

CHIEN-HAO HUANG

qianhao.huang.tw@gmail.com

<https://qiao-tw.github.io>

<https://www.linkedin.com/in/qianhaohuang/>

SUMMARY

- Great passion for cutting-edge technologies, especially in robotics, operating system, software engineering
- Sufficient experience in solving system problems, including hardware, software or both.
- Good team-player but also able to work independently

EDUCATION

09/2008 MSc in Engineering, Taipei, Taiwan

-06/2010 *National Taiwan University*

- Average 87.39/100
- Master thesis: Sound Source Localization and Speech Interaction System for Intelligent Mobile Robots; advisor: Professor Ren C. Luo
- First Prize, Intelligent Security Robot Competition
 - National competition hosted by Shin Kong Security; attended by university students from around Taiwan
 - Objective was to design robot which could navigate rooms of standard residential home autonomously
 - Implemented navigation system based on Monte-Carlo localization and A-Star path-planning algorithm
- “Development of Intelligent Education Entertainment Companion Robot” – “Sound-source Localization Research Project”
 - “Development of Intelligent Education Entertainment Companion Robot” project funded by National Science Council
 - Implemented sound-source-detection system to identify user’s location by sound from scratch
- “Development of Intelligent Education Entertainment Companion Robot” – “Voice Dialog System Research Project”
 - Frontend: used Microsoft Speech API to build human-robot-interface to enable robot to recognize pre-defined voice commands
 - Backend: designed primitive ROS-like middleware which provided protocols for different software modules to communicate with each other

09/2004 BSc in Engineering, Taipei, Taiwan

-06/2008 *National Taiwan University*

- Last-two-years average 81.27/100

WORK EXPERIENCE

03/2016 Specialist (Algorithm Developer), Taipei, Taiwan

-Present *AsusTek, Intelligent Robot Business Unit, Computer Vision Dept.*

- In charge of designing and implementing localization system of Zenbo
 - Designed Java API as Android Service for other app development teams
 - Designed and implemented customized Monte-Carlo localization algorithm for low-cost, severely limited sensors of Zenbo
 - Developed software tools to collect and analyze sensor data in real world based on Android, ROS, OpenCV and PCL
- Worked in team to build SLAM system of Zenbo

04/2015 Advanced Engineer, Taipei, Taiwan

-02/2016 *AsusTek, New Product Business Planning Dept.*

- Placed in charge of SLAM and localization of new robot product, Zenbo
- Worked in team of 30+ people; attended all meetings to ensure team members understood how SLAM and localization worked
- Prototype launched at Computex Taipei 2016

05/2014 Engineer, Taipei, Taiwan

-12/2014 *Midas Optronics Corporation (a startup IC design house)*

- Prototyped IC which implemented a new algorithm to achieve multi-touch capability on surface-capacitive touchscreen, which previously could only achieve single touch capability
- Emulated analog and digital parts of IC from scratch
 - Emulated digital circuit with FPGA development kit; verified behavior and algorithm by simulation with ModelSim; conducted experiments with programmable-data-generator and logic-analyzer
 - Emulated analog circuit with PCB and breadboard; drew and sent schematics to PCB layout and manufacture firms; conducted experiments with function-generator and oscilloscope
- Designed software on microprocessor and PC to interpret digital signal from IC to x-y coordinate of touch panel

10/2011 Advanced Engineer, Nantou, Taiwan

-04/2014 *Universal Scientific Industrial Co., Ltd.*

Smart Handheld Devices Division, Software Development Department

- Android system-level development
 - Cooperated with Motorola Solutions (now Zebra Technology) on embedded devices, led five-person team
 - Responsible for bringing up new hardware platform, including porting Linux kernel driver and Android HAL/framework to new devices Tested phone performance based on CDD/CTS, monkey, stress tests
- Software tools for mass-production-line
 - Developed hardware diagnostic program based on bootloader (das U-Boot) to

verify conditions of devices without booting into operating system; enhanced efficiency of testing procedure in production lines

- Developed Android-specific multiple-device flash tool for mass-production in factories; this tool still widely used by Zebra Technology's Android SHD production lines (originally Motorola Solutions)

10/2010 **Substitute Military Service**, Hualien, Taiwan

-08/2011 *National Airborne Service Corps., Ministry of the Interior*

PUBLICATIONS/CONFERENCE PAPERS

- Luo, R. C., W. H. Cheng, and C. H. Huang. "Combined 2-d sound source localization with stereo vision for intelligent human-robot interaction of service robot." *Advanced Robotics and Its Social Impacts (ARSO)*, 2009 IEEE Workshop on. IEEE, 2009.
- Luo, Ren C., Chien H. Huang, and Chun Y. Huang. "Search and track power charge docking station based on sound source for autonomous mobile robot applications." *Intelligent Robots and Systems (IROS)*, 2010 IEEE/RSJ International Conference on. IEEE, 2010.
- Luo, Ren C., Chien H. Huang, and Tsu T. Lin. "Human tracking and following using sound source localization for multisensor based mobile assistive companion robot." *IECON 2010-36th Annual Conference on IEEE Industrial Electronics Society*. IEEE, 2010.

EXTRACURRICULAR ACTIVITIES

08/2004 **President**, Taipei, Taiwan

-10/2010 *Zhongshan-ChienKuo Alumni Chinese Orchestra (CKSCO)*

- Established society's standard operating procedure including designating tasks and responsibilities to committee members and setting up guidelines
- Oversaw restructuring of society's finances and revamping society by setting budget, writing proposal, recruiting new members, and organizing concerts
- Successfully transformed society into well-known alumni Chinese orchestra in Taiwan by 2008; other societies emulated CKSCO's model
- Hosted large-scale concerts in prestigious concert halls to promote public's awareness of CKSCO; by 2011, CKSCO concerts were usually sold out

MOOC COURSES TAKEN

05/2016 - Machine Learning, Coursera

11/2016 Instructor: Prof. Andrew Ng, Stanford University

02/2017 - Self-Driving Car Nanodegree, Udacity

06/2017 Instructors: Prof. Sebastian Thrun, Stanford University, *et al*

TEACHING EXPERIENCE

04/2013 **New Employees Training Coach**, Nantou, Taiwan

-04/2014 *Universal Scientific Industrial Co., Ltd.*

- Offered training in how Android HAL/framework, and Linux kernel work and system booting procedure

09/2009 **Teaching Assistant**, Taipei, Taiwan

-02/2010 *National Taiwan University*

- Course title: Robot Sensing and Control
- Offered undergraduates advice on preparing for Intelligent Security Robot Competition

09/2004 **Private Tutor**, Taipei, Taiwan

- 09/2007**
- Provided one-to-one tutoring in Physics, Mathematics, and Chemistry from elementary school level to high school level
 - Offered one-to-one tutoring in middle school level English and History
 - Coached students in Chinese Flute

09/2004 - **Teaching Assistant**, Taipei, Taiwan

06/2005 *A-Tai's Physics Center*

- Answered students' inquiries on high school Physics

OTHER

Languages: Chinese (native), English (advanced, TOEIC 900)

Operating Systems: Windows, Linux, MacOS

Programming Languages: C/C++, Java, Python, Matlab/Octave

Technical Skills:

- Familiar with robotics/computer vision libraries including ROS, Gazebo, OpenCV, PCL, Eigen
- Experienced in porting Linux kernel driver and Android HAL/framework
- Familiar with desktop application (Qt) and mobile app (Android) development

Interests: Traditional Chinese music, piano

Research Interests:

- Robotics - SLAM, localization
- Embedded Operating System