

CONTACT  
INFORMATION

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EDUCATION

Ph.D. candidate in Electronic & Computer Engineering. Sep. 2015 - present

- Research Interests: *Vision Attention, Computer Vision, Eye Tracking*
- Advisor: Prof. Bertram E. Shi

**Zhejiang University**, Zhejiang, China

Bachelor of Information Engineering. Sep. 2011 - Jun. 2015

- GPA: 3.95/4.0 (Ranking: Top 5%)
- Graduated with honor of Zhejiang Province

*Undergraduate thesis: Real-time multi-face tracking based on a panoramic camera.*

RESEARCH  
EXPERIENCE

**Learning Attention from Human for Robot Navigation** Jan. 2019 - present

- Learned attention from human and incorporated it into RL architectures.

**Using Eye Gaze to Improve Autonomous Driving** Aug. 2018 - Jan. 2019

- Learned a task-driven attention model and incorporated it into autonomous driving.
- Proposed gaze modulated dropout for imitation learning in driving scenarios.

**Interaction between Gaze and Physiological Signal** Jan. 2017 - Aug. 2018

- Quantifying subjects' responses to viewing a garden scene at various stages.
- Analyzed differential response for different stages based on sequential modelling.

**Remote Gaze Tracking System for 3D Environments** Sep. 2015 - Dec. 2016

- Proposed a non-intrusive 3D gaze tracking system in real environment which is robust to head motion.

SELECTED  
PUBLICATIONS

1. Yuying Chen\*, **Congcong Liu\***, Ming Liu, Bertram Shi, "Navigation in Crowds by Graph Convolutional Networks with Attention Learned from Human Gaze". *arXiv preprint arXiv:1909.10400.*, 2019.
2. **Congcong Liu\***, Yuying Chen\*, Lei Tai, Haoyang Ye, Ming Liu, Bertram Shi, "A Gaze Model Improves Autonomous Driving". *ACM Symposium on Eye Tracking Research & Applications (ETRA)*, 2019.
3. Lei Tai, Peng Yun, Yuying Chen, **Congcong Liu**, Haoyang Ye, Ming Liu, "End-to-end Driving Deploying through Uncertainty-Aware Imitation Learning and Stochastic Visual Domain Adaptation". *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.
4. Yuying Chen\*, **Congcong Liu\***, Lei Tai, Ming Liu, Bertram Shi, "Gaze Training by Modulated Dropout Improves Imitation Learning". *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.
5. **Congcong Liu\***, Yuying Chen\*, Lei Tai, Ming Liu, Bertram Shi, "Utilizing Eye Gaze to Enhance the Generalization of Imitation Network to Unseen Environments". *International Conference on Machine Learning (ICML) Workshop*, 2019.

6. **Congcong Liu**, Yawen Zhang, Karl Herrup, Bertram Shi, “On the Interaction between Gaze Behavior and Physiological Responses when Viewing Garden Scenes”. *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)* , 2018.
7. **Congcong Liu**, Yawen Zhang, Seiko Goto, Minkai Sun, Karl Herrup, Bertram Shi “Quantifying Interactions between Gaze Behavior and Physiological Responses When Viewing Japanese Style Gardens”. *Alzheimer’s & Dementia: The Journal of the Alzheimer’s Association*, 2018.
8. **Congcong Liu**, Karl Herrup, Bertram Shi, “Remote gaze tracking system for 3D environments”. *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)* , 2017.
9. Yawen Zhang, **Congcong Liu**, Karl Herrup, Bertram Shi, “Physiological Responses of the Youth Viewing a Japanese Garden”. *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)* , 2018.
10. Minkai Sun, Karl Herrup, Bertram Shi, Yutaka Hamano, **Congcong Liu**, Seiko Goto, “Changes in visual interaction: Viewing a Japanese garden directly, through glass or as a projected image”. *Journal of Environmental Psychology*, 2018.
11. Seiko Goto, Thomas J Gianfagia, John P Munafo, Eijiro Fujii, Xuting Shen, Minkai Sun, Bertram Emil Shi, **Congcong Liu**, Hiroshi Hamano, Karl Herrup, “The power of traditional design techniques: The effects of viewing a Japanese garden on individuals with cognitive impairment”. *HERD: Health Environments Research & Design Journal*, 2016.

#### SELECTED HONORS AND AWARDS

**SENG Academic Award (Top RPG Award)**      *School of Engineering, HKUST 2019*  
**Hong Kong PhD Fellowship**      *Hong Kong Research Grants Council 2015*  
**Outstanding Graduates of Zhejiang Province**      *Zhejiang University 2015*  
**Scholarship for Outstanding Students (First Class)**      *Zhejiang University, 2012, 2014*  
**Excellent Student Awards**      *Zhejiang University, 2012-2014*  
**Scholarship for Outstanding Merits**      *Zhejiang University, 2012-2014*  
**The National Optical Design Competition (Third Prize)**      *Optical Society of China, 2014*  
**Scholarship for Outstanding Students (Second Class)**      *Zhejiang University, 2013*  
**Physical Competition of Zhejiang Province (Second Prize)**      *Physical Society of Zhejiang Province, 2012*

#### TEACHING EXPERIENCE

**Teaching Assistant**      Spring 2016  
 ELEC 1200: A System View of Communications: from Signals to Packets  
 Instructor: Prof. Danny Hin-Kwok TSANG  
 ECE Department, Hong Kong University of Science and Technology  
**Teaching Assistant**      Fall 2016  
 ELEC 5300: Stochastic Processes  
 Instructor: Prof. Wai Ho MOW  
 ECE Department, Hong Kong University of Science and Technology

#### ACADEMIC ACTIVITIES

**Oral Presentations:**  
 • *Asian Deans Forum 2019, Seoul, Korea*  
 • *ETRA 2019, Denver, USA*  
 • *ICML 2019, Long Beach, USA*  
 • *EMBC 2018, Hawaii, USA*  
 • *EMBC 2017, Jeju, South Korea*

**Referee Services:**

- *International Conference on Robotics and Automation (ICRA), 2020*

**SKILLS**

**Programming:** Experienced in Python, C, Matlab

**Deep Learning:** Pytorch, TensorFlow, Keras

**Language:** Native in Mandarin; Fluent in English; Basic in Cantonese