

Po Chuan Chen

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Education

Georgia Institute of Technology

MS in Electrical and Computer Engineering (GPA: 3.84/4.0)

Atlanta, GA

Aug 2021 - May 2023

- **Courses:** Convex Optimization, Network Control, Adaptive Control, Linear System and Controls, Intro Robotics Research, Robotics, Advance Program Techniques, Biomedical Sensing System, Digital Image Processing

National Chiao Tung University

MS in Electro-Optical Engineering (GPA: 4.0/4.0)

Hsinchu, Taiwan

Sept 2010 - June 2011

- **Thesis:** Dual Directional Overdriving Method for Fast Response LC-lenses on Autostereoscopic 3D Display [PDF]

National Chiao Tung University

BS in Photonics (GPA: 3.55/4.0)

Hsinchu, Taiwan

Sept 2006 - June 2010

Industrial Experience

MediaTek Inc. / MStar Semiconductor Inc. (Television Unit)

Hsinchu, Taiwan

Software Engineer

Jan 2018 - May 2021

- Improved image resolution detection accuracy from 80% to 90% on the display quality tuning automation by using convolution neural network.
- Jointly developed data communication between multiple systems on chips (SoC) to avoid asynchronously images on television.
- Used visual scene understanding system with convolution neural network to enhance display quality automatically.
- Established an auto capture image system for image dataset collection on SoC.
- Developed flickering reduction function, which resulted in 90% less flickering effect on SoC.
- Automated the tone tuning process on Netflix image testing and reduced adjusting time from hours to 10 seconds on SoC.
- **Technical Skills:** Python with TensorFlow, NumPy, Matplotlib, Pandas, PyQt, C/C++, Real-Time Operating System, Linux, Git.

Research Experience

Exoskeleton and Prosthetic Intelligent Controls Lab (Georgia Institute of Technology)

Atlanta, GA

Graduate Research Volunteer

Jan 2022 - Present

- Developing torque assistance controllers allowing robust adaptation to various walking conditions. The controllers are based on the electromyography-driven neuromuscular model to simulate muscle activities and biological torque for a high-torque hip exoskeleton. The primary purpose of this project is to reduce metabolic costs for older people at their self-select-walking speed (Accepted by American Society of Biomechanics.)
- **Technical Skills:** Python with TensorFlow, TensorRT, NumPy, Pandas, Matlab, C, Ubuntu Linux, Docker, LabView, Eagle, Communication Protocol with SPI, CANBUS, Embedded System Platform with myRIO, Jetson nano, sensors with CoApt, Encoders, COSMED.

Neurotech Lab (National Yang Ming University)

Taipei, Taiwan

Graduate Research Assistant

Apr 2016 - Sept 2017

- Built an exoskeleton-based rehabilitation system from scratch, including mechanical structure, control system, and electronic design, for patients with peripheral nerve injuries. The system was controlled via electromyography (EMG) of the patient and was operated on an Arduino embedded development board. [Video]
- Designed a system to control a robotic hand to mimic human gesture in real-time via a depth camera.
- **Technical Skills:** Matlab with Digital Signal Processing, Mechanical Design, C++, Embedded System platform with Arduino, Myo armband.

Multimedia Information Retrieval Lab (National Taiwan University)

Taipei, Taiwan

Graduate Research Assistant

Oct 2013 - July 2015

- Utilized convolutional deep belief network on the acoustic spectrum to extract image features for classifying music genres.
- Proposed a natural language processing project with recursive neural network and Word2Vec on sentiment analysis on Chinese post.
- Implemented support vector machine on acoustic spectrum to transform a common plastic box into a human-machine interface [Video]
- Used reinforcement learning to balance an inverted pendulum [Video]
- Designed a system to control a robotic hand to mimic human gesture in real-time via a depth camera.
- **Technical Skills:** Matlab with Digital Signal Processing, Machine Learning, Deep Learning.

University Projects

Intelligent Shopping Assistance Cart

Atlanta, GA

Georgia Institute of Technology

Apr 2022

- Developed a control law with object detection to follow a moving target at a certain distance and avoid obstacles at the same time. [Video]
- **Technical Skills:** Python, ROS, Sensors with Lidar, Camera, Odometry.

Navigation in a Maze

Atlanta, GA

Georgia Institute of Technology

May 2022

- Utilized KNN to classify different traffic signs in the maze and designed a control law to navigate the turtlebot to the final goal without bumping any obstacles. [Video].
- **Technical Skills:** Python, ROS, Sensors with Lidar, Camera, Odometry, Machine Learning.