Chih-Hsuan (Owen) Chen

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WORK EXPERIENCE

Fraunhofer IPA - Department of Robot and Assistive Systems, Stuttgart, Germany
Marie Skłodowska-Curie Early Stage Researcher **June.2017 – Current**

- The SECURE project, European Union's Horizon 2020 research and innovation program, aims to improve the safety of robots with a view to using them in environments which require interaction with humans. My responsibilities are multimodal modeling and motion prediction in dynamic environments by using robots developed at Fraunhofer (the Care-O-bot series).

HIWIN TECHNOLOGIES CORP. - Industrial Robot Dept., Taiwan Headquarter
Embedded System and Control System Engineer **Apr.2015 – June.2017**

- Developing the ARM-based embedded system for controlling 6-axis industrial robots, which integrated FPGA to fulfill motion control and the proposed architecture reduced 60% cost in the previous architecture.
- Leading a team to establish lightweight service robot development with ROS to fulfill unmanned shop task.
- Derived dynamic modeling and friction compensation for 6-axis industrial robots with applications of torque feedforward control and impedance control.

Hewlett-Packard INTERNATIONAL Pte. Ltd. - Servers Enterprise Group, Taiwan Branch
Technical Lead **Dec.2013 – Oct.2014**

- Led ultra-low-power and high-density server nodes project (Moonshot), and advised integration test requirement and technical risk assessment to fulfill cost effective and sufficient test requirements.
- Assisted to set up automation environment to improve 20% test efficiency.

Systems Software Engineer **Apr.2011 – Dec.2013**

- Collaborated original-design-manufacturer test team on issue debugging to provide high quality integration test results including systems and OS levels on the high performance-computing servers (SL230/SL250/SL270).
- Executed and troubleshot networking performance testing for embedded NICs (Intel and Broadcom) to cover HP ProLiant ML310/DL320/SL140/DL360/DL380/ML350 Gen8 servers.
- Duplicated and validated issues to narrow down root causes comprising embedded storage, GPU PCI-e slot, WOL and low throughput issues fulfilling the goal of developing a high performance team.

RESEARCH EXPERIENCE

YUAN ZE UNIVERSITY - Intelligent Control System Lab, Taiwan
Master's Thesis - *National Science Council Research Project* **Sep.2007 – Jan.2010**

- Designed FPGA-based humanoid robot for stable walking over uneven terrain and resisting disturbance with self-balancing using Cerebellar Model Articulation Controller enhanced robustness and stability by 50%.
- Implemented FPGA-based soft multiprocessor architecture in robotic system merged intelligent control system and vision system; which can increase processing effectively by 40%.

CHIEN HSIN UNIVERSITY OF SCIENCE AND TECHNOLOGY - Control System Lab, Taiwan
Undergraduate Project **June.2005 – June.2007**

- Initiated microprocessor-based biped robot project with applications of static walking on a smooth surface.
- Demonstrated microprocessor-based Fuzzy control for rotary inverted pendulum system.

AWARDS & HONORS

- **First-Place Winner, Altera Innovate Asia FPGA Design Contest** **2009**
  The award is granted in recognition of outstanding achievements and demonstration in 2009 Asia FPGA Design Competition by competing with 133 teams.
- **Candidate, Who's Who in the World** **2009**
  The honor is given by the 2010 Edition of Who's Who in the World for the world's most accomplished men and women in science and engineering.

- **Academic Gold Medal Award, Yuan Ze University** **2010**
  The award is awarded based upon outstanding research achievement from Yuan Ze University.
- **Academic Excellence Scholarship, Yuan Ze University** **2007 – 2009**
  The scholarship is an award of outstanding academic/research achievement for the top 5% of student in Yuan Ze University.

PUBLICATIONS

- **Chih-Hsuan Chen**, "**Design and Implementation of Intelligent Control System for Autonomous Humanoid Robot based on SOPC Technology,**" *Master Thesis,* 2009.
- **Chih-Hsuan Chen**, Chih-Min Lin, "**Biped Robot Control Using Cerebellar Model Articulation Controller**," *International Journal of Advancement in Electronics and Engineering- IJAEEE (Volume4:Issue 1),* 2015.
- Chih-Min Lin, **Chih-Hsuan Chen**, Ming-Hung Lin, "**A Novel Intelligent Control System Design for a Humanoid Robot**," *Machine Learning and Cybernetics (ICMLC), 2011 International Conference on (Volume: 3),* pp. 1156 - 1161, 2011.
- Chih-Min Lin, **Chih-Hsuan Chen**, Ming-Hung Lin and Jia-Jung Chang,"**CMAC-Based Dynamic-Balancing Design for Humanoid Robot,**" *SICE Annual Conference 2010,* pp. 1849 - 1854, 2010.
- Chiu-Hsiung Chen, Chih-Min Lin, **Chih-Hsuan Chen**, Chug-Fei, Hsu, "**Recurrent CMAC-Based Hybrid Controller Design for Inverted Double Pendulum System,**" *2009 International Conference on Machine Learning and Cybernetics,* pp. 3285 - 3290, 2009.

PATENTS

- The system of robot safety (co-inventor). US/JP/TW/CN Patent, filed Jan. 2016. Patent Pending.
- Gesture based robot teaching method (co-inventor)., US/JP/TW/CN Patent, filed June 2016. Patent Pending.

EDUCATION

YUAN ZE UNIVERSITY, Zhongli, Taiwan **Sep.2007 – Jan.2010**
Master of Electrical Engineering (Major GPA: 3.71/4.0 Rank: 4/20)
Thesis Title: Design and Implementation of Intelligent Control System for Autonomous Humanoid Robot based on SOPC Technology.

CHIEN HSIN UNIVERSITY OF SCIENCE AND TECHNOLOGY, Zhongli, Taiwan **Sep.2003 – June.2007**
Bachelor of Electronic Engineering (Major GPA: 3.84/4.0 Rank: 4/157)
Graduated Cum Laude

LEADERSHIP EXPERIENCE

HP YOUNG EMPLOYEE NETWORK

HP Taiwan Chair **Sep.2012 – Oct.2013**

- Organized monthly events to engage, retain and promote the young talents based HP community to boost member's personal development, and improved satisfaction of club from 60% to 95%.

PROFESSIONAL SKILLS

- **Programming** C/C++, JAVA, Python, JavaScript, Verilog/VHDL, VB, VB.NET, MATLAB
- **Embedded System Design** FPGA/CPLD (Xilinx, Altera), ARM , DSP
- **Operating Systems** Linux (Debian, Ubuntu)
- **Revision Control System** Git
- **PCB Design** Altium Designer
- **Mechanical Design** Solidworks
- **IC Design & Layout** L-Edit, T-Spice, Cadence
- **Network** VPN/DHCP/DNS/PXE, RFC2544
- **Web** HTML