Li-Wei Yang

LinkedIn • GitHub • Personal Website • E-mail

EDUCATION

National Taiwan University *Sept. 2018—Jun. 2022*

Bachelor in Biomechatronics Engineering

- **Overall GPA: 3.99/4.30, Rank: 2/35, Last 60 GPA: 4.14/4.30**
- Relevant Coursework: Data Structures and Algorithms, Machine Learning, Robotics, Intelligent Control, Automatic Control, Medical Mechatronics and Control, Digital Image Processing, Linear Algebra and Its Applications (Auditing), Algorithm Design and Analysis (Auditing)

RESEARCH EXPERIENCE

Robots and Medical Mechatronics Lab *Sept. 2020—Mar. 2022*

Undergraduate Researcher, supervisor: Ping-Lang Yen

- ***Smart Cyber-physical System of a Remote Swabbing Robot***
  - Developed a statistical morphing oral model that fits the oral cavity in 3D Slicer and built a simulation environment in **GAZEBO** for the operator to swab for the oral specimen.
  - Won **sponsorship** from Taiwan's Ministry of Science and Technology (MOST).
  - Contained the RMS Error of Markups below 4 mm.
- Designed the torque of counterbalance in **MATLAB**, broadening the robot's workspace by 80%.

Center for Artificial Intelligence and Advanced Robotics *Feb. 2022—Oct. 2022*

Research Assistant, supervisor: Li-Chen Fu

- ***CHARM: Companion Healthcare Aid Robot Manager***
  - Connected an ECG smartwatch to the robot using BLE protocol and utilized **SQLite** to synchronize multiple users' physiological data to a remote server.
  - Utilized synchronous and asynchronous threading to develop a surveillance module that follows and recognizes faces and interacts with people in voice to improve user experience.
  - Refined research proposal and informed consent form, which helped the research pass Institutional Review Board and advances into the clinical research phase.

PUBLICATIONS

Peer-reviewed Journal Articles

- **Yang, L. W.**, & Yen, P. L. (2022). A Morphology Model for the Cyber-physical Operation of a Remote Swabbing Robot. International Journal of iRobotics, 5(3), 7-12. ResearchGate Link.

International Conference

- **Yang, L. W.**, & Yen, P. L. (2022, August). Smart Cyber-physical System of a Remote Swabbing Robot. In 2022 International Conference on Advanced Robotics and Intelligent Systems (ARIS).

Domestic Conference

- Liu, L. C., & **Yang, L. W.** (2022, December). Analysis of RCM Mechanism and Counterbalance for a Swabbing Robot. In 2022 Chinese Society of Mechanical Engineers Annual Conference.

AWARDS

Prof. Takasaka Memorial Scholarship *Apr. 2022*

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

Presidential Award *Apr. 2021*

- GPA ranked top 5% in a semester.

Best Student Paper Contest (ARIS) *Aug. 2021*
- **First place**.

SELECTED COURSE PROJECTS

Mobile Lost and Found - MLF6110 *Jan. 2022*
Team leader, related course: Robotics
- Led the team to integrate an object-searching robot using RealSense D435 and RPLIDAR-A1.
- Implemented DWA navigation and AMCL localization methods.
- Applied BRISK and RANSAC algorithms in object searching.

Dynability5 *Dec. 2021*
Team leader, related course: Medical Mechatronics and Control
- 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.

SKILLS

Programming: Python (TensorFlow, PyTorch), C/C++ (OpenCV), C#, Java, Git, Qt, Latex, Kotlin, MATLAB (Robotics System Toolbox, Reinforcement Learning Toolbox)
System: Raspberry Pi, Arduino, Android, Jetson TX2/Nano, TI F28388D, Ubuntu
Software: SOLIDWORKS, **ROS**, **GAZEBO**, 3D Slicer, Unity, Android Studio, Endnote
English proficiency: Chinese (native), English (fluent)

SOCIETIES

Robotics Society of Taiwan (RST)
Personal Member
- RST focuses on studying and promoting Robotic theories, technologies, and education.

Science United (Funded Project of the National Science Foundation)
Computing Volunteer
- Science United promotes coordinated volunteer computing. Contributed 8316 CPU hours and 3518 GPU hours in science areas such as Computer Science, Mathematics, Astronomy, etc.

International Life Saving Federation (ILS)
Course Lifesaver
- ILS is an organization for drowning prevention, water safety, lifesaving, and lifesaving sports.

EXTRACURRICULAR AND VOLUNTEERING ACTIVITIES

National Taiwan University Pop Dance Club
Main Choreographer
- Held and competed in the most prestigious choreography competition in Taiwan: NTUTDC.
  - One of 17 finalists from 67 professional teams.
- Choreographed and led the team to perform 3 performances with 100 audiences.

CERTIFICATES

Coursera
- Writing in the Sciences, Successful Negotiation: Essential Strategies and Skills, Mathematics for Machine Learning: Linear Algebra, Robotics (1)

MathWorks
- Reinforcement Learning Onramp