LEHONG WANG

508-847-7972 | wangleh2002@outlook.com | 20 William St. Apt 1, Worcester, MA 01609, USA
GitHub: https://github.com/Lehong-Wang
Personal Website: https://lehong-wang.github.io/

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: **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, Haotian Liu, and Markus P. Nemitz. **STREAM: Software Tool for Routing Efficiently Advanced Macrofluidics**, submitted to 2024 IEEE International Conference on Robotics and Automation (ICRA) (Under review)
- Zilin Dai, Yijia Wu, Haotian Liu, **Lehong Wang**, and Markus P. Nemitz. **Vision-based FDM Printing for Fabricating Airtight Soft Actuators**, submitted to 2024 IEEE International Conference on Soft Robotics (RoboSoft) (Under review)
- **Lehong Wang***, Savita V. Kendre*, Ethan Wilke, Nicholas Pacheco, Loris Fichera, and Markus P. Nemitz. **FDM Printing: A Fabrication Method for Fluidic Soft Circuits?** submitted to 2024 IEEE International Conference on Soft Robotics (RoboSoft) (Under review)
  * Means equal contribution

RESEARCH/PROJECT/INTERNSHIP EXPERIENCE

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

Aerosol Jet Additive Manufacturing, Biorobotics Lab Pittsburgh, PA, USA & Remote
Team member (10-member teamwork 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

Fluidic Circuit Auto-generation Software Worcester, MA, USA
Research Assistant of Robotic Materials Group May. 2022-Oct. 2023
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

Fully 3D Printed Fluidic Logic for Soft Robots Worcester, MA, USA
Team member (6-member teamwork project) May. 2022-Present
Under the supervision of Prof. Markus Nemitz, Robotics Engineering, WPI

- Contributed to a paper aiming for PNAS Journal
- Assisted in designing, manufacturing, characterizing, and simulating a novel fluidic logic gate device
- Designed and built robots that use the device as logic components

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 Rehabilitiation WPI, Worcester, MA
Research Assistant of Intentional Design Studio (IDeaS) Nov. 2022-May. 2023
Under the supervison 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

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

Robotic Arm with Computer Vision Features Worcester, MA, USA
Team leader (3-member teamwork project) Aug. 2022-Oct. 2022

- Led the team to derive and implement kinematic equations in MATLAB for a 3DOF robotic arm
- Implemented object detection and image processing algorithms in MATLAB with a webcam
- Programmed AI for the robotic arm to manipulate colored balls and play tic-tac-toe with humans

Development of a Task & Rresource 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 a chief developer of the Fluidic Circuit Auto-generation Software required to use in this course, 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, Mathmatical 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, Fusion360, Autodesk Inventor, Pronterface, PrusaSlicer, CCSstudio, Coolterm, TLA+, Mathcad, Multisim, Logger Pro
- **Language:** Chinese/Mandarin (native), English (fluent)