CHENYUAN LIU

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EDUCATION

University of Chinese Academy of Sciences, Beijing, China *September 2023 – Now*
Master of Engineering in Electronic Information

Central South University, Changsha, China *September 2019 – June 2023*
Bachelor of Engineering in Software Engineering

PROFILE SUMMARIZATION

Major Courses: Advanced Artificial Intelligence, Pattern Recognition and Machine Learning, Robotics, Deep Learning, Algorithm Design and Analysis, Theory and Technology of Man-machine Interaction, etc.

Programming Skills: C++, Python, PyTorch, etc.

Research Interest: Deep Learning, Machine Learning Algorithm and Applications.

About Me: A self-motivated student with a strong background in Computer Science and Machine Learning. Skilled in software development and passionate about applying machine learning to research and real-world challenges.

RESEARCH & PUBLICATION

School of Artificial Intelligence, Shanghai Jiao Tong University *March 2025 – Now*
Research Topic: Object Concept Learning for Robot **Research Assistant**
- I am currently a research assistant at the MVIG-RHOS Lab, working supervised by Prof. Yong-Lu Li and Prof. Cewu Lu. My main research focuses on embodied AI and object concept learning for robots. I am responsible for the construction of the data base of the dual-arm robot, as well as the research of the perception module and the action module. Our target is to enable robots to understand the physical world and achieve general task execution ability through the attribute and affordance of the physical world.

Institute of Automation, Chinese Academy of Sciences *March 2024 – July 2024*
Research Topic: "Changying" Military Simulation System **Research Assistant**
- I joined the Key Laboratory of Cognition and Decision of Complex Systems as a research assistant, where my main research was to reconstruct a military simulation system called Changying. Additionally, I was responsible for reproducing experiments from several cutting-edge research papers.

School of Computer Science and Engineering, Central South University *November 2021 – May 2025*
Research Topic: Follow-up State Estimation of Intelligent Battery Management System **Research Assistant**
- I have been conducting research supervised by Prof. Heng Li. My research focuses on advancing battery management systems (BMS) with novel approaches to improve performance and safety. I proposed an IoT-based battery system paradigm to address the limitations of traditional BMS architectures. Additionally, I utilized large language models for dynamic state prediction, enhancing the accuracy of state tracking and forecasting. I also conducted comprehensive reviews of deep learning and pre-trained large model applications in BMS, summarizing current research trends. To mitigate sensor density challenges in electric vehicles, I developed a digital twin model integrating motor and battery systems, employing the KNN algorithm for battery state estimation, thereby optimizing sensor usage.

Publication List (# Equally Contribution)

1. Peng H#, Liu C#, Li H. Large Language Model Enabled Health Management for Internet of Batteries in Electric Vehicles[J]. IEEE Internet of Things Journal, 2024.
2. Liu C#, Li H#, Li K, et al. Deep Learning for State of Health Estimation of Lithium-Ion Batteries in Electric Vehicles: A Systematic Review[J]. Energies, 2025, 18(6): 1463.
3. Liu C, Xu X, Liu W, et al. From Motor to Battery: A Digital Twin Model of Electric Vehicles[C]//International Conference on Image, Vision and Intelligent Systems. Singapore: Springer Nature Singapore, 2022: 735-745.
4. Liu C, Chen X, Zhu Z et al. A Foundation Model for State of Health Prediction of Lithium-ion Battery in Electric Vehicles[C]//International Conference on High Performance Computing and Communications. China: IEEE China, 2024. (Accept)

5. Kaleem MB, Li H, Liu C, et al. Advances in Pre-trained Large Models for Battery Management Systems in Electric Vehicles[C]//Annual Conference of the IEEE Industrial Electronics Society. IEEE Spain, 2025. (Accept)
6. Kaleem MB$^{\#}$, Liu C$^{\#}$ et al. Pre-trained Large Models for Battery Management Systems in Electric Vehicles[J]. Applied Energy, 2025. (Under Review)

HONORS & AWARDS

University of Chinese Academy of Sciences Graduate Scholarship (2023 & 2024)

Service Outsourcing Innovation and Entrepreneurship Competition for Chinese College Students (2022)
- National Second Prize

China National University Student Innovation & Entrepreneurship Development Program (2021 & 2022)
- The intelligent nursing home IoT System with multi-device integration (2022)
- The end-cloud integrated sharing intelligent mirror system (2021)

Third-Class Scholarship of Central South University (2020)