RU-HAN WU

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EDUCATION

M.S. in Department of Computer Science and Information Engineering Aug. 2012 - Jul. 2014
National Taiwan University, Taiwan
Thesis: Gesture-Mediated Multimedia player for Tai Chi Chuan Instruction

B.S. in Department of Computer Science Sep. 2008 - Jun. 2012
National Chiao Tung University, Taiwan

RESEARCH INTERESTS

Wearable Technology, Machine Learning, Interactive Multimedia System, Human-Computer Interaction

RESEARCH EXPERIENCE

IMLab, National Taiwan University, Taiwan **Advisor: Dr. Yi-Ping Hung**

- **Tai Chi Chuan Learning System[1]** Jan. 2014 - Aug. 2014

· Demonstrated a gesture-mediated multimedia player application to learning Tai Chi Chuan.
· Developed a recognition pipeline for hand gesture that implement Open-end-begin DTW algorithm to deal with segmentation of continuous input data stream and real-time progress detection.
· Built an Android-base application that recognizes real-time hand gesture data from smart watch, then adjusts the playback of corresponding tutorial video to fit learner's status and shows it on the head mounted display.

- **iM-stage[2]** Sep. 2012 - Jun. 2013

· Demonstrated an interactive multimedia effects system, which builds up a camera-projector system; depth cameras are used as observers and projectors as outputs.
· Used OpenNI to get depth map from Kinect, and used OpenCV to process the depth image for object tracking.
· Constructed the socket communication among server, tablet client, and effect generator.

- **Win-Win Asleep(WWAS)** Jan. 2013 - Dec. 2013

· Demonstrated a social persuasion system that alleviates insomnia.
· Integrated fitness tracker Jawbone Up to WWAS app and displayed the sleeping data.
· Implemented algorithm of sleep score computation on Sony Smartwatch (Android-based) and Pebble watch (C-based).

- **Depth Map Refinement[3]** Aug. 2013 - Nov. 2013

· Demonstrated an automatic multi-resolution approach with a probabilistic Bayesian model to remove the noise of the depth map while filling the missing regions.
· Implemented the joint guided filtering and cascaded with a messing-passing technique called belief propagation.

WORK EXPERIENCE

Software Engineer, Garmin, Taiwan Nov. 2014 - Jun. 2018

- **Project software owner** Dec. 2015 - Jun. 2018

· Developed or refined features for Android-based software of automotive infotainment embedded system.
· Integrated car accessories such as radar, HUD and rear seat entertainment system into the software.
· Solved a critical issue of rendering deadlock in OpenGLES functions by adding mutex protection into rendering system.
· Achieved mass production and software releases in collaboration with electronic, customer services and vendor engineers.

- **Software solutions for navigation system** Nov. 2014 - Nov. 2015

· Refined the boot-up sequence for navigation system to integrate with customer's software, which reduced 50% boot up time.
· Designed APIs for navigation software.

PUBLICATIONS

[1] **Ru-Han Wu**, Yu-Chun Chen, and Sheng-Jie Yang. Gesture-mediated multimedia player for learning tai chi chaun. In *27th IPPR Conference on Computer Vision, Graphics, and Image Processing, CVGIP 2014, Taiwan, Aug. 2014*, 2014.

[2] Jinyao Lin, Li-Xiang Chen, **Ru-Han Wu**, Li-Wei Chan, and Yi-Ping Hung. Im-stage: Interactive multimedia system for stage performance. In *27th IPPR Conference on Computer Vision, Graphics, and Image Processing, CVGIP 2014, Taiwan, Aug. 2014*, 2014.

[3] He-Lin Luo, Chih-Tsung Shen, Yu-Chun Chen, **Ru-Han Wu**, and Yi-Ping Hung. Automatic multi-resolution joint image smoothing for depth map refinement. In *2nd IAPR Asian Conference on Pattern Recognition, ACPR 2013, Naha, Japan, November 5-8, 2013*, pages 284–287, 2013.

HONORS AND AWARDS

Excellent Paper Award, 27th CVGIP 2014
iM-stage: Interactive Multimedia System for Stage Performance

SKILLS

Programming languages	C/C++, JAVA, Matlab, Python,
Platform	Linux, Android, Windows,
Tools and Libraries	OpenCV, OpenGL, OpenNI,
Hardware Platforms	Kinect, Arduino.