

Dongyao Chen

Singapore Management University
School of Computing and Information Systems
80 Stamford Rd, Singapore, 178902

<https://chendy.tech>
dychen@smu.edu.sg

ACADEMIC POSITIONS

Assistant Professor, School of Computing and Information Systems Singapore Management University	2026 – Present Singapore
Assistant Professor, School of Electronic Information and Electrical Engineering Shanghai Jiao Tong University	2020 – 2026 Shanghai, China
Research Intern, Networking and Mobility Team Hewlett Packard Labs	2016 Palo Alto, CA, USA

EDUCATION

Ph.D., Computer Science and Engineering University of Michigan <i>Thesis: Seamless Interactions Between Humans and Mobility Systems</i>	2015 – 2020 Ann Arbor, MI, USA
M.S., Electrical Engineering University of Michigan	2013 – 2015 Ann Arbor, MI, USA
B.S., Electrical Engineering Shanghai Jiao Tong University	2009 – 2013 Shanghai, China

PUBLICATIONS

Underlined authors are my direct advisees; * denotes co-primary authors
Labels: **C** = peer-reviewed conference, **J** = peer-reviewed journal.

- [C.22] Jike Wang, Yasha Irvantchi, Mingke Wang, Alanson Sample, Kang G. Shin, Xinbing Wang, and **Dongyao Chen** (2026). MagLens: Bringing Mobile, Fine-Grained Imaging to Ferrous Building Structures. *ACM Conference on Embedded Networked Sensor Systems (SenSys)*.
- [C.21] Siyuan Wang, Ke Li, Jingyuan Huang, Jike Wang, Cheng Zhang, Alanson Sample, and **Dongyao Chen** (2026). μ Touch: Enabling Accurate, Lightweight Self-Touch Sensing with Passive Magnets. *IEEE International Conference on Pervasive Computing and Communications (PerCom)*.
- [C.20] Xiaomeng Chen, Jike Wang, Zhenyu Chen, Qi Alfred Chen, Xinbing Wang, and **Dongyao Chen** (2026). DualStrike: Accurate, Real-time Eavesdropping and Injection of Keystrokes on Commodity Keyboards. *Network and Distributed System Security Symposium (NDSS)*.
- [C.19] Hyungjun Yoon, Seungjoo Lee, Yu Wu, Xiaomeng Chen, Taiting Lu, Freddy Liu, Taeckyoung Lee, Hyeoncheon Cha, Haochen Zhao, Gaoteng Zhao, **Dongyao Chen**, Cecilia Mascolo, Sung-Ju Lee, and Lili Qiu (2026). Beyond Hearing: Learning Task-Agnostic ExG Representations from Earphones via Physiology-Informed Tokenization. *International Conference on Learning Representations (ICLR)*.

- [J.2] Zhenyu Chen, Jike Wang, Ye Huang, Xiaomeng Chen, Xinbing Wang, and **Dongyao Chen** (2026). OralSense: Versatile, Accurate Oral Sensing with Customizable Magnets. *IEEE Transactions on Mobile Computing (TMC)*. doi:10.1109/TMC.2026.3688797.
- [C.18] Runtong Zhang, Yijie Li, Dian Ding, Yi-Chao Chen, Yida Wang, **Dongyao Chen**, Jingxian Wang, Jiadi Yu, Ling Ma, and Guangtao Xue (2025). Bridge: Enabling BLE Direction Finding Feature Compatible with All Bluetooth Devices. *ACM International Conference on Mobile Computing and Networking (MobiCom)*.
- [C.17] Kunpeng Huang, Yasha Iravantchi, **Dongyao Chen**, and Alanson Sample (2025). MagDesk: Interactive Tabletop Workspace Based on Passive Magnetic Tracking. *Proc. ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*. [Distinguished Paper Award]
- [J.1] Zhenyu Chen, Peihang Chen, Jingyuan Huang, and **Dongyao Chen** (2025). Towards Extended Interaction with Differential Magnetic Tracking and Deep Learning. *International Journal of Human-Computer Interaction (IJHCI)*. doi:10.1080/10447318.2025.2565394.
- [C.16] Jike Wang, Yasha Iravantchi, Alanson Sample, Kang G. Shin, Xinbing Wang, and **Dongyao Chen** (2024). Polaris: Accurate, Vision-free Fiducials for Mobile Robots with Magnetic Constellation. *ACM International Conference on Mobile Computing and Networking (MobiCom)*.
- [C.15] **Dongyao Chen**, Qing Luo, Xiaomeng Chen, Xinbing Wang, and Chenghu Zhou (2024). MagDot: Drift-free, Wearable Joint Angle Tracking at Low Cost. *Proc. ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*.
- [C.14] Zhenyu Chen, Jike Wang, and **Dongyao Chen** (2024). Implementation and Benchmark of Magnetic Tracking on Mobile Platforms. *Workshop on AIoT Systems (AIoTSys), co-located with ACM MobiSys*.
- [C.13] Jike Wang, Shanmu Wang, Yasha Iravantchi, Mingke Wang, Alanson Sample, Kang G. Shin, Xinbing Wang, Chenghu Zhou, and **Dongyao Chen** (2023). METRO: Magnetic Road Markings for All-weather, Smart Roads. *ACM Conference on Embedded Networked Sensor Systems (SenSys)*.
- [C.12] **Dongyao Chen**, Mert D. Pesé, and Kang G. Shin (2023). Guess Which Car Type I Am Driving: Information Leak via Driving Apps. *ISOC Symposium on Vehicle Security and Privacy (VehicleSec)*. [Best Paper Award]
- [C.11] Mingke Wang*, Qing Luo*, Yasha Iravantchi, Xiaomeng Chen, Alanson Sample, Kang G. Shin, Xiaohua Tian, Xinbing Wang, and **Dongyao Chen** (2022). Automatic Calibration of Magnetic Tracking. *ACM International Conference on Mobile Computing and Networking (MobiCom)*.
- [C.10] Fengyuan Zhu, Mingwei Ouyang, Luwei Feng, Yaoyu Liu, Xiaohua Tian, Meng Jin, **Dongyao Chen**, and Xinbing Wang (2022). Enabling Software-defined PHY for Backscatter Networks. *ACM International Conference on Mobile Systems, Applications and Services (MobiSys)*.
- [C.9] Mert D. Pesé, **Dongyao Chen**, C. Andrés Campos, Alice Ying, Troy Stacer, and Kang G. Shin (2022). DETROIT: Data Collection, Translation and Sharing for Rapid Vehicular App Development. *IEEE International Conference on Sensing, Communication and Networking (SECON)*.
- [C.8] **Dongyao Chen**, Mingke Wang, Chenxi He, Qing Luo, Yasha Iravantchi, Alanson Sample, Kang G. Shin, and Xinbing Wang (2021). MagX: Wearable, Untethered Hands Tracking with Passive Magnets. *ACM International Conference on Mobile Computing and Networking (MobiCom)*.
- [C.7] Liang He, Yuanchao Shu, Youngmoon Lee, **Dongyao Chen**, and Kang G. Shin (2020). Authenticating Drivers Using Automotive Batteries. *ACM International Conference on Ubiquitous Computing (UbiComp)*.
- [C.6] Mert D. Pesé, Troy Stacer, C. Andrés Campos, Eric Newberry, **Dongyao Chen**, and Kang G. Shin (2019). LibreCAN: Automated CAN Message Translator. *ACM Conference on Computer and Communications Security (CCS)*.
- [C.5] **Dongyao Chen** and Kang G. Shin (2019). Exploiting Mobile Kinetic Data for Transportation Apps. *ACM*

International Conference on Information and Knowledge Management (CIKM).

- [C.4] **Dongyao Chen** and Kang G. Shin (2019). TurnsMap: Enhancing Traffic Safety with Crowdsensing and Deep Learning. *ACM International Conference on Ubiquitous Computing (UbiComp)*.
- [C.3] **Dongyao Chen**, Yurong Jiang, Kyu-Han Kim, and Kang G. Shin (2017). Locating and Tracking BLE Beacons with Smartphones. *ACM Conference on Emerging Networking Experiments and Technologies (CoNEXT)*.
- [C.2] **Dongyao Chen**, Kyong-Tak Cho, Sihui Han, Zhizhuo Jin, and Kang G. Shin (2015). Invisible Sensing of Vehicle Steering with Smartphones. *ACM International Conference on Mobile Systems, Applications and Services (MobiSys)*.
- [C.1] Yu-Chih Tung, Sihui Han, **Dongyao Chen**, and Kang G. Shin (2014). Vulnerability and Protection of Channel State Information in Multiuser MIMO Networks. *ACM Conference on Computer and Communications Security (CCS)*.

HONORS AND AWARDS

- Distinguished Paper Award, ACM UbiComp 2025
- Best Paper Award, ISOC VehicleSec 2023
- Rackham Graduate School Travel Grant, University of Michigan 2015, 2017
- ACM CoNEXT Travel Grant 2017
- ACM MobiSys Travel Grant 2015
- National Scholarship (top 2% of all students), SJTU 2010

PATENTS

- Inferring Left-Turn Information from Mobile Crowdsensing *Issued Jan. 2024*
Kang G. Shin, **Dongyao Chen**
US11879744B2
- Fingerprinting Driver with Mobile IMU Sensors *Issued Nov. 2021*
Dongyao Chen, Kyong-Tak Cho, and Kang G. Shin
US11180154B2
- Bluetooth Beacon Locator *Published Nov. 2018*
Dongyao Chen, Yurong Jiang, and Kyu-Han Kim
US20180317044A1
- Detecting Vehicle Maneuvers With Mobile Phones *Published Oct. 2016*
Dongyao Chen and Kang G. Shin
US20160311442A1

TEACHING

- **CS1501: Programming Methodology**, SJTU *Fall 2021 – Fall 2025*
Introductory computer science and programming course; first-year students, most with limited or no prior programming experience. Class capacity 88–96. Received an A grade evaluation (2022 Fall, 86 respondents).
- **CS7351: Principles and Design of Sensing Systems**, SJTU *Fall 2022 – Fall 2025*
Graduate course on the sensing stack of cyber-physical systems. Received an A grade evaluation (2022 Fall,

25 respondents).

• **CS106: Programming Practice**, SJTU

Summer 2022, 2023

STUDENT ADVISING

Ph.D. Students

- Jike Wang
- Zhenyu Chen
- Siyuan Wang
- Wangwei Shen
- Yifeng Zhang

M.S. Students

- Haoyuan Zeng (2024–present)
- Xiaomeng Chen (2023–2026) — incoming Ph.D. student, University of Washington
- Qing Luo (2020–2023) — Ph.D. student, HKUST

Undergraduate Students

- Mingke Wang (thesis, 2020–2022) — Ph.D. student, University of Michigan
- Shanmu Wang (thesis, 2021–2024) — Ph.D. student, UCLA
- Tao Lu (research intern, 2021–2022) — Ph.D. student, Georgia Tech
- Xueshen Liu (research intern, 2021–2022) — Ph.D. student, University of Michigan
- Chenxi He (research intern, 2020–2022) — M.S., Carnegie Mellon University
- Tong Jin (research intern, 2021–2022) — M.S., Carnegie Mellon University
- Jiaxiang Chen (research intern, 2022–2024) — M.S., SJTU
- Jingyan Wang (research intern, 2021–2022) — M.S., SJTU

INVITED TALKS

- | | |
|--|------------------|
| • “Towards Sixth Sense with Interactive Sensing Systems” | |
| Columbia University | <i>May 2025</i> |
| University of Michigan, Ann Arbor | <i>May 2025</i> |
| University of Cambridge | <i>Mar. 2025</i> |
| • “Enabling Magnetoreception for Cyber-Physical Systems” | |
| Singapore Management University | <i>Aug. 2024</i> |
| Nanyang Technological University | <i>Aug. 2024</i> |
| National University of Singapore | <i>Aug. 2024</i> |
| • “Integrating Magnetic Sensing in Health Care Applications” | |
| Microsoft Research Asia, Shanghai | <i>Jul. 2024</i> |
| • “Capturing Fine-grained Motions with Magnetic Sensing” | |
| University of California San Diego | <i>Mar. 2024</i> |
| • “Towards High-accuracy, Cost-efficient Motion Sensing” | |
| Tongji University | <i>Mar. 2024</i> |
| • “Millimeter-scale Movement Tracking with Magnetic Sensing” | |
| Microsoft Research Asia, Shanghai | <i>Apr. 2023</i> |

ACADEMIC AND PROFESSIONAL SERVICE

- **Technical Program Committee**

ACM MobiCom (2022–2027)

ACM MobiSys (2023, 2024)

VehicleSec (2022, 2023)

- **Organizing Committee**

Local Co-Chair, UbiComp 2026

Registration Co-Chair, ACM MobiSys 2025

Student Travel Grant Co-Chair, ACM MobiCom 2025

Publicity Co-Chair, ACM MobiHoc 2021

- **Journal and Conference Reviewer**

ACM UbiComp

IEEE TMC

ICCPs