Weitung Chen

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(626) 243-3793, weitung@mit.edu

Education	**Massachusetts Institute of Technology (MIT)**　　　　　Cambridge, MA

B.S. in Electrical Engineering and Computer Science, GPA: 4.9/5.0, Class of 2021, Relevant Coursework: Underactuated Robotics, Intelligent Robot Manipulation, Automatic Control, Algorithms, Autonomous Machine, Embedded System, Programming, Computer Vision, Circuits and Electronics, Machine Learning, Signal & Systems

Awards

Intel ISEF First Award in Embedded System Category (2015), Intel ISEF NASA Honorable Mention Award, Google Science Fair Global 20 Finalists (2015), Taiwan International Science Fair Presidential Award (2015), MakeMIT 2019 Xilinx Award, MakeMIT 2020 Wolfram Award, Line Fresh Global Hackathon 2nd Place (2020)

Research Experience

MIT Media Lab, Signal Kinetics Group　　　　　　　　　Cambridge, MA

Mentor: Prof. Fadel Adib

- Research on generating various patterns of antenna arrays with a robot track to achieve 3D RFID localization.
- Develop algorithm to compute the Angle-of-Arrival from the RFID reader's signal readings.
- Focus on building a robust system for industry applications that can achieve centimeter-level localization accuracy using off-the-shelf RFID tags.

MIT d'Arbeloff Lab, Department of Mechanical Engineering　　　Cambridge, MA

Mentor: Prof. Duane Boning & Prof. Harry Asada

- Developed a python node to estimate and calibrate bucket filling of excavation robots by characterizing soil movement using computer vision techniques, primarily optical flow, in OpenCV.
- Implemented a python program to calibrate estimations through the point cloud data gathered by a depth camera.
- Achieved accurate estimation after testing the python program on the experimental rig of the excavation robot.
- Developed a soft-actor critic based deep reinforcement learning algorithm to achieve optimal manipulation on granular materials.

Institute of Information Science, Academia Sinica   Taipei, Taiwan

Mentor: Prof. Ling-Jyh Chen

- Built a single-source magnetic positioning sphere for accurate indoor positioning. Based on modules such as NRF24L01, magnetometers, ADCs, LCDs.
- Developed the system based on STM32 micro controllers (develop the code in C), and applied techniques such as Frequency Division Multiplexing.

Work Experience	**Nexuni Co.** (formerly GadgetHi) Taipei, Taiwan

Nexuni Co. (formerly GadgetHi)   Taipei, Taiwan

Co-founder / CEO / Chief Engineer   *February 2019 to August 2022*

- Lead a team of 15 people to develop automation technologies in food, parking system, and semiconductor industries.
- Automated Dessert Café:
  - Develop automation technologies to aid daily operation of restaurants or stores, key technologies include automated ordering kiosk with different payment types, automated cooking pot, AI dessert making platform, autonomous mobile robot, and restaurant management system.
  - Open and run three automated café – DoDay starting in June 2020 to test our automation technologies, which have handled over 200,000 orders.
- Parking Lot Automation:
  - Developed the automated parking lot solution, including payment kiosk, automated management system, and car plate recognition.
  - Deployed the automation equipment in 15+ parking lots in Taiwan starting in January 2020. The system helps manage around 1000 season parking tenants and more than 10000 cars every month.
- UTH Semiconductor Test Handler R&D:
  - Developed the software architecture based on ROS, ZMQ, and arm-based microcontroller (NVIDIA Jetson) and demonstrated 10 times increase in overall performance.
  - Developed motor driver with Ethercat and Ethernet/IP interface to control servo, stepper, and voice coil motor.
  - Invented a mini scripting language – GAML to simplify the test handler's multi-threaded application program development process.
- Texas Instrument Semiconductor Factory Automation Project:
  - Led the R&D team of 6 and work with our client – Texas Instrument – to develop a solution to manage all IC-test handler machines in the semiconductor factory.
  - Developed a standalone device that enables all semiconductor machine to be controlled remotely and collect/analyze manufacturing data by computer vision techniques based on on-screen data.

- Demonstrated that an IC handler's user interface can be access from any devices, including iPhone, iPad, tablets, PCs in Texas Instruments Taiwan.

Minc-Hitech Ltd.   Hsinchu, Taiwan

Research Engineer Intern   *July 2018 to September 2018*

- Developed a system to help people navigate in parking lots by designing localization beacons and implement parking lot navigation app.
- Researched and integrated inertial sensors, Bluetooth, and the database API into the localization app.
- Tested both IOS and Android apps in a parking lot with 100 cars and 15 beacons and achieved accurate localization.

Ingensys Pte Ltd.   Singapore, SG

Software Engineer Intern   *May 2018 to July 2018*

- Developed an Android app to manage 700,000 complimentary tickets for the intelligent car parking management system.
- Implemented user interface and communication protocol for database server with Java on Android Studio.

Teaching Experience

MIT, Dept. of Electrical Engineering & Computer Science   Cambridge, MA

6.004 Computation Structures. Teaching/Laboratory Assistant (Fall 2018)

- Advised students 8 hours per week as a teaching/laboratory assistant for the Computation Structures class.
- Prepared materials for the weekly lab assignment and guided 250 students to complete their labs during lab hours.

National Taiwan Science and Education Center   Taipei, Taiwan

Intel ISEF Taiwan Team Mentor (2016-2017)

- Advised Intel ISEF Taiwan delegates 12 hours per week to help them prepare their poster and presentation for the science fair

Publications

Pokeball: a 3D positioning system using magnetism

2017 IEEE International Conference on Internet of Things (iThings) and IEEE Green Computing and Communications (GreenCom) and IEEE Cyber, Physical and Social Computing (CPSCom) and IEEE Smart Data (SmartData)

Presentations

Weitung Chen (MIT SuperUROP 2019) Autonomous Excavation in Granular Materials with Reinforcement Learning

Weitung Chen, Ling-Jyh Chen (ACM Mobisys 2016) DEMO: Magnetic Positioning Sphere - A Single-Source 3D Positioning System using Rotating Magnetic Fields

Patents	**Gate of Parking Lot and Parking Space with Display Function** Patent Office: Taiwan. Issued May. 11, 2018. Patent No: I623916.
	Gate of Induction Coil and Car Park Charging Equipment using the Same Patent Office: Taiwan. Issued May. 11, 2018. Patent No: I623915.
	Magnetic Positioning Device Patent Office: Taiwan. Issued Jul. 1, 2016. Patent No: I540331.
	Intelligent Switching Apparatus and Operating Method Thereof Patent Office: Taiwan. Issued May. 21, 2015. Patent No: I485737.
	Device for Emitting SOS Signal Patent Office: Taiwan. Issued Sept. 11, 2013. Patent No: M461847.
	Water-Saving Device Patent Office: Taiwan. Issued Dec. 11, 2012. Patent No: M443146.

Leadership & Activities

- Nexuni Co Ltd. CEO (2019 - Present)
- MIT Student Cable president (2018-2020)
- MIT Chinese Choral Society performance media coordinator (2018-2019)
- Taiwan International Science Fair judge assistant (2016-2018)
- Jianguo High School Science and Mathematics Gifted Class graduation research conference coordinator (2016)
- Intel International Science and Engineering Fair Taiwan Team leader (2015)

Languages

Chinese (Native). Taiwanese (Native). English (Full Professional).
Japanese (Limited working proficiency)

References

Fadel Adib
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Massachusetts Institute of Technology
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