Li-Wei Yang

(412) 291-0263 • liweiy@andrew.cmu.edu • https://www.linkedin.com/in/liweiy • https://liver121888.gitlab.io

EDUCATION

Carnegie Mellon University - School of Computer Science — Pittsburgh, PA
Master in Robotic Systems Development (expected) — May 2025
- Courses: Advanced Computer Vision, Robot Mobility, Manipulation, Estimation & Control, Robot Autonomy, Optimal Control & Reinforcement Learning.

National Taiwan University — Taipei, Taiwan
Bachelor in Biomechatronics Engineering — Jun. 2022
- **Overall GPA: 3.99/4.30, Last 60 GPA: 4.14/4.30.**
- Courses: Robotics, Machine Learning, Medical Mechatronics and Control, Intelligent Control, Automatic Control, Data Structures and Algorithms, Digital Image Processing.

SKILLS

Programming: C/C++, Python (PyTorch, OpenCV), Java, MATLAB, Julia.
Robotics: Computer Vision, Control, Planning, Navigation, SLAM.
Software/Tools: ROS, SolidWorks, Gazebo, MoveIt, 3D Slicer, Qt, Git, Arduino, Android Studio.

RESEARCH EXPERIENCE

Center for Artificial Intelligence and Advanced Robotics — Taipei, Taiwan
Research Assistant, topic: Companion Healthcare Aid Robot Manager, advisor: Li-Chen Fu — Feb. 2022 - Oct. 2022
- Developed voice-interactive module, driving enhanced capabilities in facial recognition and user engagement.
- Integrated ECG smartwatch and robot through BLE protocol, optimizing data synchronizing capabilities.
- Leveraged **SQLite** to centralize physiological data from multiple users, enhancing system scalability and user management.
- Refined research proposal, contributing swift approval by the Institutional Review Board.

Robots and Medical Mechatronics Lab — Taipei, Taiwan
Undergraduate Researcher, topic: Remote Swabbing Robot, advisor: Ping-Lang Yen — Sept. 2020 - Mar. 2022
- Won **sponsorship** worth NT$ 48000 from Taiwan's Ministry of Science and Technology (MOST).
- Constructed statistical morphing oral model using CT images in **3D Slicer**, achieving landmarks' accuracy of 2 mm.
- Designed the torque of robot's counterbalance in **MATLAB**, broadening robot's workspace by 80%.

SELECTED PROJECTS

Tekkneeca – MRSD Capstone — Pittsburgh, PA
- Develop learning-based solutions to replace current invasive IR trackers for surgical robots. — Sept. 2023 - Present
- Support the placement of cutting guides in Total Knee Arthroplasty with real-time motion compensation.

Robotics Playground — Taipei, Taiwan
- Explored **ROS** navigation stack with several navigation methods, including A*, Greedy, and Dijkstra. — Aug. 2022
- Simulated spot quadruped in Gazebo, with RRT as navigation algorithm.

Mobile Lost and Found Robot — Taipei, Taiwan
- Led teammates to integrate an object-searching robot using depth camera and lidar. — Jan. 2022
- Implemented DWA **navigation** and AMCL **localization** methods.
- Applied BRISK and RANSAC algorithms in object searching and found all lost items.

Dynability5 — Taipei, Taiwan
- Built a 5-DOF manipulator to deliver water bottles for people with physical disabilities. — Dec. 2021
- Concatenated various frequency filters and amplifiers to collect clear EMG signals.
- Fine-tuned an **SVM** classifier to classify EMG patterns for control and achieved 90% accuracy.

PUBLICATIONS

Peer-reviewed Journal Articles
A Morphology Model for the Cyber-physical Operation of a Remote Swabbing Robot.
- **Yang, L. W.** & Yen, P. L., International Journal of iRobotics.

AWARDS

Best Student Paper Contest (Conference on Advanced Robotics and Intelligent Systems) — Taipei, Taiwan
- First place. — Aug. 2022

Prof. Takasaka Memorial Scholarship — Taipei, Taiwan
- The scholarship was granted to top 3 students in Biomechatronics department. — Apr. 2022

Presidential Award — Taipei, Taiwan
- GPA ranked top 5% in a semester. — Apr. 2021