

# CHAOFAN WANG

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## EDUCATION

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### Ph.D. in Human-Computer Interaction

February 2019 - October 2022

*The University of Melbourne*

*Melbourne, Australia*

- Thesis Title: Automated Monitoring of Hand Hygiene Quality
- Supervisors: Prof. Vassilis Kostakos and Assoc. Prof. Jorge Goncalves

### Master of Information Technology

February 2017 - December 2018

*The University of Melbourne*

*Melbourne, Australia*

- Graduated with Distinction and Dean's Honours List

### Bachelor of Computer Science

September 2012 - June 2016

*Hangzhou Dianzi University*

*Hangzhou, China*

## INTERESTS AND SKILLS

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### Research Interests

Human-Computer Interaction, Ubiquitous Computing, Medical Informatics

### Program Languages

Python, Java, C & C++, SQL

### Technical Skills

Wearable Sensing (IMU, sEMG), Environmental Sensing (RGB camera, thermal camera, depth camera), Image Process (OpenCV), Android Development

### Analysis Skills

Statistical Analysis, Machine Learning & Deep Learning (scikit-learn, PyTorch), Data Visualization

### Languages

Chinese (native), English (fluent, IELTS - 7.0)

## WORK EXPERIENCE

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### Delft University of Technology

September 2022 - Present

*Postdoctoral Fellowship in Human-Centred AI*

*Delft, Netherlands*

- Worked on COALA (under European Union's Horizon 2020 Research and Innovation Programme).

### Murdoch Children's Research Institute (MCRI)

February 2020 - August 2022

*Research Associate*

*Melbourne, Australia*

- Worked on using wearable sensor to detect episodes of hand hygiene (Field Study).

## TEACHING EXPERIENCE

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### Delft University of Technology

September 2022 - Present

- Tutor - ID5515 (Advanced Machine Learning for Design);
- Tutor - IOB4-T3 (Machine Learning for Design).

### The University of Melbourne

July 2019 - June 2022

- Head Tutor - COMP90018 (Mobile Computing Systems Programming);
- Tutor - COMP10003 (Media Computation).

## PROJECTS

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### Using Computer Vision to Measure Quality of Hand Hygiene

October 2019 - August 2022

- Detect the hand surface coverage with antiseptic products after hand hygiene by environmental sensors, e.g., thermal camera and RGB camera;
- Apply computer vision algorithms to measure the corresponding hand hygiene quality in medical settings.

## Using Wearable Sensor to Detect Episodes of Hand Hygiene

February 2019 - August 2022

- Detect episodes of hand hygiene with machine learning algorithms by wearable sensors, e.g., IMU and sEMG;
- Examine the feasibility of monitoring the frequency and thoroughness of hand hygiene practices in medical settings.

## Using Environment Data to Predict Emergency Admissions

February 2019 - November 2019

- Design machine learning algorithms to predict emergency department admissions through environment data, calendar variables, and history admission records;
- Optimize the personnel flow in hospitals' emergency departments and determine the relevance of environment and calendar data towards emergency admissions.

## RESEARCH PUBLICATIONS

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### Published Articles

1. Samuel K. Freire, Evangelos Niforatos, **Chaofan Wang**, Santiago Ruiz-Arenas, Mina Foosherian, Stefan Wellsandt, and Alessandro Bozzon. Lessons Learnt from Designing and Evaluating CLAICA: A Continuously Learning AI Cognitive Assistant. *IUI'23: 28th International Conference on Intelligent User Interfaces*, March 2023 (CORE - A, accepted)
2. Kangning Yang, Benjamin Tag, **Chaofan Wang**, Yue Gu, Zhanna Sarsenbayeva, Tilman Dingler, Greg Wadley, and Jorge Goncalves. Survey on emotion sensing using mobile devices. *IEEE Transactions on Affective Computing*, (01):1–20, Nov 2022 (Impact factor: 13.99)
3. Wei Jing, Weiwei Jiang, **Chaofan Wang**, Difeng Yu, Jorge Goncalves, Tilman Dingler, and Vassilis Kostakos. Understanding how to administer voice surveys through smart speakers. *Proc. ACM Hum.-Comput. Interact.*, 6(CSCW2), nov 2022 (CORE - A)
4. **Chaofan Wang**, Kangning Yang, Weiwei Jiang, Jing Wei, Zhanna Sarsenbayeva, Jorge Goncalves, and Vassilis Kostakos. Hand hygiene quality assessment using image-to-image translation. In Linwei Wang, Qi Dou, P. Thomas Fletcher, Stefanie Speidel, and Shuo Li, editors, *Medical Image Computing and Computer Assisted Intervention – MICCAI 2022*, pages 64–73, Cham, 2022. Springer Nature Switzerland (CORE - A)
5. Kangning Yang, Benjamin Tag, Yue Gu, **Chaofan Wang**, Tilman Dingler, Greg Wadley, and Jorge Goncalves. Mobile emotion recognition via multiple physiological signals using convolution-augmented transformer. In *Proceedings of the 2022 International Conference on Multimedia Retrieval, ICMR '22*, page 562–570, New York, NY, USA, 2022. Association for Computing Machinery (CORE - B)
6. **Chaofan Wang**, Weiwei Jiang, Kangning Yang, Zhanna Sarsenbayeva, Benjamin Tag, Tilman Dingler, Jorge Goncalves, and Vassilis Kostakos. A System for Computational Assessment of Hand Hygiene Techniques. *Journal of Medical Systems*, 46(6):36, May 2022 (Impact factor: 4.92)
7. Weiwei Jiang, Difeng Yu, **Chaofan Wang**, Zhanna Sarsenbayeva, Niels van Berkel, Jorge Goncalves, and Vassilis Kostakos. Near-infrared imaging for information embedding and extraction with layered structures. *ACM Trans. Graph.*, 42(1), August 2022 (Impact factor: 7.40)
8. **Chaofan Wang**, Weiwei Jiang, Kangning Yang, Difeng Yu, Joshua Newn, Zhanna Sarsenbayeva, Jorge Goncalves, and Vassilis Kostakos. Electronic Monitoring Systems for Hand Hygiene: Systematic Review of Technology. *Journal of Medical Internet Research*, 23(11):e27880, Nov 2021 (Impact factor: 7.08)
9. Kangning Yang, **Chaofan Wang**, Yue Gu, Zhanna Sarsenbayeva, Benjamin Tag, Tilman Dingler, Greg Wadley, and Jorge Goncalves. Behavioral and Physiological Signals-Based Deep Multimodal Approach for Mobile Emotion Recognition. *IEEE Transactions on Affective Computing*, (01):1–1, July 2021 (Impact factor: 13.99)
10. Weiwei Jiang, Zhanna Sarsenbayeva, Niels van Berkel, **Chaofan Wang**, Difeng Yu, Jing Wei, Jorge Goncalves, and Vassilis 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, 2021. Association for Computing Machinery (CORE - A\*)

11. Difeng Yu, Weiwei Jiang, **Chaofan Wang**, Tilman Dingler, Eduardo Velloso, and Jorge Goncalves. ShadowDancXR: Body Gesture Digitization for Low-Cost Extended Reality (XR) Headsets. In *Companion Proceedings of the 2020 Conference on Interactive Surfaces and Spaces*, page 79–80, New York, NY, USA, 2020. Association for Computing Machinery (ISS EA)
12. Kangning Yang, **Chaofan Wang**, Zhanna Sarsenbayeva, Benjamin Tag, Tilman Dingler, Greg Wadley, and Jorge Goncalves. Benchmarking commercial emotion detection systems using realistic distortions of facial image datasets. *The Visual Computer*, pages 1–20, 2020 (Impact factor: 2.84)
13. **Chaofan Wang**, Zhanna Sarsenbayeva, Xiuge Chen, Tilman Dingler, Jorge Goncalves, and Vassilis Kostakos. Accurate Measurement of Handwash Quality Using Sensor Armbands: Instrument Validation Study. *JMIR Mhealth Uhealth*, 8(3):e17001, Mar 2020 (Impact factor: 4.95)
14. **Chaofan Wang**, Zhanna Sarsenbayeva, Chu Luo, Jorge Goncalves, and Vassilis Kostakos. Improving Wearable Sensor Data Quality Using Context Markers. In *International Joint Conference on Pervasive and Ubiquitous Computing*, UbiComp Adjunct, 2019 (UbiComp EA)
15. Qiushi Zhou, Joshua Newn, Benjamin Tag, Hao-Ping Lee, **Chaofan Wang**, and Eduardo Velloso. Ubiquitous Smart Eyewear Interactions using Implicit Sensing and Unobtrusive Information Output. In *International Joint Conference on Pervasive and Ubiquitous Computing*, UbiComp Adjunct, 2019 (UbiComp EA)

### Preprints

1. **Chaofan Wang**, Weiwei Jiang, Kangning Yang, Zhanna Sarsenbayeva, Benjamin Tag, Tilman Dingler, Jorge Goncalves, and Vassilis Kostakos. Using thermal imaging to measure hand hygiene quality. *arXiv preprint arXiv:2302.02233*, 2023
2. Weiwei Jiang, **Chaofan Wang**, Zhanna Sarsenbayeva, Andrew Irlitti, Jarrod Knibbe, Tilman Dingler, Jorge Goncalves, and Vassilis Kostakos. Infoprint: Embedding information into 3d printed objects. *arXiv preprint arXiv:2112.00189*, 2021

### ACADEMIC SERVICE

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1. Reviewer (Journal): PACM IMWUT, Journal of Medical Internet Research, JMIR mHealth and uHealth, JMIR Medical Informatics, BMJ Innovations, American Journal of Infection Control, Public Health in Practice, etc.
2. Reviewer (Conference): CHI, NordiCHI, OzCHI, etc.
3. Conference Committee: IoT 2022 (session chair)

### AWARDS AND SCHOLARSHIPS

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<b>PhD Write Up Award</b> The University of Melbourne	2022
<b>Research Training Program Scholarship</b> The University of Melbourne	2019 - 2022
<b>Dean's Honours List</b> The University of Melbourne	2018
<b>Commonwealth Supported Place</b> The University of Melbourne	2018 - 2019
<b>Third Prize Scholarships</b> Hangzhou Dianzi University	2012 - 2015