



## Yi Liu

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*"I always like to look on the optimistic side of life, but I am realistic enough to know that life is a complex matter"*

I am a Ph.D. student at Interdisciplinary Graduate School, Nanyang Technological University, supervised by Assoc Prof. Lee Bu Sung and Prof. Martin J. McKeown. My research interests are quite broad spanning healthcare-related interdisciplinary fields, but focusing on Human-Computer Interaction and Eye Tracking. While I am also happy to collaborate with other researchers who are working on Software Engineering, Artificial Intelligence, and industrial areas.

## Education

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### Academic Qualifications.....

- **Nanyang Technological University** **Singapore**  
*PhD in Interdisciplinary Graduate School, Computer Engineering* 2013–2017
- **Harbin Institute of Technology** **China**  
*Bachelor in School of Software, Software Engineering* 2009–2013

### Notable Projects.....

- **Gaze Estimation (on going):** *'Tracking what people are looking at'*  
We are developing an eye gaze estimation system with a simple and flexible webcam, which can be integrated with existing interaction applications
- **Eye Typing:** *'Text entry only using eye movement'*  
We developed a dwell-free eye-based text entry system, GazeTry, which allows people to type a word by gazing sequentially at the letters of intended words.
- **Brain-computer Interaction:** *'Development of mobile applications controlled by brainwaves'*  
Given the availability of EEG technology and existing studies, in this project, we developed a mobile application controlled by brainwaves using a low-cost, non-invasive, headband type of device.
- **Parkinson's Disease:** *'Analysis of Visually Guided Tracking Performance in Parkinson's Disease'*  
This project we investigated the motor performance of Parkinson's Disease patients who have L-dopa induced dyskinesias, when on and off of L-dopa medication. This project is collaborated with Dr. Martin McKeown, The University of British Columbia.

## Technical skills

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- **Programming Languages:** Proficient in: Java, C/C++, OpenCV, Matlab, SQL, Python  
Also basic ability with: C#, Android.
- **Industry Software Skills:** Eclipse (Advanced), Matlab (Advanced), Visual Studio (Intermediate), Android Studio (Intermediate), MySQL (Intermediate).

## Publications

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### Journal Papers.....

- **Yi Liu**, Bu-Sung Lee, Deepu Rajan, Andrzej Sluzek, and Martin J. Mckeown, "CamType: Assistive Text Entry Using Gaze with an Off-the-shelf Webcam" *International Journal of Human-Computer Interaction (IJHCI)*, 2017 (Under Review).
- **Yi Liu**, Bu-Sung Lee, and Martin J. Mckeown, "Robust Eye-Based Dwell-Free Typing" *International Journal of Human-Computer Interaction (IJHCI)*, 2016.

### Conference Papers.....

- **Yi Liu**, Bu-Sung Lee, and Martin Mckeown, "A New Reconstruction Method in Gaze Estimation with Natural Head Movement" In *IAPR Conference on Machine Vision Applications*, Nagoya, Japan, May 2017. (Oral, 38/194 = 19.6%)
- **Yi Liu**, Bu-Sung Lee, Andrzej Sluzek, Deepu Rajan, and Martin Mckeown, "Feasibility Analysis of Eye Typing with a Standard Webcam" In *ECCV Workshop on Assistive Computer Vision and Robotics*, Amsterdam, The Netherlands, Oct 2016. (Oral, 12/64 = 18.7%)
- **Yi Liu**, Bu-Sung Lee, Martin J. Mckeown and Chonho Lee, "A Robust Recognition Approach in Eye-Based Dwell-Free Typing," In *2015 International Conference on Progress in Informatics and Computing (PCI)*, Nanjing, China, Dec 2015.
- **Yi Liu**, Chi Zhang, Chonho Lee, Bu-Sung Lee and Alex Q. Chen, "GazeTry: Swipe Text Typing Using Gaze," In *The 27th Australian Conference on Human-Computer Interaction (OzCHI)*, Melbourne, Australia, Dec 2015.
- **Yi Liu**, Chonho Lee, Bu-Sung Lee, James K. R. Stevenson, and Martin J. Mckeown, "Analysis of Visually Guided Tracking Performance in Parkinson's Disease," in *IEEE 16th International Conference on e-Health Networking, Applications and Services (Healthcom)*, Natal, Brazil, Oct 2014.

### Co-Authored Papers.....

- Chonho Lee, Jinyao Chin, **Yi Liu**, and Bu-Sung Lee, "Feasibility analysis and adaptive thresholding for mobile applications controlled by EEG signals," In *23rd European Signal Processing Conference (EUSIPCO)*, Nice, France, Aug 2015.
- Chonho Lee, **Yi Liu**, Li-Hau Tan, Weihan Goh, Bu-Sung Lee and Chai-Kiat Yeo, "A Wavelet Entropy-Based Change Point Detection on Network Traffic: A Case Study of Heartbleed Vulnerability," In *IEEE 6th International Conference on Cloud Computing Technology and Science (CloudCom)*, Singapore, Dec 2014.
- Chonho Lee, Yu Terada, **Yi Liu**, and Bu-Sung Lee, "A motion accuracy evaluator based on body parts movement by MapReduce video processing," *IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI)*, Valencia, Spain, June 2014.

## References

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- **Martin J. Mckeown**  
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