

# Li-Wei Yang

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## EDUCATION

### Carnegie Mellon University - School of Computer Science

*Master in Robotic Systems Development (expected)*

- Relevant Courses (in progress): Advanced Computer Vision, Robot Mobility, Manipulation, Estimation, & Control.

Pittsburgh, PA  
May 2025

### National Taiwan University

*Bachelor in Biomechatronics Engineering*

- Overall GPA: 3.99/4.30, Last 60 GPA: 4.14/4.30.

Taipei, Taiwan  
Jun. 2022

- Relevant Courses: Data Structures and Algorithms, Machine Learning, Robotics, Intelligent Control, Automatic Control, Medical Mechatronics and Control, Digital Image Processing.

## SKILLS

**Programming:** Python (PyTorch, OpenCV), C/C++, MATLAB, Java.

**Robotics:** SLAM, Navigation, System Control, Computer Vision.

**Software/Tools:** ROS, Gazebo, MoveIt, SolidWorks, 3D Slicer, Qt, Git, Arduino, Android Studio.

## RESEARCH EXPERIENCE

### Center for Artificial Intelligence and Advanced Robotics

*Research Assistant, topic: Companion Healthcare Aid Robot Manager, advisor: Li-Chen Fu*

Taipei, Taiwan  
Feb. 2022 - Oct. 2022

- 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.
- Developed voice-interactive module, driving enhanced capabilities in facial recognition and user engagement.
- Refined research proposal, contributing swift approval by the Institutional Review Board.

### Robots and Medical Mechatronics Lab

*Undergraduate Researcher, topic: Remote Swabbing Robot, advisor: Ping-Lang Yen*

Taipei, Taiwan  
Sept. 2020 - Mar. 2022

- Won **sponsorship** worth NT\$ 48000 from Taiwan's Ministry of Science and Technology (MOST).
- Constructed statistical morphing oral model in **3D Slicer** and simulated in **Gazebo**, achieving landmarks' accuracy of 2 mm.
- Designed the torque of robot's counterbalance in **MATLAB**, broadening robot's workspace by 80%.

## SELECTED PROJECTS

### Robotics Playground

- Explored **ROS** navigation stack with several navigation methods, including A\*, Greedy, and Dijkstra.
- Simulated spot quadruped in Gazebo, with RRT as navigation algorithm.

Taipei, Taiwan  
Aug. 2022

### Mobile Lost and Found Robot

- Led teammates to integrate an object-searching robot using depth camera and lidar.
- Implemented **DWA navigation** and **AMCL localization** methods.
- Applied **BRISK** and **RANSAC** algorithms in object searching and found all lost items.

Taipei, Taiwan  
Jan. 2022

### Dynability5

- Built a 5-DOF manipulator to deliver water bottles for people with physical disabilities.
- 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.

Taipei, Taiwan  
Dec. 2021

## 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.

### Domestic Conference

*Analysis of RCM Mechanism and Counterbalance for a Swabbing Robot.*

- Liu, L. C. & **Yang, L. W.**, Chinese Society of Mechanical Engineers Annual Conference.

## AWARDS

### Best Student Paper Contest (Conference on Advanced Robotics and Intelligent Systems)

- First place.

Taipei, Taiwan  
Aug. 2022

### Prof. Takasaka Memorial Scholarship

- The scholarship was granted to top 3 students in Biomechatronics department.

Taipei, Taiwan  
Apr. 2022

### Presidential Award

- GPA ranked top 5% in a semester.

Taipei, Taiwan  
Apr. 2021

## CERTIFICATES

**Coursera:** Writing in the Sciences, Successful Negotiation: Essential Strategies and Skills, Python Data Structures, Mathematics for Machine Learning: Linear Algebra, Robotics (1).