

SHORT BIO

Changshuo Hu is currently a Ph.D. candidate in Computer Science at Singapore Management University, under the supervision of Professor Archan Misra, working closely with Professor Dong Ma at the University of Cambridge. His research interests encompass mobile computing and pervasive sensing, with a particular focus on authentication, running monitoring, and interaction using earables.

EDUCATION

Singapore Management University, Singapore *Jan. 2024 – Present*
Ph.D. Candidate in Computer Science
Advisor: Prof. Archan Misra and Prof. Dong Ma

University of New South Wales, Sydney, Australia *Jan. 2018 – Jan. 2020*
M.I.S. in Information Systems
Advisor: Prof. Mahbub Hassan

Capital Normal University, Beijing, China *Sept. 2012 – June 2016*
B.E. in Computer Science and Technology

PUBLICATIONS

1. **Changshuo Hu**, Hung Manh Pham, Yiming Zhang, Guanru Yan, Xiao Ma, Yuezhong Wu, Thivya Kandappu, Archan Misra, Dong Ma. PPG-Sport: A Dataset for Reliable Heart Rate Monitoring from Wrist PPG Under Dynamic Sports Conditions. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2026.
2. **Changshuo Hu***, Qiang Yang*, Yang Liu*, Tobias Röddiger, Kayla-Jade Butkow, Mathias Ciliberto, Adam Luke Pullin, Jake Stuchbury-Wass, Mahbub Hassan, Cecilia Mascolo, Dong Ma. A Survey of Earable Technology: Trends, Tools, and the Road Ahead. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2026.
3. **Changshuo Hu***, Hung Manh Pham*, Ting Dang, Jiannan Li, Rajesh Balan, Dong Ma. From Cheap to Chic: Enhancing Music Playback Quality of Budget Earphones via Hardware-Aware Learning. *ACM/IEEE International Conference on Embedded Artificial Intelligence and Sensing Systems (SenSys)*, 2026.
4. **Changshuo Hu***, Hung Manh Pham*, Dong Ma. Morphology-Aware HRV Estimation from Wrist PPG in Sedentary Scenarios. *11th Workshop on Body-Centric Computing Systems, Co-located with UbiComp / ISWC (BodySys)*, 2025. **Best Paper Award (1 out of 9 papers)**
5. **Changshuo Hu**, Xiao Ma, Xinger Huang, Yiran Shen, Dong Ma. LR-Auth: Towards Practical Implementation of Implicit User Authentication on Earbuds. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2024. **Distinguished Paper Award (8 out of 208 papers)**
6. **Changshuo Hu**, Thivya Kandappu, Jake Stuchbury-Swaks, Yang Liu, Anthony Tang, Cecilia Mascolo, Dong Ma. Detecting Foot Strikes during Running with Earbuds. *10th Workshop on Body-Centric Computing Systems, Co-located with ACM MobiSys (BodySys)*, 2024.
7. **Changshuo Hu**, Thivya Kandappu, Yang Liu, Cecilia Mascolo, Dong Ma. BreathPro: Monitoring Breathing Mode during Running with Earables. *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, 2024.
8. **Changshuo Hu***, Xiao Ma*, Dong Ma, Ting Dang. Lightweight and Non-Invasive User Authentication on Earables. *Proceedings of the 24th International Workshop on Mobile Computing Systems and Applications (HotMobile)*, 2023.

^{0*} denotes co-primary author

9. Dong Ma, Guohao Lan, **Changshuo Hu**, Mahbub Hassan, Wen Hu, Mushfika B Upama, Ashraf Uddin, Moustafa Youssef. Recognizing hand gestures using solar cells. *IEEE Transactions on Mobile Computing (TMC)*, 2022.
10. **Changshuo Hu**, Dong Ma, Mahbub Hassan, Wen Hu. Data Communication using Switchable Privacy Glass. *19th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, 2020.
11. **Changshuo Hu**, Dong Ma, Mahbub Hassan, Wen Hu. NLC: natural light communication using switchable glass. *IEEE INFOCOM 2020 – IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS)*, 2020.

AWARDS

- IMWUT Vol. 8 Distinguished Paper Award, AY2025
- Best Paper Award at BodySys'25, AY2025
- SMU Presidential Doctoral Fellowship, AY2025
- PhD Full Scholarship, AY2024

ACADEMIC SERVICES

- Invited Reviewer for **IMWUT**, **TMC**
- Website Chair at *BodySys Workshop 2024*, co-located with *MobiSys 2024*
- Website Chair at *SmartWear Workshop 2023*, co-located with *MobiCom 2023*