# Siyi Hu

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*Lecturer in Generative AI | PhD in Computer Science*

## Professional Summary

I am a Lecturer in Generative AI at Curtin University with research and teaching expertise spanning machine learning, intelligent systems, and computing for engineering and societal applications. My work integrates large language models (LLMs), reinforcement learning, and autonomous systems to design scalable and trustworthy AI. I have published in leading venues such as `ICLR`, `ICML`, `AAAI`, and `JMLR`, and contributed open-source infrastructure including `MARLlib` (a 1000+ star cooperative AI library) and `ProAgent`, an LLM-based framework for reasoning-driven collaboration.

My research bridges computing and applied engineering domains, contributing to flagship research areas such as space and defence through projects like SmartSat CRC's `SCARLET-`$\alpha$, which developed intelligent decision systems for autonomous satellite constellations. I have also co-led an ARC Linkage proposal on AI-driven energy control systems for smart refrigeration.

As an educator, I design and deliver practice-oriented computing curricula that connect theory with real-world applications. My teaching spans artificial intelligence, machine learning, software systems, and research methods, with a strong focus on student-centred learning, multi-mode delivery, and authentic assessment. I aim to prepare future computing professionals who are creative, ethical, and adaptable in a fast-changing digital world.

## Academic Appointments

**Lecturer in Generative AI (Level B)**
Curtin University – School of Electrical Engineering, Computing and Mathematical Sciences (EECMS) 2025–Present

**Research Fellow (AI/ML with Engineering Applications)**
Adelaide University – STEM 2024–2025
Led applied AI research in the SmartSat CRC's `SCARLET-`$\alpha$ program, focusing on onboard learning, distributed decision-making, and multi-agent reinforcement learning (MARL). Co-led ARC proposal on intelligent control systems for sustainable refrigeration. Supervised HDR students and contributed to AI course design and delivery.

## Education

**Ph.D. in Computer Science (Artificial Intelligence)**
University of Technology Sydney 2021–2024
Advisor: Prof. Xiaojun Chang

**M.Sc. in Electrical, Electronics and Communications Engineering**
Fudan University (`QS Top 40 Global, Top 5 in China`) 2017–2020

**B.Sc. in Electrical, Electronics and Communications Engineering**
Fudan University 2013–2017

## Teaching and Supervision Experience

**Course Designer – Curtin University** 2025–Present
Designed a postgraduate course on `Large Language Models` (LLMs), combining theory (transformers, RLHF, reasoning) with practice (model fine-tuning, deployment, and safety). Applied authentic learning strategies and digital platforms to engage diverse cohorts across delivery modes.

**Tutor and Lecturer Support – Monash University & UTS** 2021–2023
Delivered tutorials and assessments for "Research Methods" and "Machine Learning." Supported hybrid and online delivery, developed lab exercises, and implemented student engagement analytics to enhance learning outcomes.

**HDR Supervision and Mentoring – Adelaide University** 2024–2025
Co-supervised four PhD students in AI/ML and autonomous systems. Mentored students in experimental design, coding, and publication writing, fostering interdisciplinary research capabilities.

## Research Highlights

**MARLlib – Multi-agent Reinforcement Learning Library**
Lead developer of `MARLlib`, an open-source research and teaching library supporting reproducible and scalable MARL experiments. Widely used by universities and industry labs worldwide.
`GitHub: Replicable-MARL/MARLlib (1000+ stars)`
`Publication: JMLR, 2023`

**ProAgent – LLMs for Human-AI Collaboration**
Developed `ProAgent`, an LLM-based coordination framework for reasoning-driven teamwork and intelligent automation. Demonstrated in robotics and smart planning contexts.
`Publication: AAAI 2024 (oral)`
`Project Page: pku-proagent.github.io`

**SCARLET-$\alpha$: AI for Satellite Autonomy (SmartSat CRC)**
Developed cooperative AI systems for multi-satellite coordination under communication and energy constraints. Contributed to mission-level optimization and onboard learning in real-world testbeds. Collaboration with BAE Systems and DSTG.

## Selected Publications

[P1] Nucleolus Credit Assignment for Effective Coalitions in Multi-agent Reinforcement Learning, `AAMAS`, 2025. [CORE A]
Yugu Li, Zehong Cao, Jianglin Qiao, and **Siyi Hu**.

[P2] ProAgent: Building Proactive Cooperative AI with Large Language Models, `AAAI` (oral, top 5%), 2024. [CORE A*]
**Siyi Hu***, Ceyao Zhang*, Kaijie Yang*, et al.

[P3] Maximum Entropy Heterogeneous-Agent Mirror Learning, `ICLR` (spotlight), 2024. [CORE A*]
Jiarong Liu, Yifan Zhong, **Siyi Hu**, et al.

[P4] MARLlib: A Scalable and Efficient Multi-agent Reinforcement Learning Library, `JMLR`, 2023. [CORE A*]
**Siyi Hu**, Yifan Zhong, Minquan Gao, et al.

[P5] Policy Diagnosis via Measuring Role Diversity in Cooperative Multi-agent Reinforcement Learning, ICML, 2022. [CORE A*]
**Siyi Hu**, Chuanlong Xie, Xiaojun Chang, and Xiaodan Liang.

[P6] UPDeT: Universal Multi-agent RL via Policy Decoupling with Transformers, ICLR, 2021. [CORE A*]
**Siyi Hu**, Fengda Zhu, Xiaojun Chang, and Xiaodan Liang.

## Professional Service and Engagement

Reviewer for NeurIPS, ICLR, ICML, AAAI, IJCAI, and JMLR. Organiser of *AI-Industry Seminar Series* and UniSA STEM Research Showcase. Collaborated with industry partners including BAE Systems, DSTG, and Glaciem Cooling Technologies.

## Awards and Honours

- SmartSat CRC Research Fellowship, 2024
- PRC Award for Outstanding HDR Students Abroad, 2023
- Fudan University Graduate with Honours, 2020