

# TING DANG

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University of Melbourne  
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 Google scholar    Personal website    LinkedIn

## RESEARCH INTERESTS

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My research interests focus on **human-centred sensing and AI for health monitoring**. Specifically, it includes:  
**Speech and Audio Processing:** investigating advanced signal processing techniques and potential novel applications using speech and audio signals.

**Affective Computing:** developing computational models for emotional intelligence

**Trustworthy Deep Learning (DL):** improving the interpretability and generalization in DL for more reliable health outcome predictions.

**Wearable Sensing:** examining novel sensing opportunities for fitness and well-being monitoring with new forms of resource constrained IoT wearable device forms.

## EXPERIENCE

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Senior Lecturer, <i>University of Melbourne, Australia</i>	Mar 2024 – Present
Senior Research Scientist, <i>Nokia Bell Labs, UK</i>	Oct 2022 – Dec 2023
Senior Research Associate, <i>University of Cambridge, UK</i>	Jan 2021 – Oct 2022
Research Associate, <i>University of New South Wales (UNSW), Australia</i>	May 2018 – Jan 2021

## EDUCATION

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Ph. D., <i>University of New South Wales (UNSW), Australia</i>	Aug 2014 – Jun 2018
M.Sc., <i>Northwestern Polytechnical University, China</i>	Sep 2012 – Mar 2015
B.Eng., <i>Northwestern Polytechnical University, China</i>	Sep 2009 – Mar 2012

## SELECTED HONORS

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- Best paper award at ACII 2023.
- Top 3% of accepted papers at ICASSP 2023.
- Shortlisted candidate for Asian Dean's Forum 2022 The Rising Stars - Women in Engineering Grant, 2022
- IEEE Early Career Writing Retreat Grant, 2019
- Distinguished reviewer award for IEEE Transactions in Affective Computing, in 2019
- Outstanding reviewer award for Expert Systems With Applications Elsevier, 2018
- ISCA (International Speech Communication Association) Grant, Interspeech, Stockholm 2017
- Highly Commended Presentation (6 finalists) of Postgraduate Research Symposium, UNSW, 2017
- 2<sup>nd</sup> rank in Audio, Video Emotion Challenge (AVEC) workshop, ACM Multimedia, 2015
- Tuition Fee Scholarship (TFS) plus a Research Stipend from UNSW, 2014-2018
- Top-up Scholarship from Data 61, CSIRO, Australia, 2014-2018
- First-Class Prize of Underwater Signal Technology Competition of NWPU, 2013
- Excellent Bachelor Graduation Thesis Award of NWPU, 2012

**Journals:** (\* indicates equal contributions)

- [1] Butkow, K. J., Dang, T., Ferlini, A., Ma, D., Liu, Y., & Mascolo, C. (2024). An evaluation of heart rate monitoring with in-ear microphones under motion. *Pervasive and Mobile Computing*.
- [2] Xia, T., Dang, T., Han, J., Qendro, L., & Mascolo, C. (2024). Uncertainty-aware Health Diagnostics via Class-balanced Evidential Deep Learning. *IEEE Journal of Biomedical and Health Informatics*.
- [3] Ma, D., Dang, T., Ding, M., & Balan, R. (2024). ClearSpeech: Improving Voice Quality of Earbuds Using Both In-Ear and Out-Ear Microphones. *ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 7(4), 1-25.
- [4] Demirel, B. U., Dang, T., Al-Naimi, K., Kawsar, F., & Montanari, A. (2024). Unobtrusive Air Leakage Estimation for Earables with In-ear Microphones. *ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 7(4), 1-29.
- [5] Dang, T., Spathis, D., Ghosh, A., Mascolo, C. (2023), "Human-centered AI for mobile health sensing: challenges and opportunities", *Royal Society Open Science*, 2023.
- [6] Han, J., Montagna, M., Grammenos, A., Xia, T., Bondareva, E., Brown, C., Chauhan, J., Dang, T., Spathis, D., Floto, A., Cicuta, P., and Mascolo, C., (2023). "Comparing Listening Performance for COVID-19 Detection between Clinicians and Machine Learning: A Comparative Study", *Journal of Medical Internet Research*.
- [7] Wickramasinghe, B., Ambikairajah, E., Sethu, V., Epps, J., Li, H., & Dang, T. (2023). DNN controlled adaptive front-end for replay attack detection systems. *Speech Communication*, 154, 102973.
- [8] Dang, T., Han, J., Xia, T., Spathis, D., Bondareva, E., Brown, C., Chauhan, J., Grammenos, A., Hasthanasombat, A., Floto, A., Cicuta, P., and Mascolo, C., (2022). "Exploring Longitudinal Cough, Breath, and Voice Data for COVID-19 Disease Progression Prediction via Sequential Deep Learning", *Journal of Medical Internet Research*.
- [9] Wu, J., Dang, T., Sethu, V., and Ambikairajah, E., (2022), "A Novel Markovian Framework for Integrating Absolute and Relative Ordinal Emotion Information", *IEEE Transaction on Affective Computing*.
- [10] Han, J., Xia, T., Spathis, D., Bondareva, E., Brown, C., Chauhan, J., Dang, T., Grammenos, A., Hasthanasombat, A., Floto, A., Cicuta, P., and Mascolo, C., (2021). "Sounds of COVID-19: exploring realistic performance of audio-based digital testing", *NPJ Digital Medicine (Nature Portfolio)*.
- [11] Wu, J., Dang, T., Sethu, V., and Ambikairajah, E., (2021), "Multimodal Affect Models: An investigation of relative salience of audio and visual cues for emotion prediction", *Frontiers in Computer Science*, 2021.
- [12] Dang, T., Sethu, V., and Ambikairajah, E., (2018), "Compensation techniques for speaker variability in continuous emotion prediction", *IEEE Transaction on Affective Computing*.
- [13] Dang, T., Sethu, V., Ambikairajah, E., Epps, J., & Li, H. (2021). "Joint Spatio-Temporal Discretisation of Nonlinear Active Cochlear Models", 2021. (Preprint)

**Conferences:**

- [14] Jia, H., Kwon, Y., Orsino, A., Dang, T., Talia, D. and Mascolo, C., "TinyTTA: Efficient Test-time Adaptation via Early-exit Ensembles on Edge Devices", *NeurIPS* 2024.
- [15] Wang, X., Dang, T., Kostakos, V., Jia, H., Efficient and Personalized Mobile Health Event Prediction via Small Language Models", *Mobicom Workshop ELFCOM* 2024.
- [16] Wu, Y., Dang, T., Spathis, D., Jia, H., Mascolo, C., "StatioCL: Contrastive Learning for Time Series via Non-Stationary and Temporal Contrast", *CIKM* 2024.
- [17] Wu, J., Dang, T., Sethu, V., Ambikairajah, E., "Emotion Recognition Systems Must Embrace Ambiguity", *ACII Workshop EASE* 2024.
- [18] Hu Y., Zhang, S., Dang, T., Jia, H., Salim, F., Hu, W., Quigley, A., "Exploring Large-Scale Language Models to Evaluate EEG-Based Multimodal Data for Mental Health", *UbiComp Workshop: WellComp* 2024.
- [19] Wu J., Dang, T., Sethu, V., Ambikairajah, E. (2024), "Dual-Constrained Dynamical Neural ODEs for Ambiguity-aware Continuous Emotion Prediction", *Interspeech* 2024.
- [20] Shahid, I., Al-naimi, K., Dang, T., Liu, Y., Kawsar F., Montanari, A., (2024), "Towards Enabling DPOAE Estimation on Single-speaker Earbuds", *ICASSP* 2024.
- [21] Nan Z., Dang, T., Sethu, V., Ambikairajah, E. (2024), "Variational Connectionist Temporal Classification for Order-Preserving Sequence Modeling", *ICASSP* 2024.
- [22] Romero, J., Ferlini, A., Spathis, D., Dang, T., Farrahi, K., Kawsar F., Montanari, A., (2024), "OptiBreathe: An Earable-based PPG System for Continuous Respiration Rate, Breathing Phase, and Tidal Volume Monitoring", *HotMobile* 2024.
- [23] Dang, T., Han, J., Xia, T., Bondareva, E., Brown, C., Chauhan, J., Grammenos, A., Spathis, D., Cicuta, P., and Mascolo, C., (2023). "Conditional Neural ODE Processes for Individual Disease Progression Forecasting: A Case Study on COVID-19", ACM Conference on Knowledge Discovery & Data Mining (*KDD*), 2023.
- [24] Wu J., Dang, T., Sethu, V., Ambikairajah, E. (2023), "Belief Mismatch Coefficient (BMC): A Novel Interpretable Measure of Prediction Accuracy for Ambiguous Emotion States", Affective Computing and Intelligent Interaction (*ACII*), 2023.
- [25] Wu J., Dang, T., Sethu, V., Ambikairajah, E. (2023), "From Interval to Ordinal: A HMM based Approach for Emotion Label Conversion", *Interspeech* 2023.

- [26] Dang, T., Dimitriadis, A., Wu J., Sethu, V., Epps, J., Ambikairajah, E. (2023), "Constrained Dynamic Neural ODE for Time Series Modelling: A Case Study on Continuous Emotion Prediction", *ICASSP 2023*.
- [27] Gashi, S., Spathis, D., Dang, T., Hoelzemann, A., "WellComp 2023: Sixth International Workshop on Computing for Well-Being", *Wellcomp workshop located in UbiComp 2023*.
- [28] Butkow K. J., Dang, T., Ferlini, A., Ma, D., & Mascolo, C. (2023). "hEART: Motion-resilient Heart Rate Monitoring with In-ear Microphones", *PerCom 2023*.
- [29] Vavaroutas, S., Dang, T., Rocheteau, E., Mascolo C., "Uncertainty Estimation for Sequence-to-Sequence Regression on Sparse Time Series", *MobiUK, 2023*.
- [30] Hu C., Ma X., Ma D., Dang T. (2023), "Lightweight and Non-invasive User Authentication on Earables", *HotMobile 2023*.
- [31] Xia T., Han J., Qendro L., Dang T., Mascolo C., "Hybrid-EDL: Improving Evidential Deep Learning for Uncertainty Quantification on Imbalanced Data", *TSRML located at NeurIPS 2022*.
- [32] Dang, T.\*, Quinell T\*, Mascolo, C. (2022). "Exploring Semi-supervised Learning for Audio-based COVID-19 detection using Fixmatch", *Interspeech, 2022*.
- [33] Jingyao Wu, Dang, T., Sethu, V., Epps, J., Ambikairajah, E. (2022), "A Novel Sequential Monte Carlo Framework for Predicting Ambiguous Emotion States", *ICASSP 2022*.
- [34] Xia, T., Spathis, D., Ch, J., Grammenos, A., Han, J., Hasthanasombat, A., Bondareva, E., Dang, T., Floto, A., Cicuta, P. and Mascolo, C., (2021), "COVID-19 Sounds: A Large-Scale Audio Dataset for Digital COVID-19 Detection". In *Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS) Datasets and Benchmarks Track*, August 2021.
- [35] Xia, T., Han, J., Qendro, L., Dang, T., & Mascolo, C. (2021). Uncertainty-Aware COVID-19 Detection from Imbalanced Sound Data. *Interspeech 2021*.
- [36] Deboshree B., Dang, T., Sethu, V., and Ambikairajah, E., and Sarith Fernando, (2019), "A Novel Bag-of-Optimised-Clusters Front-End for Speech based Continuous Emotion Prediction", *Affective Computing and Intelligent Interaction (ACII)*, 2019.
- [37] Ouyang A., Dang, T., Sethu, V., and Ambikairajah, E., (2019), "Speech Based Emotion Prediction: Can a Linear Model Work?", *Proc. Interspeech 2019*.
- [38] Gamage. Kalani, Dang, T., Sethu, V., Epps, J., and Ambikairajah, E., (2018), "Speech-based Continuous Emotion Prediction by Learning Perception Responses related to Salient Events: A Study based on Vocal Affect Bursts and Cross-Cultural Affect in AVEC 2018", In *Proceedings of the 8th International Workshop on Audio/Visual Emotion Challenge*, in conjunction with *ACM MM*, 2018.
- [39] Dang, T., Sethu, V., and Ambikairajah, E., (2018), "Dynamic multi-rater Gaussian Mixture Regression incorporating temporal dependencies of emotion uncertainty using kalman filters", *ICASSP 2018*.
- [40] Dang, T., Sethu, V., Epps, J. and Ambikairajah, E.,(2017),"An investigation of Emotion Prediction Uncertainty Using Gaussian Mixture Regression", *Interspeech 2017*.
- [41] Dang, T., Stasak, B., Huang, Z., Jayawardena, S., Atcheson, M., Hayat, M., Le, P., Sethu, V., Goecke, R. and Epps, J., (2017),"Investigating Word affect Features and Fusion of Probabilistic Predictions Incorporating Uncertainty in AVEC 2017", In *Proceedings of the 7th International Workshop on Audio/Visual Emotion Challenge*, in conjunction with *ACM MM*, 2017.
- [42] Dang, T., Sethu, V., and Ambikairajah, E. ,(2016),"Factor Analysis Based Speaker Normalisation for Continuous Emotion Prediction", *Interspeech 2016*.
- [43] Huang, Z., Stasak, B., Dang, T., Wataraka Gamage, K., Le, P., Sethu, V., and Epps, J., (2016),"Staircase Regression in OA RVM, Data Selection and Gender Dependency in AVEC 2016", In *Proceedings of 6th International Workshop on Audio/Visual Emotion Challenge*, in conjunction with *ACM MM*, 2016.
- [44] Huang, Z., Dang, T., Cummins, N., Stasak, B., Le, P., Sethu, V., and Epps, J., (2015), "An investigation of annotation delay compensation and output-associative fusion for multi-modal continuous emotion prediction", In *Proceedings of the 5th International Workshop on Audio/Visual Emotion Challenge*, in conjunction with *ACM MM*, 2015.

## PROFESSIONAL ACTIVITIES

### Talks and Seminars:

- Invited talk on 'Machine learning for mobile health' at School of Computer Science, UNSW, 2024.
- Invited talk on 'Machine learning for mobile health' at School of Biomedical Engineering, University of Sydney, 2024.
- Invited talk on 'Machine learning for mobile health via audio' at South China Normal University, China, 2023.
- Invited talk on 'COVID -19 Disease Progression Prediction and Forecasting via Audio: A Longitudinal Study' by Women@CL at the University of Cambridge, UK, 2022.
- Invited talk on 'Computational modeling of ambiguous emotion' in AFAR Lab at the University of Cambridge, 2022.
- Invited talk on 'Machine Learning in Mobile Health via Audio: bridging the gap between AI and healthcare' in UCLIC at the University College London, 2022.
- Invited talk on 'Speech-based Emotion Prediction' at Tsinghua University, China, 2020

## Organizing and Technical Program Committee:

- Co-chair: Industry Perspectives at MobileHCI 2024
- Workshop co-organizer: WellComp Workshop 2024 in UbiComp
- Tutorial co-organizer: Wearable Eye and Audio for Affect Analysis at ACII 2023
- Tutorial co-organizer: An Introduction to Wearable Eye and Speech for Affect Analysis at ICMI 2023
- Workshop co-organizer: WellComp Workshop 2023 in UbiComp
- Social Media Co-chair: INTERSPEECH 2026
- AAAI 2023, Senior PC
- IEEE International Conference on Distributed Computing Systems (ICDCS), 2022
- Earable Computing (EarComp) in conjunction with UbiComp, 2022
- The AAAI-20 Workshop on Affective Content Analysis (AFFCON), 2020
- Asia Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC 2020)
- Audio/Visual Emotion Challenge and Workshop (AVEC), 2018 and 2019
- 17th Speech Science and Technology Conference (SST 2018), 2018
- International Conference on Affective Computing & Intelligent Interaction (ACII), 2022

## Reviewers:

- 20+ Journals: ACM Health, JMIR Ageing, Rapid Reviews, IEEE TAC, IEEE TASLP, IEEE TIFS, IEEE TETCI, JASA, IMWUT, Speech Communications, Computer Speech & Language, etc.
- 10+ Conferences: NeurIPS, IJCAI, ICASSP, APSIPA, ACII, IEEE SLT, et

## SUPERVISIONS AND TEACHING

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### Supervision

#### Ph.D.

- Siyi Wang, University of Melbourne (Incoming): primary supervision with Prof. James Bailey.
- Jian Xiang, UNSW (Incoming): co-supervision with A/Prof. Vidhya Sethu.
- Shujie Li, University of Melbourne (Incoming): co-supervision with A/Prof. Jianzhong Qi.
- Zheng Nan, UNSW (2021-): joint-supervised with A/Prof. Vidhya Sethu and A/Prof. Beena Ahmed.
- Jingyao Wu, UNSW (2020-2024): co-supervision with A/Prof. Vidhya Sethu and Prof. Eliathamby Ambikairajah. [*Postdoc Fellowship at MIT*]

#### M.Sc. and B.Eng

- Feixiang Zheng, University of Melbourne (2024-)
- Jiaheng Dong, University of Melbourne (2024-)
- Xuanang Li, University of Melbourne (2024-)
- Xin Hong, University of Melbourne (2024-)
- Jule Valendo Halim, University of Melbourne (2024-)
- Tom Quinnell, University of Cambridge (2021)
- Haobing Zhu, Yang Yu, Jinhao Gu, Anubhuti Gupta, UNSW (2020)
- Anda Ouyang, UNSW (2018).
- Mo Li, UNSW (2018)

### Mentoring

- Kayla Butkow, Ph.D., University of Cambridge (2021-2023)
- Tong Xia, Ph.D., University of Cambridge (2021-2023) -> [*Postdoc at University of Cambridge*]
- Yu Wu, Ph.D., University of Cambridge (2022-)
- Sotirios Vavaroutas, Ph.D., University of Cambridge (2022)

### Teaching

- Machine Learning for Health Applications (~160 students, postgraduate course)
- Introduction to Machine Learning (~250 students, postgraduate course)
- Speech Processing and Machine Learning (~25 students, postgraduate course)
- Digital Signal Processing (~15-40 students, undergraduate course)
- Strategic Leadership & Ethics (~20 students; postgraduate course)
- Electrical Circuits (~80 students, undergraduate course)
- Design Proficiency (~60 students, undergraduate course)