Shiyao Sang (Samuel)

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IEEE RAS Technical Committee on Cognitive Robotics — Member

Research focus: Trajectory planning, world modeling, and cognitive robotics, with a foundation in planning & decision making and deep reinforcement learning. First-author paper accepted to IROS 2025 on robotic middleware for distributed systems.

Research Interests

Robotic Middleware & Systems; Trajectory Planning & Decision Making; Cognitive Robotics & World Modeling; Deep Reinforcement Learning; Large Models (LLM/VLM) for Robotics

Education

Huaiyin Institute of Technology, Jiangsu, China — *B.Eng., Computer Science and Technology*
School of Computer and Software Engineering — 2014–2018

Central China Normal University, Wuhan, China (Project 211) — *M.Eng., Computer Technology*
Faculty of Artificial Intelligence in Education — 2020–2022

University of Wollongong, NSW, Australia (QS Top 200) — *M.Sc., Computer Science*
Faculty of Engineering and Information Sciences — 2020–2022
Joint Training Program with Central China Normal University

Professional Experience

BYD Company Ltd. — Institute of New Technology Research — Jun 2025 – Present
Decision & Planning Algorithm Engineer, Urban Joint Game Group

Chery Automobile Co., Ltd. — Mar 2023 – Mar 2025
Decision & Planning Algorithm Engineer, Advanced Algorithm Group

Coolwa Technology Co., Ltd. — Jul 2022 – Jan 2023
Remote Driving Software Engineer, System Software Group

Publications & Research Outputs

- **S. Sang**, Y. Ling. *Service Discovery-Based Hybrid Network Middleware for Efficient Communication in Distributed Robotic Systems. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2025. (Accepted, First Author)
- **S. Sang**. *Discrete Gradient Policy Optimization via Grouped Trajectory Sampling for Structure-Agnostic Motion Planning.* Manuscript in preparation.
- **S. Sang**. *Tokenized Intent World Model: A Generative Cognitive Planning Framework with Multi-Intent Chains and World Modeling.* Manuscript in preparation.

Patents

- **S. Sang**. *Adaptive Trajectory Generation Method for Unmapped Intersections Based on Multi-Decision Makers and Evaluators.* Invention Patent, 2024. (First Author)
- **S. Sang**. *SOME/IP Service to Topic Software Architecture Design Scheme.* Invention Patent, 2023. (First Author)

- **S. Sang**. *Digital Clock-based Automatic Latency Testing Method and System for Remote Driving Streaming Media.* Invention Patent, 2022. (First Author)

Technical Skills

Planning & Decision: Multi-proposal decision frameworks, spatiotemporal joint planning, iterative game-theoretic approaches
AI & Learning: Markov Decision Processes (MDP), Monte Carlo Tree Search (MCTS), Deep Q-Networks (DQN), Grouped Reinforcement Policy Optimization (GRPO), world models, vision-language model (VLM)-based planning
Robotic Middleware & Systems: ROS, ROS2, CyberRT; expertise in distributed computing architectures for large-scale robotic applications
Human-Robot Interaction (HRI): Dialogue system design with AIML; prompt engineering and fine-tuning of large language models (LLMs) for interactive robotics

Honors & Awards

- 2017 "Zhongxing Cup" Pan-Pearl River Delta University Computer Works Contest — Silver (Undergraduate Group)
- 2017 China Engineering Robot Competition — IoT Robot Innovation — Second Prize
- 2018 Microsoft Imagine Cup — Suzhou Regional Final — Third Prize
- Jiangsu Province 5th Science Students Humanities & Social Science Knowledge Contest — Excellence Award

Professional Service

Member, IEEE RAS Technical Committee on Cognitive Robotics

Selected Links

Personal homepage: https://fengmao31.github.io