Shuze Chen

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Education

- **Shanghai Jiao Tong University** Shanghai, China
  Undergraduate in Computer Science *Sep. 2021 - present*
  - *GPA : 4.1/4.3, Ranking : 1/17*
  - *Member of **John Hopcroft Honors Class**, an elite CS program at SJTU for top 5% of students, with a focus on **Theoretical Computer Science**.*

Research Interests

Experimentation, Reinforcement Learning and Operations Research.

Research Experience

- **MIT Data Science Lab, Massachusetts Institute of Technology** Jan. 2024 - Present
  Research Intern, Advisor: Prof. David Simchi-Levi
  - **Topic**: Efficient Experimentation
  * We systematically study the experimentation problem for customer lifetime value. By incorporating the Markov Decision Process (MDP) framework, we demonstrate how leveraging the structure of treatments leads to significant improvements in efficiency.

- **Decision, Risk, and Operations Division, Columbia Business School** Feb. 2024 - Present
  Research Intern, Advisor: Prof. Tianyi Peng
  - **Topic**: Reinforcement Learning
  * We introduce a framework called Markov Entanglement to study the complex interactions in multi-agent reinforcement learning. This framework allows us to derive sufficient conditions for value decomposition in entangled systems.

- **John Hopcroft Center, Shanghai Jiao Tong University** July 2023 - Dec. 2023
  Research Intern, Advisor: Prof. Shuai Li
  - **Topic**: Online Learning and Algorithmic Game Theory
  * We study imperfect-information extensive-form games (IIEFGs) with linear function approximation,and present provably efficient algorithms for fast convergence to Nash Equilibrium.

- **Apex Data&Knowledge Management Lab, Shanghai Jiao Tong University** Oct. 2022 - July 2023
  Research Intern, Advisor: Prof. Weinan Zhang
  - **Topic**: Deep Reinforcement Learning
  * An implementation of state-of-the-art deep reinforcement learning algorithms with pure Jax.

Preprints

1. **Experimenting on Markov Decision Processes with Local Treatments**
   with David Simchi-Levi and Chonghuan Wang.
   https://arxiv.org/abs/2407.19618

2. **Towards provably efficient learning of extensive-form games with imperfect information and linear function approximation**
   with Canzhe Zhao, Weiming Liu , Haobo Fu, Qiang Fu, Shuai Li.
   In Submission.

Academic Projects

- **JaxRL**: A pure Jax implementation of state-of-the-art deep reinforcement learning algorithms like PPO, TD3, SAC, DQN etc.
  - Integrate Just-in-Time Compilation and pure function to accelerate training for deep reinforcement learning.
  - Benchmark on popular deep reinforcement learning environments like Openai Gym, Mujoco and Minigrid.

- **SEAL Compiler**: Engineer a compiler from scratch for a C-like programming language SEAL.
  - Complete implementation of a modern compiler, from lexer and parser to assembly code generator that runs on Qemu RISC-V Simulater.
  - Optimizations implemented like tree-based register allocation and constant folding etc.

Honors and Awards

- National Scholarship of China (Top 0.2% nationwide) 2021-2022
- Fan Hsu-Chi Scholarship (15 winners each year, Shanghai Jiao Tong University) 2022-2023
- Han-Ying-Ju-Hua Scholarship (15 winners each year, Shanghai Jiao Tong University) 2022-2023
- Zhiyuan Honorary Scholarship (Top 5%, , Shanghai Jiao Tong University) 2021-2022, 2022-2023, 2023-2024
- A-class Academic Excellence Scholarship, Shanghai Jiao Tong University 2021-2022

Service

- **Conference Reviewer**: ICML 2024

Skills Summary

- **Programming Languages**: C/C++, Python
- **Frameworks**: Pytorch, Jax