CHIEN-HAO HUANG

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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 -06/2010 **MSc in Engineering**, Taipei, Taiwan
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
  - Gained hands-on experience in robot SLAM/localization
  - 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 -06/2008 **BSc in Engineering**, Taipei, Taiwan
National Taiwan University

- Last-two-years average 81.27/100

WORK EXPERIENCE

03/2016 -Present **Specialist (Algorithm Developer)**, Taipei, Taiwan
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 -02/2016 **Advanced Engineer**, Taipei, Taiwan
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 -12/2014 **Engineer**, Taipei, Taiwan
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 -04/2014 **Advanced Engineer**, Nantou, Taiwan
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 devicesTested 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 -08/2011 **Substitute Military Service**, Hualien, Taiwan
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 -10/2010 **President**, Taipei, Taiwan
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 - 11/2016 Machine Learning, Coursera
Instructor: Prof. Andrew Ng, Stanford University
02/2017 - 06/2017 Self-Driving Car Nanodegree, Udacity
Instructors: Prof. Sebastian Thrun, Stanford University, *et al*

TEACHING EXPERIENCE

04/2013 -04/2014 **New Employees Training Coach**, Nantou, Taiwan
Universal Scientific Industrial Co., Ltd.

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

09/2009 -02/2010 **Teaching Assistant**, Taipei, Taiwan
National Taiwan University

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

09/2004 -09/2007 **Private Tutor**, Taipei, Taiwan

- 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 - 06/2005 **Teaching Assistant**, Taipei, Taiwan
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