Lehong Wang

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EDUCATION

Worcester Polytechnic Institute (WPI), Worcester, MA — June 2024
Bachelor of Science in Robotic Engineering & Computer Science, GPA: 3.76/4.00

RELATED EXPERIENCES

Research Assistant, Robotic Materials Group, WPI, Worcester, MA — May 2022 - present

- Developed software and workflow for auto-generated design and fabrication of macro fluidic circuits
- Researched into employing CV methods to improve low-cost FDM printing
- Assisted in designing 3D printed mechanisms and characterizing them with experiments

Research Assistant, Biorobotics Lab, CMU, Pittsburgh, PA — May 2023 - present

- Developed software for additively printing integrated circuits onto existing mechanical parts
- Researched into the transformation of 2D circuits onto arbitrary high-curvature 3D surface
- Designed the controls for a novel 3-DOF platform for multi-axis additive manufacturing

Research Assistant, Intentional Design Studio, WPI, Worcester, MA — Nov 2022 – May 2023

- Collaborated in a team of 6 to build a game that provides training for wheelchair users
- Designed and implemented a control system and simulation environment for the wheelchair
- Implemented EMG control to provide accessibility for special disabled users who can't use joysticks

PUBLICATIONS

- **Lehong Wang**, Savita V. Kendre, Haotian Liu and Markus P. Nemitz. STREAM: Software Tool for Routing Efficiently Advanced Macrofluidics. ICRA (Under review)
- Savita V. Kendre, Calvin S. Page, Cem Aygül, **Lehong Wang**, and Markus P. Nemitz. Fully 3D Printed Fluidic Logic for Soft Robots Using Fused Deposition Modeling. (In progress)
- Zilin Dai, Yijia Wu, Haotian Liu, **Lehong Wang** and Markus P. Nemitz. Vision based FDM printing for fabricating airtight soft robots. RoboSoft (Under review)
- **Lehong Wang***, Savita V. Kendre*, Haotian Liu and Markus P. Nemitz. Design of 3D-printable Bistable Valve for Fluidic Logic. RoboSoft (Under review)
- **Lehong Wang***, Jinyun Xu*, Yuchen Wu, Manan Agarwal, Shubin Xie, Fujun Ruan, Lu Li and Howie Choset. Aerosol Jet Based Additive Manufacturing of Conformal Integrated Circuit on High Curvature Surfaces. (In progress)
  * Means equal contribution

SKILLS

Programming Languages: Python, Java, C++, C, MATLAB, JavaScript, R
Engineering Software: ROS, Docker, Solidworks, COMSOL, MATLAB, Rviz, Gazebo, Autodesk Inventor, PrusaSlicer, Arduino, CCSstudio, Coolterm, TLA+, R studio, Mathcad, Multisim, Logger Pro, Tracker
Additional Skills: 3D printing, 3D design, Blender, ZBrush, Unreal Engine, 3D Max, Photoshop, Adobe Illustrator
Languages: Chinese (Native)

PROJECTS

Aerosol Jet Additive Manufacturing, Biorobotics Lab (ongoing) — May 2023

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

Fluidic Circuit Auto-generation Software, Robotic Materials Group (ongoing) — May 2022

- Submitted paper for review for ICRA and RoboSoft as first author
- Developed software for auto-generating 3D printable fluidic circuits
- Developed new designs of 3D printable bi stable valve for fluidic logic

Fully 3D Printed Fluidic Logic for Soft Robots, Robotic Materials Group (ongoing) May 2022

- 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, WPI Oct 2022

- Collaborated in a group of 7 to build an affordable and portable single-channel wireless EEG device
- Wrote a program for receiving and processing the wireless EEG data
- Assisted in designing and manufacturing a chip that integrates all components of the device

ROS-based Robot for Mapping and Navigation, WPI Dec 2022

- Designed and optimized various control and path-planning algorithms for the 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

Robotic Arm with Computer Vision Features, WPI Oct 2022

- Derived and implemented control algorithms 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 human

Field Mapping Robot, WPI May 2022

- Built robot that can map an arena with OpenMV camera, infer-red and ultrasonic sensors
- Programmed and optimized PID control and odometry algorithm for the robot
- Set up an MQTT server for publishing the collected map data

Mini Solar Panel Installation Robot, WPI Mar 2022

- Worked in a team of 3 to design, analyze, build, and program two semi-autonomous robot
- Engineered the two robots to collaborate and operate heavy plats (solar panels) on a high platform (roof)
- Designed and analyzed actuators and four-bar mechanisms for the robots with Solidworks

Software Engineering, WPI Mar 2022

- Worked in a team of 9 to build a task and resource management software for a hospital
- Used Agile Software Development methodology and daily scrums during the process of building the software
- Involved in designing and building the backend database for the software and improved the frontend UI for the software

Embedded System Software Development, WPI Oct 2022

- Developed multiple programs for the MSP430 micro-controller
- Studied the data sheet and user guide for MSP430 and changed the functionality of the board
- Programmed classical games and other software for MSP430 with Ccs Studio

Jumping Segway, WPI Jan 2022

- Assisted an MQP group of three to build a self-balanced Segway that can jump up stairs
- Configured the sensors and micro-controllers used for the project
- Assisted in designing and building a system to control the balance of the Segway

EXTRACURRICULAR ACTIVITIES:

Peer Learning Mentor, Math department, WPI Oct 2021 - Dec 2021

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

Peer Mentor, International Student Council, WPI Aug 2022 – present

- Led the 2022 International Student Orientation as a peer mentor
- Helped organize multiple events for the International Student Council

Member, Rho Beta Epsilon (WPI Robotics honor society), WPI Feb 2023 - present

- Hold weekly help sessions to provide assistance and guidance for students
- Involved in organizing various activities to promote and improve robotics education in the community

Member, Math club, WPI Sep 2021 - present

- Meet weekly to solve interesting math problems / games

Member, CSSA, WPI Sep 2021 – present

- Host weekly activities to help students learn Chinese language and culture