

Yuwei Liu

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EDUCATION

Johns Hopkins University

Aug. 2025 – Present

Master of Science in Mechanical Engineering

Baltimore, MD

- **Concentration in Robotics**
- **Relevant Coursework:** Control System Design, Machine Learning, Robot Kinematics & Dynamics, Haptics & Human-Robot Interaction, Robot Motion Planning

Wuhan University of Science and Technology (WUST)

Sep. 2016 – June 2021

Bachelor of Engineering in Architecture

Wuhan, China

- **Rank: Top 10% | GPA: 3.45/4.0**
- **Honors: Outstanding Graduate, Academic Excellence Scholarship (3 Consecutive Years)**

TECHNICAL SKILLS

Robotics & Engineering: Python, C++, MATLAB/Simulink, Arduino, ROS 2, Git, Linux/Ubuntu

Design & Modeling: SolidWorks, Auto CAD, Rhino, Grasshopper, 3D Printing, Laser Cutting

PROJECTS

Robot Kinematics, Motion Planning and Control | *Matlab, ROS 2, Python*

Feb. 2026 – April. 2026

- Programmed a UR5 robotic arm to execute predefined drawing paths and validate trajectory accuracy
- Developed kinematics (PoE) and implemented motion planning in ROS2 for smooth trajectory execution
- Improved motion stability by tuning parameters and handling singularity issues

Haptic Force-Cepx | *C++, Arduino, SOFA, SolidWorks, 3D Printing*

Sep. 2025 – Dec. 2025

- **[1st Place in Course Project]** Led a team to develop a real-time haptic feedback gripper for robotic surgery training (e.g. Da Vinci 5), reducing tissue slippage and improving manipulation stability
- Built a high-fidelity hardware-in-the-loop system coupling a direct-drive BLDC motor with SOFA simulation
- Eliminated instabilities via two-loop control bridging 200Hz/1000Hz gaps with a spring-damper model

Desktop Robotic Arm Fabrication Practice | *Python, Arduino, Grasshopper*

Jul. 2024 – Dec. 2024

- Assembled, calibrated, and tested a 6-DOF robotic arm and developed a kinematic model for path planning
- Fabricated a 1:100 yurt-inspired pavilion by programming the arm to automate a traditional winding process

Multi-Robot Collaborative Construction | *Python, Arduino, Machine Learning, LiDAR*

Oct. 2024 – Nov. 2024

- Constructed a 5x5 reciprocal shell using multi-robot coordination and LiDAR / vision-based localization for real-time positioning and construction
- Generated visual datasets from assembly processes to support machine learning-based robotic control

EXPERIENCE

Central South Architectural Design Institute (CSADI)

June 2021 – June 2024

Assistant Architect, Urban Infrastructure Division

Wuhan, China

- Utilized parametric modeling and BIM workflows to resolve geometric constraints and optimize engineering performance standards (e.g. sustainability metrics), ensuring design feasibility under regulatory requirements
- Coordinated with multi-disciplinary teams to translate client requirements into technical specifications, successfully reconciling conflicting design interfaces through iterative problem-solving
- Led departmental digital transformation by upskilling 15 team members on computational design tools to enhance team efficiency and design quality

PUBLICATION

[Third Prize] Y. Liu and F. Wang, "A Study on the Architecture of a Nursing Home Alongside Kindergarten: The Elderly Apartment in Tongxin Garden", *Hubei Civil Engineering Academy Journal*, no. 4, 2019.

L. Zhou, B. Zhou, Y. Liu, and Y. Xiang, "Research on Improvement of Village Landscape under Rural Revitalization Strategy", in *2019 IERI International Conference on Economics, Management, Applied Sciences, and Social Sciences (EMAS 2019)*.