Justin Chang-Qi Zhang

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Education

National Taipei University of Technology *Taipei, Taiwan*

M.S ELECTRONIC ENGINEERING GPA 4.0/4.0 *Jun 2020*

- Graduate thesis: Chang-Qi Zhang and Lih-Jen Kau, Point-cloud based Dynamic Object Detection and Tracking for Autonomous Vehicles, 2020.
- Selected courses: Machine Learning, advanced digital image processing, hardware-software co-design, multimedia service in heterogeneous network environment, intelligent vehicle communication network system design, data compression, etc.

National Taipei University of Technology *Taipei, Taiwan*

B.S ELECTRONIC ENGINEERING GPA 3.72/4.0 *Jun 2017*

- Selected courses: Digital image processing, data structure, computer architecture, operating system, digital signal processing, computer algorithms, computer network, electronic circuit design, principles of communications, VLSI design, FPGA system design, user interface design, etc.

Skills

Languages	C, C++, Python, Java, Javascript, HTML, MySQL, Verilog
Frameworks	ROS, TesorFlow, OpevCV, PCL, CMake, Qt, Vue.js, Django, Electron, RTOS, Mbed OS

Experience

National Taipei University of Technology - City Science Lab@Taipei Tech *Taipei, Taiwan*

RESEARCH AND DEVELOPMENT ENGINEER *Jun 2020 – Present*

- A developer and project manager of two types of autonomous mobile robots (AMRs) systems.
- Contribute core features across the entire AMR system.
- Object tracking system using camera and 3D LiDar information to detect and track obstacles.
- SLAM system enables robots to localize in both indoor and outdoor environments.
- Robot power management circuit design.
- A vehicle control system connects ROS to motors communication through CAN-BUS network.
- Lead firmware development, creating robot's peripheral by STM32 MCU.
- Robots Backend management system.
- Frontend development for robots' control dashboard.

Massachusetts Institute of Technology - Media Lab City Science Group *Cambridge, MA, USA*

VISITING STUDENT *Feb 2017 – Jan 2018*

- A member of the core development team of Persuasive Electric Vehicle (PEV), a lightweight autonomous vehicle.
- Integrated mapping, localization on, routing, and path planning modules for the PEV.
- Created a new HMI component for obstacle visualization by projecting animation on the ground.
- Implemented Web APP for users calling the vehicle.
- Set up and config sensors on a vehicle, including motors, cameras, LIDARs, IMU, encoders, etc.
- Created control interface between ROS and motor controllers for the PEV.

Events and Demo

- PEV's HMI static demo on THE ROAD AHEAD exhibition at Cooper Hewitt, Smithsonian Design Museum in New York.
- Demo PEV autonomous function on Japan's Good Design Award 2019.
- Full autonomous system and HMI integration demo at Denso headquarter in Japan.

Projects

Campus Rover An autonomous mobile robot for campus delivery.

Charging Rover An autonomous mobile robot for E-scooter charging service.

Persuasive Electric Vehicle (PEV) A light-weight autonomous tricycle cooperated with MIT Media Lab.

CityHD Digital 3D bricks are used for urban planning challenges.
TorqueBot Autonomous platform for educational and service design applications.
Driver Alert System A embedded system that is able to notify dangerous turn.
MES A manufacturing execution systems enables company to mange and track production status.
Disinfect Map A web service enables students to track the disinfection status of classrooms.