

WEIWEI JIANG

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I am a graduate researcher in computer science. My research interests focus on the area of ubiquitous computing and human-computer interaction, including wireless sensing, wireless communications, machine learning, and digital fabrication.

EDUCATION

University of Melbourne

PhD Candidate of Engineering

School of Computing and Information Systems

October 2019 - present

Expected graduating: *February 2023*

Japan Advanced Institute of Science and Technology

Degree of Master of Science

School of Information Science

October 2014 - September 2016

Huazhong University of Science and Technology

Degree of Bachelor of Engineering

Department of Computer Science and Engineering

September 2010 - June 2014

SKILLS

Programming Languages

Python (mostly used), C/C++, MATLAB, Java.

Frameworks & Development Tools

Machine learning (sklearn, Tensorflow and PyTorch), OpenCV, statistical data analysis (Pandas), Linux, parallel computing, Android, Django.

Hardware Prototyping

Digital fabrications (laser cut, 3D print and PCB milling), embedded/IoT system development, PCB design, laboratory test & characterization (digital, analog and RF circuits).

Spoken Languages

Chinese (native), English (fluent, TOEFL iBT 105), Japanese (fluent, JLPT N2).

RESEARCH EXPERIENCE

Human-Computer Interaction Group, University of Melbourne

Graduate Researcher

October 2019 - present

Melbourne, Australia

- Developing and studying novel interactive devices using mobile infrared devices for material sensing, imaging and visualization.
- Required skills: 3D modeling & printing, laser cutting, machine learning & deep-learning, statistical analysis, full-stack web development, understanding & improving existing embedded systems, signal processing.

LINKE, University of Science and Technology of China

Visiting Researcher

May 2019 - August 2019

Hefei, China

- Prototyped a Wi-Fi backscattering development platform for sensor and video streaming.
- Required skills: Python, C/C++, PCB design, embedded system prototyping, wireless communication engineering, signal processing, GNU Radio.

Kawahara Lab, The University of Tokyo

Project Researcher

January 2017 - March 2019

Tokyo, Japan

- Worked on machine learning solutions for low-cost electromagnetic sensing methods.
- Required skills: Python, C/C++, Tensorflow, algorithm design, hardware prototyping.

Interaction Design Lab, University of Melbourne*Visiting Researcher**May 2018 - August 2018**Melbourne, Australia*

- Identified everyday drinks using near-infrared spectroscopy with ~99% accuracy.
- Required skills: Python, C/C++, Linux system, sklearn, algorithm design, hardware prototyping.

Japan Advanced Institute of Science and Technology*Industry-Academy-Government Collaboration Researcher**July 2014 - September 2016**Nomi, Japan*

- Designed a wireless communication system that improved up to 50% performance for vehicle networking.
- Required skills: Python, MATLAB, Calculus, Probabilities, Information theory, Coding theory.

Center for Ubiquitous Computing, University of Oulu*Bachelor Project Researcher**September 2013 - May 2014**Oulu, Finland*

- Developed a novel covert wireless communication method for smartphones with 44 bps.
- Developed a full-stack novel dynamic wireless sensor network with multiple drones.
- Required skills: Python, Java, C/C++, MATLAB, Linear Algebra, Android, hardware prototyping, web development, algorithm design.

Wuhan National Laboratory for Optoelectronics*Research Assistant**July 2013 - August 2013**Wuhan China*

- Assisted deploying an OpenStack system for community level cloud-storage service for up to 100 users.
- Required skills: Python, OpenStack, Linux management, network management.

RESEARCH GRANTS

Australia-Germany Joint Research Cooperation Scheme

University of Melbourne (co-investigator)

January 2022 - December 2023

24,800 AUD

Preserving HCI Research Artefacts

University of Melbourne (chief investigator)

December 2021

3,000 AUD

General Program

National Natural Science Foundation of China (co-investigator)

January 2020 - December 2024

560,000 CNY

TEACHING

Designing Novel Interactions*Guest Lecturer**2021, 2022**University of Melbourne*

- Taught an introduction course on 3D modeling for printing for ~50 master students in computer science.

Mobile Computing Systems Programming*Tutor**2020, 2021**University of Melbourne*

- Taught tutorials on Android development for more than 100 master students in computer science.
- Mentored ~20 Android projects for the subject.

Fundamentals of Interaction Design*Tutor**2020**University of Melbourne*

- Mentored ~50 undergraduate students for designing user interfaces.

AWARDS AND SCHOLARSHIPS

Melbourne Research Scholarship

University of Melbourne

October 2019 - April 2023

110,000 AUD

Doctoral Student Special Incentives Program

The University of Tokyo

April 2018 - March 2019

1,440,000 JPY

English Session Encouragement Award

IEICE Technical Committee on Information Communication Management

March 2018

(Honorable award)

Doctoral Student Research Support Program The University of Tokyo	<i>July 2017 - December 2017</i> 300,000 JPY
Outstanding Graduate (Master) Japan Advanced Institute of Science and Technology	<i>September 2016</i> (Honorable award for Top 3 graduates)
Scholarship for Master's Program Japan Advanced Institute of Science and Technology	<i>October 2015 - September 2016</i> 267,900 JPY
TEIJIN Scholarship TEIJIN LIMITED	<i>April 2015 - September 2016</i> 900,000 JPY
Monbukagakusho Honors Scholarship Japan Student Services Organization	<i>September 2014 - March 2015</i> 390,000 JPY
Outstanding Graduate (Bachelor) Huazhong University of Science and Technology	<i>June 2016</i> (Honorable award)
Excellent Bachelor Thesis (2nd place out of ~500 theses) Huazhong University of Science and Technology & Hubei Province Government	<i>June 2016</i> (Honorable award)
National Endeavor Fellowship (for Top 3% students) Chinese Government	<i>September 2013 - June 2014</i> 5,000 CNY
People's Scholarship in China (for Top 10% students) Huazhong University of Science and Technology	<i>September 2012 - July 2013</i> 1,200 CNY
Finalist in Lanqiao Cup National Software Competition Sponsored by IBM & Intel	<i>May 2013</i> 3rd prize out of finalists from more than 1000 universities in China

SERVICES AND VOLUNTEERING

Reviewing

ACM IMWUT (2018, 2019, 2020, 2021, 2022), ACM MobileHCI (2020, 2021, 2022), ACM CHI (2020, 2021, 2022), ACM DIS (2021), ACM JETC (2018), IEEE/ACM Transactions on Networking (2020), IEEE Systems Journal (2018), OzCHI (2021) etc.

Volunteering

HUST Volunteer Service (61 hours), ACM Ubicomp 2018 Student Volunteer (10 hours)

OUTREACHING

Joint Research Project

Academic visiting

June 2022

Munich, Germany

- Visited Media Informatics and Human-Computer Interaction Groups in LMU Munich (Top 1 in Germany).

HCI Summer School

Attending student

June 2022

Lodz, Poland

- Attended HCI research related courses, talks, and events (organized by ACM SIGCHI).

Research Seminar

Public talk

June 2022

Copenhagen, Denmark

- Presented "Transforming Sensing Devices into Tools Using Digital Fabrication" at Human-Centred Computing section, University of Copenhagen (Top 1 in Denmark).

Melbourne Design Week

Public demo

March 2022

Melbourne, Australia

- Demonstrated my prototype of a smart pillbox using miniaturized near-infrared spectroscopy.
- Demonstrated a VR haptics system using an indoor drone with origami (joint-project).

Research Seminar

Public talk

September 2021

Online

- Presented “Research Methods in Computer Science” for graduate students.

HCI Seminar

Public talk

September 2020

Online

- Presented my preliminary work on miniaturized near-infrared spectroscopy.

ERATO Kawahara Project Forum

Public forum

September 2018

Tokyo, Japan

- Presented my project on wirelessly powered ring devices.
- Volunteered as the organizer team member.

PUBLICATIONS

First-authored ¹

- [1] **W. Jiang**, D. Yu, C. Wang, Z. Sarsenbayeva, N. van Berkel, J. Goncalves, and V. Kostakos, “Near-infrared imaging for information embedding and extraction with layered structures,” *ACM Transactions on Graphics (TOG)*, 2022, (Just Accepted), ISSN: 0730-0301. DOI: [10.1145/3533426](https://doi.org/10.1145/3533426), [Impact factor: 12.03][Ranking: CORE A* | CCF A | JCR Q1].
- [2] **W. Jiang**, Z. Sarsenbayeva, N. van Berkel, C. Wang, D. Yu, J. Wei, J. Goncalves, and V. Kostakos, “User trust in assisted decision-making using miniaturized near-infrared spectroscopy,” in *Proceedings of the 2021 CHI conference on human factors in computing systems*, New York, NY, USA: Association for Computing Machinery, 2021, pp. 1–16. DOI: <https://doi.org/10.1145/3411764.3445710>, [Ranking: CORE A* | CCF A].
- [3] **W. Jiang**, G. Marini, N. van Berkel, Z. Sarsenbayeva, Z. Tan, C. Luo, X. He, T. Dingler, J. Goncalves, Y. Kawahara, and et al., “Probing sucrose contents in everyday drinks using miniaturized near-infrared spectroscopy scanners,” *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, vol. 3, no. 4, 2019. DOI: [10.1145/3369834](https://doi.org/10.1145/3369834), [Ranking: CORE A* | CCF A].
- [4] D. Yu*, **W. Jiang*** (*co-first author), A. Irlitti, T. Dingler, E. Velloso, J. Goncalves, and V. Kostakos, “Haptics in vr using origami-augmented drones,” in *2022 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct)*, 2022, [Ranking: CORE A* | CCF B].
- [5] **W. Jiang**, K. Yang, M. Windl, F. Chioffi, B. Tag, S. Mayer, and Z. Sarsenbayeva, “Current challenges of using wearable devices for online emotion sensing,” in *The Future of Emotion in Human-Computer Interaction (workshop in CHI 2022)*, 2022.
- [6] **W. Jiang**, G. Marini, N. van Berkel, Z. Sarsenbayeva, C. Luo, X. He, T. Dingler, Y. Kawahara, and V. Kostakos, “A mobile scanner for probing liquid samples in everyday settings,” in *Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers (UbiComp '18 Adjunct)*, Singapore: ACM, 2018, pp. 1172–1177, ISBN: 978-1-4503-5966-5. DOI: [10.1145/3267305.3274764](https://doi.org/10.1145/3267305.3274764), [Ranking: CORE A* | CCF A].
- [7] **W. Jiang**, X. He, and T. Matsumoto, “Power allocation in an asymmetric wireless sensor network,” *IEEE Communications Letters*, vol. 21, no. 2, pp. 378–381, 2017, ISSN: 1089-7798. DOI: [10.1109/LCOMM.2016.2624728](https://doi.org/10.1109/LCOMM.2016.2624728), [Impact factor: 3.55][Ranking: JCR Q2].
- [8] **W. Jiang**, X. He, S. Qian, M. Juntti, and T. Matsumoto, “Finite-snr diversity-multiplexing tradeoff for decode-and-forward relaying system allowing intra-link errors,” in *2015 10th International Conference on Information, Communications and Signal Processing (ICICS)*, IEEE, 2015, pp. 1–5. DOI: [10.1109/ICICS.2015.7459909](https://doi.org/10.1109/ICICS.2015.7459909).

¹Representative work: [1,2,3]

- [9] **W. Jiang**, D. Ferreira, J. Ylioja, J. Goncalves, and V. Kostakos, “Pulse: Low bitrate wireless magnetic communication for smartphones,” in *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp '14)*, Seattle, Washington: ACM, 2014, pp. 261–265, ISBN: 978-1-4503-2968-2. DOI: [10.1145/2632048.2632094](https://doi.org/10.1145/2632048.2632094), [Ranking: CORE A* | CCF A].

Co-authored

- [10] G. Lin, Y. Zhou, **W. Jiang**, X. He, X. Zhou, G. He, and P. Yang, “Lf-swipt: Outage analysis for swipt relaying networks using lossy forwarding with qos guaranteed,” *IEEE Internet of Things Journal*, pp. 1–11, 2022. DOI: [10.1109/JIOT.2022.3161980](https://doi.org/10.1109/JIOT.2022.3161980), [Impact factor: 9.94][Ranking: JCR Q1].
- [11] C. Wang, **W. Jiang**, K. Yang, Z. Sarsenbayeva, B. Tag, T. Dingler, J. Goncalves, and V. Kostakos, “A system for computational assessment of hand hygiene techniques,” *Journal of Medical Systems*, vol. 46, no. 6, p. 36, 2022. DOI: [10.1007/s10916-022-01817-z](https://doi.org/10.1007/s10916-022-01817-z), [Impact factor: 4.92][Ranking: JCR Q1].
- [12] C. Wang, **W. Jiang**, K. Yang, D. Yu, J. Newn, Z. Sarsenbayeva, J. Goncalves, and V. Kostakos, “Electronic monitoring systems for hand hygiene: Systematic review of technology,” *Journal of Medical Internet Research (JMIR)*, vol. 23, no. 11, e27880, 2021, ISSN: 1438-8871. DOI: [10.2196/27880](https://doi.org/10.2196/27880), [Impact factor: 7.09][Ranking: JCR Q1].
- [13] D. Yu, **W. Jiang**, C. Wang, T. Dingler, E. Velloso, and J. Goncalves, “Shadowdancxr: Body gesture digitization for low-cost extended reality (xr) headsets,” in *Companion Proceedings of the 2020 Conference on Interactive Surfaces and Spaces (ISS)*, 2020, pp. 79–80. DOI: [10.1145/3380867.3426222](https://doi.org/10.1145/3380867.3426222), [Ranking: CORE A].
- [14] X. He, **W. Jiang**, M. Cheng, X. Zhou, P. Yang, and B. M. Kurkoski, “Guardrider: Reliable wifi backscatter using reed-solomon codes with qos guarantee,” in *2020 IEEE/ACM 28th International Symposium on Quality of Service (IWQoS)*, 2020. DOI: [10.1109/IWQoS49365.2020.9213057](https://doi.org/10.1109/IWQoS49365.2020.9213057), [Best paper runner-up][Ranking: CORE B | CCF B].
- [15] X. Chen, H. Li, M. Cheng, **W. Jiang**, and X. He, “Outage probability analysis of power splitting swipt relay networks in nakagami-m fading channel,” in *2020 6th International Conference on Big Data Computing and Communications (BIGCOM)*, IEEE, 2020, pp. 161–167. DOI: [10.1109/BigCom51056.2020.00030](https://doi.org/10.1109/BigCom51056.2020.00030).
- [16] Z. Sarsenbayeva, G. Marini, N. van Berkel, C. Luo, **W. Jiang**, K. Yang, G. Wadley, T. Dingler, V. Kostakos, and J. Goncalves, “Does smartphone use drive our emotions or vice versa? a causal analysis,” in *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, ser. CHI '20, Honolulu, HI, USA: Association for Computing Machinery, 2020, pp. 1–15, ISBN: 9781450367080. DOI: [10.1145/3313831.3376163](https://doi.org/10.1145/3313831.3376163), [Ranking: CORE A* | CCF A].
- [17] C. Mc Caffrey, T. Umedachi, **W. Jiang**, T. Sasatani, Y. Narusue, R. Niiyama, and Y. Kawahara, “Continuum robotic caterpillar with wirelessly powered shape memory alloy actuators,” *Soft Robotics*, 2020. DOI: [10.1089/soro.2019.0090](https://doi.org/10.1089/soro.2019.0090), [Impact factor: 7.78][Ranking: JCR Q1].
- [18] Z. Tan, R. Beuran, S. Hasegawa, **W. Jiang**, M. Zhao, and Y. Tan, “Adaptive security awareness training using linked open data datasets,” *Education and Information Technologies*, 2020. DOI: [10.1007/s10639-020-10155-x](https://doi.org/10.1007/s10639-020-10155-x), [Impact factor: 3.67][Ranking: JCR Q1].
- [19] Z. Sarsenbayeva, N. van Berkel, D. Hettiachchi, **W. Jiang**, T. Dingler, E. Velloso, V. Kostakos, and J. Goncalves, “Measuring the effects of stress on mobile interaction,” *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)*, vol. 3, no. 1, 24:1–24:18, 2019, ISSN: 2474-9567. DOI: [10.1145/3314411](https://doi.org/10.1145/3314411), [Ranking: CORE A* | CCF A].
- [20] Z. Sarsenbayeva, N. van Berkel, **W. Jiang**, D. Hettiachchi, V. Kostakos, and J. Goncalves, “Effect of ambient light on mobile interaction,” in *IFIP Conference on Human-Computer Interaction (INTERACT)*, Springer, 2019, pp. 465–475. DOI: [10.1007/978-3-030-29387-1_26](https://doi.org/10.1007/978-3-030-29387-1_26), [Ranking: CORE B | CCF C].
- [21] Z. Chang, H. Kim, K. Kato, K. Saito, T. D. Ta, **W. Jiang**, K. Narumi, Y. Miyamoto, and Y. Kawahara, “Kirigami keyboard: Inkjet printable paper interface with kirigami structure presenting kinesthetic feedback,” in *Extended Abstracts of the 2019 CHI Conference on Human Factors in*

- Computing Systems*, ser. CHI EA '19, Glasgow, Scotland Uk: Association for Computing Machinery, 2019, ISBN: 9781450359719. DOI: [10.1145/3290607.3312757](https://doi.org/10.1145/3290607.3312757), [Ranking: CORE A* | CCF A].
- [22] O. Matthews, Z. Sarsenbayeva, **W. Jiang**, J. Newn, E. Velloso, S. Clinch, and J. Goncalves, “Inferring the mood of a community from their walking speed: A preliminary study,” in *Proceedings of the 2018 ACM International Joint Conference and 2018 International Symposium on Pervasive and Ubiquitous Computing and Wearable Computers (UbiComp '18 Adjunct)*, Singapore: ACM, 2018, pp. 1144–1149, ISBN: 978-1-4503-5966-5. DOI: [10.1145/3267305.3274759](https://doi.org/10.1145/3267305.3274759), [Ranking: CORE A* | CCF A].
- [23] G. Cheng, H. Sun, X. He, **W. Jiang**, X. Zhou, M. Cheng, and P. Yang, “Outage probability analysis of decode-and-forward relaying systems with energy harvesting,” in *2018 4th International Conference on Big Data Computing and Communications (BIGCOM)*, Chicago, 2018, pp. 28–33. DOI: [10.1109/BIGCOM.2018.00011](https://doi.org/10.1109/BIGCOM.2018.00011).
- [24] S. Qian, J. He, X. He, **W. Jiang**, M. Juntti, and T. Matsumoto, “Line-of-sight component impact analyses for lossy forward relaying over fading channels having different statistical properties,” in *13th IEEE VTS Asia Pacific Wireless Communications Symposium (APWCS)*, IEEE, 2016. [Online]. Available: <https://dspace.jaist.ac.jp/dspace/handle/10119/14286>.