Juo-Tung Chen

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Education

JOHNS HOPKINS UNIVERSITY — Maryland
M.S.E. in Robotics - Perception and Cognitive Systems Track — Aug. 2022 - May. 2024 (expected)

NATIONAL TAIWAN UNIVERSITY — Taipei, Taiwan
B.S. in Biomechatronics Engineering (GPA: 3.72/4.0) — Sept. 2017 – Jun. 2022

Skills

- **Programming language:** C/C++, Python, Matlab, LaTeX, HTML, CSS, Javascript
- **Software:** ROS, GIT, Docker, SolidWorks, Simulink, QT, Rviz, Gazebo, MoveIT, OpenCV, MySQL, Pytorch
- **Operating system:** Linux, Windows, MacOS
- **Embedded Systems:** Raspberry Pi, Arduino, TX2, Concerto(F28M3X)

Internship Experience

Coretronics Intelligent Robotics Corporation — **Hsinchu, Taiwan**
R&D Intern in AI Team — Jul. – Sept. 2020

- Implemented system identification using Matlab and constructed a 2D simulation for autonomous forklift using Simulink, QT, C++, and OpenCV
- Performed research on Convex Elastic Smoothing algorithm and developed a Double Continuous Curvature path planning algorithm with an error $< 3\%$

Research Experience

Course Projects at JHU — Maryland
Machine Perception — Oct. – Nov. 2022

- Implemented GoogLeNet using Pytorch and trained on CIFAR-10 dataset with an accuracy of 92.68 %
- Applied three adversarial attacks including Fast Gradient Sign Method (FGSM), Noise, and Semantic attack
- Introduced Defensive-Distillation as a defense mechanism against FGSM attack and successfully retained an accuracy of 89.13 % instead of 28.15 % without defense

National Taiwan University, Robots and Medical Mechatronics Lab — Taipei, Taiwan
Collaborative Tea-Harvesting Robot — Jul. 2019 – Aug. 2021

- Created an intelligent vehicle capable of carrying tea harvesting tool with a side-by-side walking feature and object avoidance to pluck tea with a human worker collaboratively
- Devised path planning with Reed & Shepp curve to perform autonomous turns between tea trees
- Performed object avoidance and SLAM using Lidar through Robot Operating System (ROS)

Intelligent sensing and precise cultivating system for tomato growth in greenhouses

- Led a team of 5 undergraduate students to conduct research activities and organized tasks for team members
- Utilized SolidWorks to design a 5 DoF robotic arm equipped with a Chlorophyll Fluorescence Imaging sensor to automatically detect water stress within a tomato plant
- Simulated kinematics and motion planning for robotic arm with Simulink and Rviz

Course Projects at NTU — Taipei, Taiwan
Adaptive Control System — Mar. – Jul. 2021

- Collaborated with a team of 3 to implement various adaptive laws and Neural network algorithms to estimate slippage parameters of a tracked mobile robot
- Constructed simulation models and animation using Simulink and python

Digital Control System — Mar. – Jul. 2021

- Executed system identification to estimate transfer function of motors on a tracked mobile robot
- Analyzed motor transfer function using Matlab; performed Pole placement to design digital PI controller
- Implemented digital controller on actuator to meet controller design specifications on a track mobile robot and improved trajectory tracking performance by 73 %