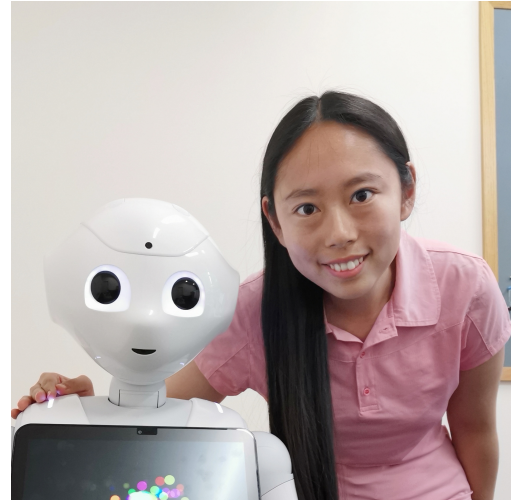# Dr Leimin Tian

Research Fellow

[Robotics](), ECSE, Engineering
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Monash University

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Research Interests

Affective Computing, Human-Robot Interaction, Human-Centered AI, Multimodal Behavioural Analytics, Social Robotics, Dialogue Systems, Speech Processing, Natural Language Processing, Digital Health

Education

- Ph.D. in Informatics. The University of Edinburgh. 2013–2018.

    - *Thesis:* "Recognizing Emotions in Spoken Dialogue with Acoustic and Lexical Cues"
    - *Supervisors:* Prof Johanna D. Moore and Dr Catherine Lai

- M.Sc. in Artificial Intelligence (*with Distinction*). The University of Edinburgh. 2012–2013.

    - *Dissertation:* "Emotion Recognition using Feature-Level Fused Audio-Visual Data"
    - *Supervisors:* Prof Johanna D. Moore and Dr Catherine Lai

- B.Eng. in Artificial Intelligence. Beijing University of Posts and Telecommunications. 2008–2012.

    - *Dissertation:* "An Application of Audio-Visual Emotion Recognition on the NAO robot"
    - *Supervisors:* Prof Xiaojie Wang and Dr Yongbin Liu

Grants and Awards

- Monash University and Osaka University Research Exchange Grant. Jun. 2022–Jun. 2023. JPY 1M.

    - *Project:* "RoboWell Coach: Investigating the influence of robot appearance and cultural context in instructing mindfulness meditations"
    - *Investigators:* Dr Leimin Tian, Dr Nicole Robinson, Dr Takahisa Uchida, Dr Hidenobu Sumiok, Prof Dana Kulić, Prof Hiroshi Ishiguro

- Monash University Data Future Institute Seed Grant. Aug. 2021–Aug.2022. AUD 50K.

    - *Project:* "Transforming measurement of how unsafe someone feels when bike riding"

- *Investigators:* Dr Ben Beck, Prof Dana Kulić, Dr Akansel Cosgun, Dr Leimin Tian, Dr Joanne Caldwell Odgers

- Monash University Data Future Institute Seed Grant. Jan. 2020–Dec.2021. AUD 50K.

  - *Project:* "Understanding Robots in Public Spaces: Interdisciplinary Insights for Public Policy"
  - *Investigators:* A/Prof Shanti Sumartojo, Prof Dana Kulić, Dr Leimin Tian, Prof Michael Mintrom

- Monash University Faculty of IT Early Career Researcher Grant. July 2019–Aug.2020. AUD 13K.

  - *Project:* "Developing a Robot Teleoperation Framework for Simulation Studies"
  - *Investigator:* Dr Leimin Tian

- Best Reviewer Awards (top 5% of reviewers) at ICMI 2021

- Multiple "AAAC researcher of the day" during 2018-19, when the Association for the Advancement of Affective Computing (AAAC) held this selection for highlighting its members on the website.

- Fiorella De Rosis Award for the best Doctoral Consortium paper at the sixth International Conference on Affective Computing and Intelligent Interaction (ACII 2015).

- Full PhD scholarship funded by the University of Edinburgh.

Work Experiences

- *Post-doctoral Research Fellow.* Monash University. 23rd July 2018–Present.

  - Acting director of Monash Robotics. Jan 2023–June 2023.
  - Research Fellow at the Human-Robot Interaction group, Monash Robotics, Faculty of Engineering. Mar. 2020–Present.
  - Research Fellow at the Human-Centred AI group, Faculty of IT. July 2018–Mar. 2020.

- *Research Fellow.* University of Edinburgh. 1st Apr. 2017–30th Jun 2017.

  - *Toyota Conversational Agent Project:* Integrated the multimodal emotion recognition model developed in my PhD to a dialog system aimed at encouraging social interaction and physical activities of elderly users.

- *Consultant.* EmoTech Ltd. 19th Sep. 2016–19th Dec. 2016.

  - *AI of Emotion Project:* Designed and developed the emotion recognition, emotional interaction modeling, and emotion synthesis modules of Olly, a domestic personal assistant robot.

Teaching and Supervision

- *Co-instructor* of ECE4078/5178 Intelligent Robotics (4th year elective and master's course): Monash University. Aug–Nov 2020/2021.

- Co-supervision of PhD projects:

  - Sanjeev Nahulanthran: "Generating human-centered explanation for a social robot capable of multimodal emotion recognition". Monash University. Aug 2022–Present.

- – Shujie Zhou: "Achieving context-aware and adaptive intelligent agents by learning from interaction". Monash University. Jan 2022–Present.
  – Subra Muthusamy: "Multimodal Analysis of Patients with Epileptic Seizure and Psychogenic Non-Epileptic Seizure". Monash Health. Feb 2020–Present.
  – Chathurika Palliya Guruge: "Designing Multimodal Interfaces for Early Diagnosis of Dementia". Monash University. Feb 2019–Feb 2020.

- *Supervisor* of Master thesis (4 completed), Honor's thesis (1 completed), summer research internships (2 completed), and final year projects (11 completed): Monash University. 2019–Present.

- *Supervisor* of MSc dissertations (3 completed): The University of Edinburgh. 2016–2017.

- *Lead author and developer* of an interactive guide to HRI study methodology. 2022

Technical Skills

- *Programming languages:* Python (primary), MATLAB, HTML

- *Robotic platforms:* Pepper, NAO, Cozmo, Fetch

- *Machine learning and deep learning:* Keras, PyTorch, TensorFlow, Scikit-Learn, R, WEKA, SPSS

- *Cloud platforms:* Amazon Web Services, Google Cloud

- *Signal processing and annotation:* OpenFace, OpenPose, OpenSMILE, MediaPipe, ELAN, MTurk

- *Other:* ROS, Linux, LaTeX

Services

- *Regular reviewer*: ACII, HRI, CHI, ICMI, ICSR, IROS, and RO-MAN conferences; IEEE Transactions on Affective Computing, ACM Transactions on Human-Robot Interaction.

- *Associate editor* at RO-MAN 2020/2021/2022/2023.

- *Co-editor of journal special issues*:

  – Imperfect Human-Robot Interaction, Frontiers in Robotics and AI
  – Present and Future of Socially Assistive Robotics, MDPI Machines
  – Social Interaction with More than One Robot, Taylor & Francis Advanced Robotics

- *Organizing committee member*: ACII 2019/2021/2022, ICMI 2020.

- *Workshop organizer:*

  – Affective Human-Robot Interaction, ACII 2022/2023
  – Multimodal Affect and Aesthetic Experience, ICMI 2020/2021/2022/2023
  – Artificial Intelligence in Affective Computing, IJCAI 2020
  – Social Robotics Workshop. 12th Aug. 2019.

- Committee Member:

  – Association for the Advancement of Affective Computing. Feb. 2018–Present.
  – Monash University Faculty of IT Early Career Academic committee. Feb. 2019–Feb. 2020.
  – British Science Association (Edinburgh Branch). Sep. 2012–Jun. 2018.

Public Engagement and Media Presence

- [Meet a Humanoid Robot](). 1st May. 2021, interactive exhibition at Melbourne Knowledge Week.

- [Robotics Logics of Public Space in the COVID Pandemic](). 13th Aug. 2020, Mediapolis.

- [She's Building a Robot: an Interview with Mick Liubinskas](). 15th July 2019.

- [Affective Computing: What We Do and Do Not Know](). 22nd Nov. 2017, Emotech Ltd & Cocoon Networks, London, UK.

- [Girls in Tech]: in [English] and in [Mandarin]. 8th Mar. 2017

Full Publication List

Book

1. **Leimin Tian**, Sharon Oviatt, Michal Muszynski, Brent Chamberlain, Jennifer Healey, and Akane Sano. *Applied Affective Computing*. ACM Books, Morgan & Claypool, 2022

Journal articles

1. Shanti Sumartojo, Robert Lundberg, Dana Kulić, **Leimin Tian**, Pamela Carreno-Medrano, Michael Mintrom, Daniele Lugli, and Aimee Allen. The robotic production of spatiality: Predictability, partitioning, and connection. *Transactions of the Institute of British Geographers*, 48(1):56–68, 2023

2. Dewi Tojib, Elahe Abdi, **Leimin Tian**, Liana Rigby, James Meads, and Tanya Prasad. What's best for customers: Empathetic versus solution-oriented service robots. *International Journal of Social Robotics*, pages 1–13, 2023

3. **Leimin Tian** and Sharon Oviatt. A taxonomy of social errors in human-robot interaction. *ACM Transactions on Human-Robot Interaction*, 10(2):1–32, 2021

4. Michael Mintrom, Shanti Sumartojo, Dana Kulić, **Leimin Tian**, Pamela Carreno-Medrano, and Aimee Allen. Robots in public spaces: implications for policy design. *Policy Design and Practice*, pages 1–16, 2021

5. Shanti Sumartojo, Robert Lundberg, **Leimin Tian**, Pamela Carreno-Medrano, Dana Kulić, and Michael Mintrom. Imagining public space robots of the near-future. *Geoforum*, 124:99–109, 2021

6. Enrique Coronado, Dominique Deuff, Pamela Carreno-Medrano, **Leimin Tian**, Dana Kulić, Shanti Sumartojo, Fulvio Mastrogiovanni, and Gentiane Venture. Towards a modular and distributed end-user development framework for human-robot interaction. *IEEE Access*, 9:12675–12692, 2021

7. Michal Muszynski, **Leimin Tian**, Catherine Lai, Johanna Moore, Theodoros Kostoulas, Patrizia Lombardo, Thierry Pun, and Guillaume Chanel. Recognizing induced emotions of movie audiences from multimodal information. *IEEE Transactions on Affective Computing*, 2019

Conference and workshop papers

1. **Leimin Tian**, Kerry He, Shiyu Xu, Akansel Cosgun, and Dana Kulić. Crafting with a robot assistant: Use social cues to inform adaptive handovers in human-robot collaboration. In *Proceedings of the 2023 ACM/IEEE International Conference on Human-Robot Interaction*, HRI '23, pages 252–260. ACM, 2023

2. Yuanchao Li, Koji Inoue, **Leimin Tian**, Changzeng Fu, Carlos Ishi, Hiroshi Ishiguro, Tatsuya Kawahara, and Catherine Lai. I know your feelings before you do: Predicting future affective reactions in human-computer dialogue. *arXiv preprint arXiv:2303.00146 (accepted at CHI 2023 LBR)*, 2023

3. Theodoros Kostoulas, Michal Muszynski, **Leimin Tian**, Edgar Roman-Rangel, Theodora Chaspari, and Panos Amelidis. Multimodal affect and aesthetic experience. In *INTERNATIONAL CONFERENCE ON MULTIMODAL INTERACTION*, pages 797–798, 2022

4. **Leimin Tian**, Pamela Carreno-Medrano, Aimee Allen, Shanti Sumartojo, Michael Mintrom, Enrique Coronado Zuniga, Gentiane Venture, Elizabeth Croft, and Dana Kulić. Redesigning human-robot interaction in response to robot failures: A participatory design methodology. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*, pages 1–8, 2021

5. Luke Mckenzie-Mcharg, Dana Kulić, and **Leimin Tian**. Discrepancies between designs of robot communicative styles and their perceived assertiveness. In *2021 30th IEEE International Conference on Robot & Human Interactive Communication*, pages 1045–1052. IEEE, 2021

6. Shuyi Cao, Lizhen Qu, and **Leimin Tian**. Causal relationships between emotions and dialog acts. In *2021 9th International Conference on Affective Computing and Intelligent Interaction*, pages 1–8. IEEE, 2021

7. Michal Muszynski, Edgar Roman-Rangel, **Leimin Tian**, Theodoros Kostoulas, Theodora Chaspari, and Panos Amelidis. Workshop on multimodal affect and aesthetic experience. In *Proceedings of the 2021 International Conference on Multimodal Interaction*, pages 868–869, 2021

8. **Leimin Tian**, Pamela Carreno-Medrano, Shanti Sumartojo, Michael Mintrom, Enrique Coronado, Gentiane Venture, and Dana Kulić. User expectations of robots in public spaces: A co-design methodology. In *International Conference on Social Robotics*, pages 259–270. Springer, 2020

9. Shujie Zhou and **Leimin Tian**. Would you help a sad robot? influence of robots' emotional expressions on human-multi-robot collaboration. In *2020 29th IEEE International Conference on Robot and Human Interactive Communication*, pages 1243–1250. IEEE, 2020

10. Catherine Lai, Beatrice Alex, Johanna D Moore, **Leimin Tian**, Tatsuro Hori, and Gianpiero Francesca. Detecting topic-oriented speaker stance in conversational speech. In *INTERSPEECH Conference 2019*, pages 46–50. International Speech Communication Association, 2019

11. **Leimin Tian**, Catherine Lai, and Johanna Moore. Polarity and intensity: the two aspects of sentiment analysis. In *Proceedings of Grand Challenge and Workshop on Human Multimodal Language at ACL 2018*, pages 40–47, 2018

12. Jennifer Williams, Ramona Comanescu, Oana Radu, and **Leimin Tian**. DNN multimodal fusion techniques for predicting video sentiment. In *Proceedings of Grand Challenge and Workshop on Human Multimodal Language at ACL 2018*, pages 64–72, 2018

13. **Leimin Tian**, Johanna D Moore, and Catherine Lai. Recognizing emotions in spoken dialogue with acoustic and lexical cues. In *Proceedings of the 1st ACM SIGCHI International Workshop on Investigating Social Interactions with Artificial Agents*, pages 45–46. ACM, 2017a

14. **Leimin Tian**, Michal Muszynski, Catherine Lai, Johanna D Moore, Theodoras Kostoulas, Patrizia Lombardo, Thierry Pun, and Guillaume Chanel. Recognizing induced emotions of movie audiences: Are induced and perceived emotions the same? In *2017 International Conference on Affective Computing and Intelligent Interaction*, pages 28–35. IEEE, 2017b

15. **Leimin Tian**, Johanna Moore, and Catherine Lai. Recognizing emotions in spoken dialogue with hierarchically fused acoustic and lexical features. In *2016 IEEE Spoken Language Technology Workshop*, pages 565–572. IEEE, 2016

16. **Leimin Tian**, Johanna D Moore, and Catherine Lai. Recognizing emotions in dialogues with acoustic and lexical features. In *2015 International Conference on Affective Computing and Intelligent Interaction*, pages 737–742. IEEE, 2015c

17. **Leimin Tian**, Johanna D Moore, and Catherine Lai. Emotion recognition in spontaneous and acted dialogues. In *2015 International Conference on Affective Computing and Intelligent Interaction*, pages 698–704. IEEE, 2015b

18. **Leimin Tian**, Catherine Lai, and Johanna Moore. Recognizing emotions in dialogues with disfluencies and non-verbal vocalisations. In *Proceedings of the 4th Interdisciplinary Workshop on Laughter and Other Non-verbal Vocalisations in Speech*, volume 14, page 15, 2015a

19. Johanna D Moore, **Leimin Tian**, and Catherine Lai. Word-level emotion recognition using high-level features. In *International Conference on Intelligent Text Processing and Computational Linguistics*, pages 17–31. Springer, Berlin, Heidelberg, 2014

References

Available upon request.