

Jing-An Tzeng

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EDUCATION

University of Michigan

Ann Arbor, MI

Master of Science in Electrical and Computer Engineering

Jan 2021

Concentration: Robotics

Coursework: Self-Driving Cars: Perception and Control, Computational Data Science and Machine Learning(F19)

Mobile Robotics, Foundations of Computer Vision, Embedded Control (W20)

- **Average GPA:** 4.0/4.0

National Tsing Hua University (NTHU)

Hsinchu, Taiwan

Bachelor of Science in Power Mechanical Engineering

Jun 2018

Concentration: Control System

- **Average GPA:** 3.92/4.3; **Ranking:** 5/97

PROJECT EXPERIENCE

Self-Driving Car - Object Detection

Ann Arbor, MI

Perception Team Leader

Nov 2019 – Dec 2019

- Placed 2nd overall in class and implemented and trained YOLOv3 on a given dataset in Python with Keras.
- Developed a layer to discriminate the distance of the objects with point cloud.

Eurobot 2018 Contest - Autonomous Robot

Taiwan/France

Software Team Leader

Sep 2017 – Jun 2018

- Placed 24th overall in world counted.
- Prototyped positioning system model with MATLAB for integration test, utilized microcontrollers and ultra-wideband (UWB) chips to trace the robots accurately and practiced the whole system in C++ in Linux.
- Implemented Kalman filter and trilateration algorithm to enhance measuring accuracy and stability, increasing 30% accuracy which is within 5 cm radius with high repeatability.

Mobile Robot

Hsinchu, Taiwan

Control Team Leader

Sep 2017 – Jan 2018

- Developed a discrete-time PID controller and implemented it on Altera DE0-Nano by programming in Verilog.
- Handled input from rotary encoders and output with PWM signals to control the rotational speed.

Wafer Gripper

Hsinchu, Taiwan

Software Team Member

Sep 2017 – Jan 2018

- Designed a G-Code Interpreter to read the NC (numerical control) code and execute them on 3-axis wafer gripper.
- Built a human - computer interface and stimulated the wafer gripper's motion by using Windows Forms.
- Implemented trapezoidal velocity profile and interpolation to control the stepper motors smoothly.

Powered Exoskeleton for Motion Recording

Hsinchu, Taiwan

Sensing and Communication Team Leader

May 2017 – Dec 2017

- Placed 2nd and "Most Popular" awards from 50 teams in Senior Capstone Project Competition.
- Developed a sensing exoskeleton suit consisting of 4 microcontrollers, 6 encoders and 4 inertial sensors for detecting and recording the user's movements, i.e. hand gestures.
- Used SPI, I²C, UART for fetching the data to the microcontrollers and fused the gyroscope and accelerometer data by compensation filter.
- Built a Bluetooth communication system with cyclic redundancy check (CRCs) to improve its consistency.

TECHNICAL SKILLS

- Programming Languages: C++, C, Python, MATLAB, Julia
- Toolkit/Frameworks/Platforms: ROS (Robot Operating System), Arduino, Tensorflow, OpenCV, Linux, Windows