** Fudan University
  Supervisor: Qiang Luo *Sep. 2022 - May 2023*
  - Modeled decision timing data in stop-signal tasks using classic independent race models and dependent process models to solve attention and inhibition function parameters.
  - Captured belief changes in tasks using a dynamic belief model to solve individual belief parameters.
  - Incorporated behavioral parameters into classification models, finding them more effective in predicting substance abuse risks than traditional behavioral indicators.

- **Application of Time-Varying Granger Causality Model in Bargaining Experiment** Fudan University
  Supervisor: Qiang Luo *Sep. 2021 - Aug. 2022*
  - Classified participant behaviors in bargaining experiments using a Hidden Markov model, identifying three main behavioral patterns.
  - Developed an improved Granger causality model, GCSDN, to effectively handle noise in signals and proposed a time-varying Granger causality modeling method (TV-GCSDN) using kernel function convolution to weight observations.
  - Used TV-GCSDN to analyze causal relationships in brain signals across different time windows, revealing enhanced information flow in the rIFG-dLPFC during deceptive behaviors.

- **Application of Reservoir Computing (RC) in Change Point Detection** Fudan University
  Supervisor: Wei Lin *Feb. 2021 - Jun. 2021*
  - Implemented a recurrent neural network computational framework for Reservoir Computing.
  - Simulated three-dimensional time series of Lorenz and Rossler dynamical systems, detecting change points in both systems based on the prediction accuracy of reservoir computing for future time points.

Honors and Awards

- **National Scholarship For Graduate Student (for top 1% students based on research and coursework)** *Oct 2022*
- **Fudan University Excellent Student Award** *Oct 2018| Oct 2019 |Oct 2020*

Talks

- **Decision Making and Neuroeconomics Postgraduate Academic Forum** Dynamic neural reconfiguration for distinct strategies during competitive social interactions (Awarded Best Presentation at the Forum) *Oct 2022*