Xiaolong ZHU

CONTACT INFORMATION

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RESEARCH INTERESTS

Edge Computing, including *Camera Hardware*, *CPU/GPU/NPU*, *Heterogeneous Computing*;
Computer Vision, including *Image Classification*, *Object Detection*, *Semantic Labelling*, *Landmark Localization*;
Machine Learning, including *Random Forest*, *Support Vector Machines*, *Deep Learning* and *Reinforcement Learning*;
Human-Computer Interaction, including *User Study*, *Prototyping*, *Gestural Interface*.
Game AI, including *Finite State Machine* and *Behavior Tree*.

EDUCATION

The University of Hong Kong, Hong Kong SAR, China

Ph.D., *Computer Science*, **September 2010 - January 2016**

- Thesis Title: Hand Detection and Hand Shape and Posture Analysis in Images.
- Advisor: Dr. Kenneth K. Y. Wong

Peking University, Beijing, China

B.S., *Intelligence Science and Technology* **September 2006 - June 2010**

- Thesis Title: Segmentation and Classification of Range Image.
- *Excellent Undergraduate Thesis Award*.
- Advisor: Dr. Huijing Zhao

EXPERIENCE

Tencent TEG, Shenzhen, China

Senior R&D Engineer, Tech Lead **Aug 2016 - Present**

- Led to deploy real-time face detection, landmarks and deformation on iOS/Android phones;
- Developed and deployed real-time human pose estimation on iOS/Android phones;
- Helped to develop reinforcement learning for board game AI;
- Deployed real-time live video style transfer on iOS/Android phones;
- Developed an algorithm for real-time video style transfer;
- Developed several prototypes for AI Lab Vision Team.

R&D Engineer **Jul 2015 - Aug 2016**

- Implemented CTC model for end-to-end speech recognition, collaborating with Weixin Speech Team;
- Worked on prototyping news recommendation using DNN model;
- Implemented a prototype of service robot based on ROS/Turtlebot.

Lenovo IVC Lab, Hong Kong SAR, China

Research Intern **June 2013 - August 2013**

- Innovated new ways for image searching.
- Designed a prototype of touch-based image retrieval system and demonstrated it to CTO.

Microsoft Research Asia, Beijing, China

Research Intern **June 2012 - September 2012**

- Learned HCI workflow of problem solving;
- Designed visual feedback for in-air gesture recognition.

Youdao.com, Beijing, China

Software Engineer Intern **June 2010 - August 2010**

- Coded web front-end of a Location-based Social Network Service;
- Cooperated with web designer.

Peking University, Beijing, China

Undergraduate Research Assistant **September 2008 - June 2010**

- Participated in the *POSS* project, in 3D VCR Lab;
- Analyzed range data using computer vision methods.

PUBLICATIONS

[Refereed Conference Papers]

1. Haozhi Huang, Hao Wang, Wenhan Luo, Lin Ma, Wenhao Jiang, **Xiaolong Zhu**, Zhifeng Li, and Wei Liu. Real-Time Neural Style Transfer for Videos. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.

2. **Xiaolong Zhu**, Wei Liu, Xuhui Jia and Kwan-Yee K. Wong. A Two-Stage Detector for Hand Detection in Ego-Centric Videos. *Winter Conference on Applications of Computer Vision (WACV)*, 2016.

3. **Xiaolong Zhu**, Xuhui Jia and Kwan-Yee K. Wong. Pixel-Level Hand Detection with Shape-aware Structured Forests. *Asian Conference on Computer Vision (ACCV)*, 2014.

4. **Xiaolong Zhu**, Ruoxin Sang, Xuhui Jia and Kwan-Yee K. Wong. A Hand Shape Recognizer from Simple Sketches. *International Conference on Image and Vision Computing New Zealand (IVCNZ)*, 2013.

5. Xuhui Jia, **Xiaolong Zhu**, Angran Lin and Kwok-Ping Chan. Face Alignment using Structured Random Regressors Combined with Statistical Shape Model Fitting. *International Conference on Image and Vision Computing New Zealand (IVCNZ)*, 2013.

6. **Xiaolong Zhu**, Kwan-Yee K. Wong. Single-Frame Hand Gesture Recognition Using Color and Depth Kernel Descriptors. *IEEE International Conference on Pattern Recognition (ICPR)*, 2012.

7. Zhihu Chen, Kwan-Yee K. Wong, Yasuyuki Matsushita, **Xiaolong Zhu**, Miaomiao Liu. Self-Calibrating Depth from Refraction. *IEEE International Conference on Computer Vision (ICCV)*, 2011.

8. **Xiaolong Zhu**, Huijing Zhao, Yiming Liu, Yipu Zhao, Hongbin Zha. Segmentation and Classification of Range Image from an Intelligent Vehicle in Urban Environment. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2010.

9. Huijing Zhao, Yiming Liu, **Xiaolong Zhu**, Yipu Zhao, Hongbin Zha. Scene Understanding in a Large Dynamic Environment through a Laser-based Sensing. *IEEE International Conference on Robotics and Automation (ICRA)*, 2010.

[Journal Papers]

1. **Xiaolong Zhu**, Xuhui Jia, Kwan-Yee K. Wong. Structured Forests for Pixel-level Hand Detection and Hand Part Labelling. *Computer Vision and Image Understanding (CVIU)*, 2015.

2. Zhihu Chen, Kwan-Yee K. Wong, Yasuyuki Matsushita, **Xiaolong Zhu**. Depth from Refraction Using a Transparent Medium with Unknown Pose and Refractive Index. *International Journal of Computer Vision (IJCV)*, 2012.

TEACHING

The University of Hong Kong, Hong Kong SAR, China

Teaching Assistant **September 2010 - May 2014**

- Assisted Dr. Kenneth K.Y. Wong in Computer Vision;
- Assisted Dr. Kenneth K.Y. Wong in Computer Programming and Applications;
- Assisted Dr. Loretta Yi-King Choi in Topic in Computer Science: Visual Analysis.
- Assisted Dr. Kenneth K.Y. Wong in Computer Vision;
- Assisted Dr. Chun Kit Chui in Computer Programming and Applications;
- Assisted Dr. Kenneth K.Y. Wong in Computer Programming and Applications;

TALKS

- Mobile AI Development on Arm Platform. Arm Developers Global Summit. in *Chinese*. 2018;
- Deploying AI on Mobile. Tencent HKU recruitment talk. 2018;
- Human Pose Estimation on Mobile. Tencent TLC. in *Chinese*. 2018;
- Panelist for LF DL session and Deep Learning Session. LC3 China. 2018;
- Learning Game of Go. Tencent AI Lab Academic Forum. in *Chinese*. 2018;

AWARDS

- Tencent Excellent R&D of the Year 2018, 2018;
- Tencent Technology Breakthrough of the Year 2017, 2017;
- Studentship of the University of Hong Kong, 2010-2014;
- Top 10 Undergraduate Thesis, School of EECS in Peking University, 2010;
- Wusi Scholarship in Peking University, 2009;
- Outstanding Volunteer in Beijing 2008 Olympic Games, 2008;
- First Class Honor in China Physics Olympic Games, Gansu, 2006.

TECHNICAL SKILLS

- Programming in: `Python`, `C/C++`, `Matlab`, `JavaScript/HTML/CSS`;
- Basic Experience in: `Objective-C`, `Processing`, `UNIX Shell scripting`;
- Native Mandarin speaker, fluent in English, very little Japanese and Cantonese;
- Operating Systems: Windows, Mac OS X.

SOCIAL ACTIVITIES

- TAC Member of LF Deep Learning Foundation, 2018;
- Co-founder of Tech Club of Tencent TEG, 2015-2016;
- Member of Information Technology Committee, The University of Hong Kong, 2012-2014;
- IT Officer of Postgraduate Association (PGSA) in The University of Hong Kong, 2011-2013;
- Volunteer as Media Assistant for Journalists in Games of the XXIX Olympiad, 2008.