Le Fang

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RESEARCH INTERESTS

My research sits at the intersection of **human-computer interaction, ubiquitous computing and psychology**, and asks how large language models can **make humans more human**: helping them understand themselves, care for their wellbeing and connect with one another. I study what LLMs can infer about people from their **everyday digital traces** (smartphone sensor data, including screen text), where those inferences go wrong, and what changes when models enter the communication between people.

EDUCATION

The University of Melbourne — Ph.D. in Engineering and IT — Oct 2023 – present

- Research area: human-computer interaction; thesis submission expected April 2027
- Advisors: Prof. Vassilis Kostakos, A/Prof. Jorge Goncalves, Dr. Hong Jia

Northwestern University — M.S. in Computer Science — Sep 2020 – Dec 2022

- GPA 3.83 / 4.00

Pennsylvania State University — B.S. in Information Sciences & Technology — Aug 2014 – Dec 2018

- GPA 3.72 / 4.00; Cum Laude; Schreyer Honors Scholar

RESEARCH EXPERIENCE

Visiting Researcher, The University of Tokyo — IIS Lab, host: Prof. Koji Yatani — Jun 2026 – Jul 2026

- Member of ASPIRE-MWI (Mental Well-being Intelligence), a JST ASPIRE-funded international research community on data-driven mental well-being, collaborating on LLMs and mental health.
- Led a scoping review of LLM-mediated communication in human-human relationships (364 peer-reviewed papers), mapping which relationships LLMs are entering and with what consequences, using an AI-first review process with researcher verification.

PhD Research: Personalising LLMs with Passive Sensing — The University of Melbourne — Oct 2023 – present

- Built an LLM-based pipeline for digital phenotyping research that turns passively collected smartphone data (sensor streams and on-screen text) into text an off-the-shelf LLM can read, and evaluated it on **privacy** (which personal data, and how much of it, the model requires) and **alignment** (how effectively passive sensing data brings the model's inferences about a person into agreement with that person's self-reports).
- Privacy: a sensor ablation with 30 participants (11 sensors, 1–21 days of data) showed that an LLM can partly infer Big Five personality, that about three days of data is the most informative period, and that location and keyboard data can be withheld without meaningful loss.
- Alignment: screen text from 20 participants helped an LLM personalise 1,179 recommendations for 15 everyday goals only for goals pursued on the phone, not off-screen goals such as physical health; with 17 weeks of data from 83 participants, an LLM predicted weekly affect less accurately than participants' own previous reports and with a systematic positivity bias (history-based baselines, ordinal metrics, cluster-bootstrap confidence intervals).

AWARE Digital Phenotyping Platform — The University of Melbourne — Sep 2023 – present

- Contribute features and performance improvements to the open-source mobile sensing platform; built the analysis pipeline used across multiple longitudinal studies.
- Built Aware Narrator, which converts raw sensor data into human-readable narrative diaries (github.com/awareframework/aware_narrator).

PUBLICATIONS

1. **Fang, L.**, Zhang, T., Brockmeier, L. C., Zhang, S., Fei, R., Ma, Y., Teng, S., D'Alfonso, S., Koval, P., Jia, H., Goncalves, J., & Kostakos, V. (2026). Large language models rate human happiness higher than humans do. *npj Digital Public Health*. https://doi.org/10.1038/s44482-026-00049-z
2. Ma, Y., Govers, J., **Fang, L.**, Zhang, S., Hu, Y. O., Yi, X., & Goncalves, J. (2026). "Black Mirror?": Public sensemaking of AI-powered lifelogging wearables. In *Companion of the 2026 ACM International Joint Conference on Pervasive and Ubiquitous Computing and the 2026 ACM International Symposium on Wearable Computers (UbiComp/ISWC '26)*. ACM.
3. **Fang, L.**, Zhang, S., Jia, H., Goncalves, J., & Kostakos, V. (2024). ScreenTK: Seamless detection of time-killing moments using continuous mobile screen text and on-device LLMs. In *Companion of the 2024 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp '24)*. ACM. https://doi.org/10.1145/3675094.3677547
4. Zhang, T., Zhang, S., **Fang, L.**, Jia, H., Kostakos, V., & D'Alfonso, S. (2024). AutoJournaling: A context-aware journaling system leveraging MLLMs on smartphone screenshots. In *EIFCom '24: 1st ACM Workshop on Mobile Computing with Efficient and Interactive Foundation Models*. ACM. https://doi.org/10.1145/3636534.3698122 **Best Presentation Award.**
5. Zhang, S., Ma, Y., **Fang, L.**, Jia, H., D'Alfonso, S., & Kostakos, V. (2024). Enabling on-device LLMs personalization with smartphone sensing. In *Companion of the 2024 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp '24)*. ACM. https://doi.org/10.1145/3675094.3677545
6. Calvillo, J., **Fang, L.**, Cole, J., & Reitter, D. (2020). Surprisal predicts code-switching in Chinese-English bilingual text. In *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Association for Computational Linguistics. https://doi.org/10.18653/v1/2020.emnlp-main.330

TEACHING AND SUPERVISION

- **Head Tutor**, Mobile Computing, The University of Melbourne 2026
- **Casual Tutor**, The University of Melbourne — Mobile Computing, Media Computation, UI Development (FEIT); Statistical Learning (Melbourne Business School) 2024 – present
- **Research Project Supervisor**, Master of Computing and Information Systems project "Bilingual Social Media User Behavior Patterns" 2024

ACADEMIC SERVICE

- **Social Chair**, EIFCOM 2026: International Workshop on Mobile Systems with Efficient Foundation Models 2026
- **Reviewer**, ACM CHI (Posters 2026; Late-Breaking Work 2024); ACM *IMWUT* (2026); *PLOS Digital Health* (2026)
- **Session Host**, 3-Minute Paper session, 9th CIS Doctoral Colloquium, The University of Melbourne 2023
- **Volunteer**, University of Melbourne Open Day 2024

SCHOLARSHIPS AND HONORS

- Melbourne Research Scholarship, The University of Melbourne 2023 – present
- Schreyer Honors Scholar, Pennsylvania State University 2014 – 2018

SKILLS

- **Methods**: LLM-based system design, agentic workflows, multimodal LLMs, on-device deployment of quantized LLMs, mobile passive sensing, analysis of longitudinal field data, experimental design and statistical modeling
- **Programming**: Python (PyTorch, Hugging Face Transformers, NumPy, Pandas), Java / Android, R, JavaScript, SQL
- **Languages**: English (proficient), Mandarin (native)