Ankit Kumar Shaw

M.Sc. Graduate | Robotics & AI Enthusiast

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Summary

Graduate student researching Embodied AI with a focus on Autonomous Driving, Haptic shared Robot Learning, and Multimodal LLMs. Passionate about building context-aware robotic agents that collaborate with humans through language and touch to solve complex manipulation tasks.

Education

School of Vehicle and Mobility, Tsinghua University   Sep 2020 - Dec 2024
Mechanical Engineering   Master of Science
3.87/4.0, Rank: 5th

Thesis: **"Multimodal LLM based Data Cleansing Model for Confidence Score driven Crowdsourced Data Fusion"** under Dr. Yang Diange in Autonomous Driving Lab.
[NB: Almost 2 years of study gap due Covid-19]

Vellore Institute of Technology   Jul 2016 - Jun 2020
Mechanical Engineering   Bachelor of Technology
8.78/10.0

Thesis: "**Investigation into the effects of Waste Plastic Oil in Biogas fuelled Dual-Fuel Engine**" under Dr. M. Feroskhan.

Experience

National University of Singapore   Mar 2025 - Present
Research Assistant

Visuo-Tactile based Robot Learning and Manipulation under Prof. Mike Shou at Show Lab in the School of Computing.

King Abdullah University of Science and Technology   Jun 2022 - Dec 2022
Remote Intern as well as Visiting Student   Saudi Arabia

Learned to implement simple Offline Reinforcement Learning models in different Mujuco Environment under Prof. Mohamed Elhoseiny at Vision-CAIR group in Visual Computing Center.

Tsinghua AI for Student Club (TAIS)   2023 - 2024
President   Tsinghua University

Actively participate in AI hackathons, debates, and global collaborations with university and industry teams in China, fostering a vibrant AI community through talks and panel discussions.

Future Robotics Club   2022 - 2024
Team Member   Tsinghua University

Design and develop the "Tinker" home-based indoor robot for RoboCup @home.

Conference Reviewer   IROS 2025, Hangzhou, China.

Research Interests	Embodied AI, Visuo-Tactile based Robot Learning and Dexterous Manipulation, Human-Robot Interaction (HRI), Multimodal Sensing and Robot Perception, Multimodal Large Language Models, Vision Language Action Models, Scene Understanding in Autonomous Driving

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Research Projects and Publications

CleanMAP: Distilling Multimodal LLMs for Confidence-Driven Crowdsourced HD Map Updates
Feb 2024 - Dec 2024

A. K. Shaw, K. Jiang, T. Wen, C. K. Sah, Y. Shi, M. Yang, D. Yang, and X. Lian, "CleanMAP: Distilling Multimodal LLMs for Confidence-Driven Crowdsourced HD Map Updates," *arXiv preprint arXiv:2504.10738*, 2025. [Online]. Available: https://arxiv.org/abs/2504.10738.

Accepted at the **CVPR 2025** Workshop on Distillation of Foundation Models for Autonomous Driving (**WDFM-AD**).

Advancing Autonomous Vehicle Intelligence: Deep Learning and MLLM for Traffic Sign Recognition and Robust Lane Detection
Feb 2024 - Jan 2025

C. K. Sah, **A. K. Shaw**, X. Lian, A. S. Baig, T. Wen, K. Jiang, M. Yang, and D. Yang, "Advancing Autonomous Vehicle Intelligence: Deep Learning and Multimodal LLM for Traffic Sign Recognition and Robust Lane Detection," *arXiv preprint arXiv:2503.06313*, 2025. [Online]. Available: https://arxiv.org/abs/2503.06313

Joint first author – Contributed to the development of a multimodal large language model (MLLM) for robust understanding of road elements, including lane detection under adverse conditions.

Under review at **ICCV 2025**.

ViTaMIn: Learning Contact-Rich Tasks Through Robot Free Visuotactile Manipulation Interface
Aug 2024 - Jan 2025

F. Liu, C. Li, Y. Qin, **A. Shaw**, J. Xu, P. Abbeel, and R. Chen, "ViTaMIn: Learning Contact-Rich Tasks Through Robot-Free Visuo-Tactile Manipulation Interface," *arXiv preprint arXiv:2504.06156*, 2025. [Online]. Available: https://arxiv.org/abs/2504.06156.

Joint second author – Contributed equally to the design and implementation of the multimodal fusion-driven diffusion model.

Accepted at **ICRA 2025 CRM Workshop**, Submitted to **CoRL 2025**.

Done in collaboration with UC Berkeley.

Stereo Camera based Object detection at different depths and performing Pick and Place Task at specific Bin using the 7 DoF Robotic Arm
Sep 2023 - Jan 2024

Machine Vision course final project

A Privacy-Preserving Data Storage and Service Framework Based on Deep Learning and Blockchain for Construction Workers' Wearable IoT Sensors.
2022

X. Zhou, **A. K. Shaw**, and P.-C. Liao, "A privacy-preserving data storage and service framework based on deep learning and blockchain for construction workers' wearable IoT sensors," *arXiv preprint arXiv:2211.10713*, 2022. [Online]. Available: https://arxiv.org/abs/2211.10713.

Published in IEEE Access.

Skills

Programming & Frameworks: Python, C++, PyTorch, CUDA, TensorFlow, OpenCV

Robotics Tools: ROS, Gazebo, MoveIt, RViz

Collaboration & Development: Git, Docker, Linux, Jupyter, VS Code, Github

AI & ML Tools: Deep Learning, Imitation Learning, LLM, VLM, VLA

Additional Tools: Open3D, Scikit-learn, Matplotlib, NumPy, Pandas

Achievements

Best Solution Award   2022
AWS Disaster Response Hackathon

Second Class Meritorious Scholarship (英才二等奖学 金)   Oct 2021
Tsinghua University

Awarded for having excellent overall academic records

Chinese Government Scholarship   Sep 2020 - Jun 2024
Tsinghua University

Fully Funded Master's Study Scholarship

Languages

English
● ● ● ● ●

Hindi
● ● ● ● ○

Chinese
● ● ○ ○ ○