

LEHONG WANG

508-847-7972 | lwang11@wpi.edu | 20 William St. Apt 1, Worcester, MA 01609, USA

GitHub: <https://github.com/Lehong-Wang>

Personal Website: <https://lehong-wang.github.io/>

Linkedin: <https://www.linkedin.com/in/lehong-wang-1436b8271/>

EDUCATION

Worcester Polytechnic Institute (WPI)

Worcester, MA, USA

Bachelor of Science expected in Jun. 2024

Aug. 2020 to Jun. 2024

Majors: Robotics Engineering, Computer Science

- Cumulative GPA: **3.78/4.0**; Major GPA: **3.87/4.0**
- Honors & Awards: **Reviewer for RoboSoft 2024, Dean's List** (Spring 2021, Fall 2021, Spring 2022, Fall 2022), **WPI Presidential Scholarship** (a total of \$64,000: \$16,000 for each undergraduate academic year up to four years)

PAPER/PUBLICATION

- **Lehong Wang***, Savita V. Kendre*, Ethan Wilke, Nicholas Pacheco, Loris Fichera, and Markus P. Nemitz. **FDM Printing: A Fabrication Method for Fluidic Soft Circuits?** Published to 2024 IEEE International Conference on Soft Robotics (RoboSoft) (**Best Paper Award**, Excellence in Manufacturing Reproducibility track)
- Zilin Dai, Yijia Wu, Haotian Liu, **Lehong Wang**, and Markus P. Nemitz. **Vision-based FDM Printing for Fabricating Airtight Soft Actuators.** Published to 2024 IEEE International Conference on Soft Robotics (RoboSoft) (Oral Presentation)
- **Lehong Wang**, Yuchen Wu, Jinyun Xu, Fujun Ruan and Lu Li. **From Flat to Form-Fitting: A Computational Geometry Approach to 3D Wearable Electronic Design and Rapid Prototyping.** Accepted at 2024 IEEE International Conference on Robotics and Automation workshop (ICRA)
- Haotian Liu*, Fangzhou Lin*, **Lehong Wang**, Kazunori Yamada, Vijaya B. Kolachalama, and Ziming Zhang. **SIMEX: Deep Similarity Learning for Set-to-Set Matching with Extreme Value Distribution Prior.** Submitted to 2024 European Conference on Computer Vision (ECCV) (Under Review)

* Means equal contribution

RESEARCH/PROJECT/INTERNSHIP EXPERIENCE

Aerosol Jet Additive Manufacturing, Biorobotics Lab

Pittsburgh, PA, USA & Remote

Team leader (10-member research project)

May. 2023-Present

Under the supervision of Prof. Howie Choset and Mr. Lu Li, Project Scientist, Robotics Institute, Carnegie Mellon University

- Developed software for transforming 2D PCB design onto arbitrary high curvature 3D surface
- Perform motion planning for UR robot arm to print circuit on existing mechanical parts
- Design kinematics and control algorithm for a linear motor based 3 DOF platform for confined space printing

Quadruped with Supplementary Limb for Enhanced Mobility

Worcester, MA, USA

Team member (6-member teamwork capstone research project for undergraduate degree)

Aug. 2023-Present

Under the supervision of Prof. Mohammad Mahdi Agheli Hajiabadi and Prof. Jing Xiao, Robotics Engineering, WPI

- Collaborate in a team of 6 members to develop software and hardware addons for Unitree Go1 robot
- Research into quadruped motion planning and develop adaptive planner solving at real time
- Implement a 3D SLAM system for quadruped navigation in complex environment

UR Robot Arm Control, Biorobotics Lab

Pittsburgh, PA, USA & Remote

Team member (4-member research project)

Dec. 2023-Present

Under the supervision of Prof. Howie Choset and Mr. Lu Li, Project Scientist, Robotics Institute, Carnegie Mellon University

- Developed and tested software framework for interfacing with physical UR5e robot arm
- Created debugging and visualization tools with Rviz and Swift for robot arm motion plan development
- Built a simulation environment for UR arm control software development

Fluidic Circuit Auto-generation Software

Worcester, MA, USA

Research Assistant of Robotic Materials Group

May. 2022-Present

Under the supervision of Prof. Markus Nemitz, Robotics Engineering, WPI

- Devised an novel workflow for the conception and fabrication of fluidic circuitry
- Developed and implemented novel 3D printable structure with embodied functionality analogous to CMOS
- Submitted two papers as the first author for review of 2024 ICRA and 2024 RoboSoft

Vision-based Close-loop Printig for Desktop FDM Printers

Worcester, MA, USA

Team leader (4-member teamwork project)

May. 2023-Nov. 2023

Under the supervision of Prof. Markus Nemitz, Robotics Engineering, WPI

- Led the team to develop software to analyze printing gcode, detect defects, and generate fixing commands

- Implemented the approach on a desktop FDM printer and successfully improved the quality of the print
- Submitted a paper as the co-author for review of 2024 RoboSoft

Toward Wearable Multimodal Neuroimaging

Worcester, MA, USA

Team member (7-member teamwork project)

May. 2022-Oct. 2023

Under the supervision of Prof. Ali Yousefi, Computer Science, WPI and Prof. Soroush Farzin, Civil & Environmental Engineering, WPI

- Collaborated to build an affordable and portable single-channel wireless EEG device
- Designed and implemented embedded programs for parsing, analyzing, and transmitting wireless EEG data
- Assisted in designing and manufacturing a custom PCB for the device

Wheelchair Simulator Game for Rehabilitation

Worcester, MA, USA

Research Assistant of Intentional Design Studio (IDeaS)

Nov. 2022-May. 2023

Under the supervision of Prof. Gillian Smith, Interactive Media & Game Development, WPI

- Collaborated in a team of 6 to build a game that provides training for patients with limited locomotion abilities
- Designed and implemented a control system and simulation environment for the wheelchair
- Designed EMG control to provide accessibility for users with fine manipulation limitations

AI Bomberman Bot

Worcester, MA, USA

Team member (2-member teamwork project)

Jan. 2024-Mar. 2024

- Implemented reinforcement learning on game character to find strategy for avoiding monster and escaping room
- Combined modified A* path finding algorithm and approximate q-learning for more optimized strategy
- Programmed the game character to have ability to destroy map terrain and update strategies accordingly

Torque Based Generic Serial Arm Dynamic Solver and Simulator

Worcester, MA, USA

Independent research project

Jan. 2023-May. 2023

- Derived and implemented generic kinematic and dynamics equations for serial link robots in MATLAB
- Implemented a solver and a simulator based on the inverse and forward equations
- Implemented trajectory following while only controlling motor torque at each joint

Lidar-based Robot for Mapping and Navigation

Worcester, MA, USA

Team leader (3-member teamwork project)

Oct. 2022-Dec. 2022

- Led the team to design and optimize various control and path-planning algorithms for a differential drive robot
- Programmed image processing and graph algorithms for interpreting and exploring a map
- Implemented SLAM and localization algorithms for mapping and navigating through an unknown space

Embedded System Software Development

Worcester, MA, USA

Independent research project

Oct. 2022-Dec. 2022

- Developed multiple programs for the EXP430 micro-controller
- Studied the data sheet and user guide for EXP430 and changed the functionality of the board
- Programmed classical games and other software for EXP430 with Ccs Studio

Development of a Task & Resource Management Software for Birmingham Women's Hospital

Worcester, MA, USA

Software Engineer Intern (10-member two-month internship program)

Jan. 2022-Mar. 2022

- Collaborated to develop a task and resource management software for the Birmingham Women's Hospital
- Used Agile Software Development methodology and daily scrums in the process of developing the software
- Involved in designing and building the backend database, improved the frontend UI for the software

TA & VOLUNTEER EXPERIENCE

TA for Prof. Markus Nemitz's Graduate Level WPI Course: RBE595 Robotic Materials Sep. 2023-Present

- As the developer of the Fluidic Circuit Auto-generation Software required for this course, I guided students to gain proficiency in using this tool for designing and fabricating their own fluidic circuits in their course projects, and collected their feedbacks as users to keep improving this software

Member of Rho Beta Epsilon (WPI Robotics Honor Society)

Feb. 2023-Present

- Hold weekly help sessions to provide academic assistance and guidance for WPI engineering students
- Co-plan and organize various activities to promote the robotics education in the community

Volunteer for WPI International House

Sep. 2022-Present

- Serve as a volunteer peer mentor to guide the international freshmen during the orientation and the following academic year, helping them get better adapted to the academic and daily life in the new community

Peer Learning Mentor for the Course MA1023 Calculus III, Mathematical Science Department, WPI

Oct. 2021-Dec. 2021

- Prepared and led the weekly conferences about the contents taught in the Calculus class
- Held office hours to answer students' questions and help them with their assignments

SKILLS

- **Programming Languages:** Python, MATLAB, Java, C++, C, JavaScript, R
- **Engineering Software:** ROS, Docker, Solidworks, MATLAB, Rviz, Gazebo, COMSOL, MoveIt, Arduino, R studio, KiCAD, Fusion360, Autodesk Inventor, Pronterface, PrusaSlicer, CCSstudio, Coolterm
- **Language:** Chinese/Mandarin (native), English (fluent)