

Siyu Liu

Boston, MA (Open to Relocate) | liu.siyu5@northeastern.edu | [LinkedIn](#) | [GitHub](#) | [Portfolio](#)

Education

Northeastern University | Boston

May 2026

Master of Science in Robotics, Concentration in Electrical & Computer Engineering

Courses: NLP, Machine Learning, Reinforcement Learning, Robotic Sensing & Navigation, Assistive Robots

China University of Mining and Technology | Xuzhou, China

Jul 2023

Bachelor of Engineering in Mechanical Engineering

Courses: Python, Electrical and Electronic Technology, Mechanical Design, Microcomputer Control, PLC

Skills

Soft Skills: Adaptability (achieved English fluency within 1 year), Rapid learning, Time management under pressure, Leadership, Problem-solving, Project management

Programming & Data: Python, MATLAB; NumPy, Pandas, SciPy, Matplotlib

AI & Robotics: Scikit-Learn, PyTorch, TensorFlow, Keras, RL (PPO); ROS, Gazebo, RViz

Biomechanics / Signal: Force-plate analysis, COP alignment, signal resampling

CAE & Tools: SolidWorks, ANSYS, Abaqus; Git, MS Office

Projects

Autonomous Differential-Drive Steering System for Pothole Avoidance | Boston

Feb 2025 – Jun 2025

- Built 2-wheel platform with TOF + IMU sensing; real-time steering avoids 95 % potholes in test track
- Trained PPO policies in PyBullet and deployed to Arduino Nicla Vision with seamless on-device inference

Assistive Exoskeleton Technology Research | Boston

Oct 2024 – Jun 2025

- Automated a Python pipeline (Pandas, NumPy, regex) that ingests, cleans, and time-aligns hundreds of wearable-sensor files—cutting raw-to-ready prep from hours to ~10 min and boosting usable samples by 30 %

Synchronization & Coordination of Two Mobile Robots | Boston

Oct 2024 – Dec 2024

- Configured a dual-TurtleBot3 SLAM stack in ROS 1/Gazebo—gmapping + AMCL + move_base—so each robot could map, localize, and navigate autonomously in a custom world
- Engineered multi-robot integration: namespace-isolated launch files and a custom map_merge node fused the two occupancy grids into one live map and eliminated TF-frame collisions
- Debugged cross-package TF/topic conflicts (slam_gmapping ↔ explore_lite), documenting fixes and a scaling roadmap—experience that sharpened ROS troubleshooting and multi-robot coordination skills

Networked Agro-Forestry Monitoring Pan-Tilt | China

Sep 2022 – Jun 2023

- Initiated and led an independent project, driving end-to-end development from concept to deliverables
- Integrated multidisciplinary skills—mechanical design (SolidWorks/ANSYS), embedded control (STM32), and sensor fusion—into a 3-axis lightweight pan-tilt (40% weight reduction, 83% safety margin, 270 Hz resonance)
- Delivered outcome-driven results, developed a high-precision control stack (quad-encoder + IMU fusion + PID), achieving $\leq 0.05^\circ$ repeatability while reducing idle power by ~30%

Natural Field Electromagnetic Exploration System | China

Sep 2020 – Jan 2022

- Led a 6-member team in designing the suspended pod's mechanical structure to ensure stability under vibrational forces
- Awarded National Silver Medal in Mechanical Design Competition for innovative system design
- Patent:** Siyu Liu. 2022. Pod-type aviation low-frequency three-component natural field electromagnetic exploration system and control method. CN 114355459 A, filed January 7, 2022, Patent Pending.

Experience

Institute of Electrical and Electronic Reliability, Harbin Institute of Technology | Harbin, China

Jul 2023 – Apr 2024

CAE Engineer

- Simulated insertion force and contact resistance of rocket connectors in Abaqus, predicted failure zones, and reduced lab iterations
- Validated thermal rise & harmonic response in ANSYS, issuing design changes adopted by supplier

Extracurricular Experience

Northeastern University Cultural and Language Learning Society | Boston, MA | Ambassador & Chinese Instructor

Present

- Organized and managed Chinese language classes, overseeing curriculum design and scheduling for the society
- Delivered lessons to students, enhancing cross-cultural communication and engagement

Northeastern University Entrepreneur Club | Boston, MA | Co-founder, Entrepreneurship Competition

Present

- Co-founded a team to compete in the university's entrepreneurship competition with a project focused on international headhunting
- Led idea development, pitching, and strategic planning in a collaborative startup environment

RoboMaster Robotics Competition | Xuzhou, China | National First Place

Jan 2020 – Oct 2021

- Co-designed a RoboMaster robot in SolidWorks and ran battle simulations to iterate and resolve design flaws