

# Jiahui Wang

📞 +65-88856249 📩 wjiahui@u.nus.edu 🌐 <https://plusgrey.github.io/>

## RESEARCH INTERESTS

Machine Learning, Deep Learning, Computer Vision, Self-Supervised Learning, Few-/Zero-shot Learning, Spatial Understanding, 3D Computer Vision, Efficient Model, Embodied AI, Multi-Modality Model, VLM, LLM.

## EDUCATION

### National University of Singapore

*Ph.D. in Electrical and Computer Engineering, College of Design and Engineering*

Jan 2022 – Jan 2026 (Expected)

📍 Singapore

- **Scholarship:** NUS Research Scholarship (Industrial ring-fenced with Hexagon AB)
- **Supervisors:** Prof. Abdullah Al Mamun, Prof. Lee Tong Heng, and Dr. Bruce Engelmann (CTO of Hexagon AB)

### Harbin Institute of Technology

*B.S. in Opto-Electronic Information Science and Engineering, School of Physics*

Aug 2016 – Jul 2020

📍 Harbin, China

## EXPERIENCE

### TikTok PTE. LTD.

*AI Engineer*

Oct 2025 – Present

📍 Singapore

- Involved in developing multimodality AI models for efficient and accurate judgment. (Using Python, C++ with Kubernetes and Docker.)
- Responsible for post-training of VLMs and LLMs to conduct an AI agent. (Developing RL and SFT algorithms to fine-tune various base models and participate in prompt engineering.)

### Mechatronics and Automation Lab, National University of Singapore

*Ph.D Candidate; Advisors: Prof. Abdullah Al Mamun, Prof. Lee Tong Heng, Dr. Haiyue Zhu*

Jan 2022 – Oct 2025

📍 Singapore

- Designed a learning pipeline that can utilize unannotated point clouds through **contrastive pre-training to boost the performance** of few-shot learning. (*Published in ICRA 2023*)
- Developed a novel framework to **decouple the few-shot point cloud segmentation task** into shallow similarity learning and deep similarity learning, and achieve promising results. (*Published in IEEE TNNLS 2025*)
- Proposed a model that **incorporates the power of LLM into 3D few-shot point clouds segmentation**, which boosts the few-shot performance and enables promising zero-shot ability. (*Accepted by AAAI 2026 as an Oral*).
- Designed a monocular **6D pose estimation** framework that **only requires one reference RGB image** and **proposes an efficient fine-tuning method** for foundation models to derive the actual pose of the novel target object (*Accepted by NeurIPS 2025*).
- Working on **enhancing spatial perception** capabilities in Vision-Language Models (VLMs) and **mitigating hallucination** issues.

### Ducheng Technology and Consulting LTD.

*Software Engineer, ML Researcher*

Oct 2020 – Jul 2021

📍 Beijing, China

- Involved in developing an online bidding system aided by computer vision algorithms (using C++ and Python).
- Participated in the development and maintenance of an intelligent scheduling system with physical perception capabilities.

### Yuanbo Technological Company

*ML Researcher*

Jun 2020 – Sep 2020

💻 Remote

- Designed an automatic optimization method for the thermal power unit, achieved a short test cycle, less resource consumption, and high efficiency.
- Worked on dealing with the class-imbalance data of the bank statements of students' campus cards to identify abnormalities.

- Designed and implemented a deep learning framework that fuses visual and temporal data to predict solar flare severity accurately and uses SQL to conduct data management.
- Applied data science and machine learning techniques to investigate how different solar astronomical characteristics and physical parameters influence the formation of solar flares.

## REPRESENTATIVE PUBLICATIONS

---

**Jiahui Wang** Haiyue Zhu, Haoren Guo, Abdullah Al Mamun, Cheng Xiang, Tong Heng Lee. “SingRef6D: Monocular Novel Object Pose Estimation with a Single RGB Reference”. *Accepted by The Thirty-Ninth Annual Conference on Neural Information Processing Systems (NeurIPS) 2025*

**Jiahui Wang**, Changhao Chen, “DynaNav: Dynamic Feature and Layer Selection for Efficient Visual Navigation”. *Accepted by The Thirty-Ninth Annual Conference on Neural Information Processing Systems (NeurIPS) 2025*

**Jiahui Wang**, Haiyue Zhu, Haoren Guo, Abdullah Al Mamun, Cheng Xiang, Tong Heng Lee. “EPSegFZ: Efficient Point Cloud Semantic Segmentation for Few- and Zero-Shot Scenarios with Language Guidance”. *Accepted by The Fortieth AAAI Conference on Artificial Intelligence (Oral Presentation)*

**Jiahui Wang**, Haiyue Zhu, Haoren Guo, Abdullah Al Mamun, Cheng Xiang, Clarence W. de Silva, and Tong Heng Lee, “SDSimPoint: Shallow-Deep Similarity Learning for Few-Shot Point Cloud Semantic Segmentation,” *Published in IEEE Transactions on Neural Networks and Learning Systems (TNNLS), vol. 36, no. 6, pp. 10043-10056, June 2025*

**Jiahui Wang**, Haiyue Zhu, Haoren Guo, Abdullah Al Mamun, Cheng Xiang, Tong Heng Lee. “Few-Shot Point Cloud Semantic Segmentation via Contrastive Self-Supervision and Multi-Resolution Attention”. *Published in IEEE International Conference on Robotics and Automation (ICRA), London, United Kingdom, 2023, pp. 2811-2817.*

Haoren Guo, Haiyue Zhu, **Jiahui Wang**, Vadakkepat Prahlad, Weng Khuen Ho, Tong Heng Lee. “Enhancing Multivariate Time-Series Domain Adaptation via Contrastive Frequency Graph Discovery and Language-Guided Adversary Alignment”. *Published in The Thirty-Ninth AAAI Conference on Artificial Intelligence.*

**Jiahui Wang**, Haiyue Zhu, Haoren Guo, Abdullah Al Mamun, Clarence W De Silva, Tong Heng Lee. “Few-Shot Point Cloud Semantic Segmentation for CAM/CAD via Feature Enhancement and Efficient Dual Attention”. *Published in 2023- 49th Annual Conference of the IEEE Industrial Electronics Society (IECON), Singapore, Singapore, 2023, pp. 1-6.*

**Jiahui Wang**, Haiyue Zhu, Haoren Guo, Abdullah Al Mamun, Prahlad Vadakkepat, Tong Heng Lee. “CAM/CAD Point Cloud Part Segmentation via Few-Shot Learning”. *Published in IEEE 20th International Conference on Industrial Informatics (INDIN). IEEE, 2022: 359-365.*

Haoren Guo, Haiyue Zhu, **Jiahui Wang**, Vadakkepat Prahlad, Weng Khuen Ho, Clarence W de Silva, Tong Heng Lee. “Remaining Useful Life Prediction via Frequency Emphasizing Mix-Up and Masked Reconstruction”. *Published in IEEE Transactions on Artificial Intelligence, vol. 5, no. 9, pp. 4686-4695, Sept. 2024.*

## TEACHING ASSISTANT

---

**Courses** : EE5104 Adaptive Control, EE6104 Adaptive Control(Advanced), EE5101 Linear Systems, EE4302 Advanced Control Systems, CEG5301 Machine Learning with Applications, EE4305 Fuzzy Systems, EE3031 Innovation & Enterprise I

## SKILLS

---

**Language:** Mandarin (Native), English (Proficient in speaking, reading, and writing)

**Programming Related:** Python, C/C++, Rust, HTML, CUDA, Git, Docker, vim, PyTorch, TensorFlow, SQL

**Tools:** MATLAB, Simulink, Blender, NVIDIA ISAAC, MeshLab, Stable Diffusion, COMSOL, Linux, UE

**Libraries:** OpenCV, PyTorch3D, HuggingFace, triton, Minkowski Engine, PCL, Trimesh, Langchain