Yuwei (Evelyn) Zhang

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EDUCATION

University of Cambridge **Cambridge, UK**

PhD *in Computer Science, supervised by Prof. Cecilia Mascolo* *2023 – 2026 (expected)*

- Research on generalizable and multimodal foundation models for mobile and wearable health
- Funded jointly by Cambridge Trust and Nokia Corporation

MPhil *in Advanced Computer Science, supervised by Prof. Cecilia Mascolo* *2022 – 2023*

- Graduated with distinction and awarded the **Examiners' Prize** for a Highly Commended MPhil Project
- Funded by Chiang Chen Overseas Fellowship

Fudan University **Shanghai, China**

BSc *in Computer Science* *2018 – 2022*

- Graduated with distinction (Major GPA: **3.9/4.0**, School Rank: **2/153)**

SELECTED PUBLICATIONS

(# denotes co-first author)

1. SensorLM: Learning the Language of Wearable Sensors.
   Y Zhang#, K Ayush#, S Qiao, A.A Heydari, G Narayanswamy, M Xu, … & Y Yang.
   Advances in Neural Information Processing Systems (NeurIPS 2025).
2. Towards Open Respiratory Acoustic Foundation Models: Pretraining and Benchmarking.
   Y Zhang#, T Xia#, J Han, Y Wu, G Rizos, Y Liu, M Mosuily, J Chauhan, C Mascolo.
   Advances in Neural Information Processing Systems (NeurIPS 2024).
3. RespLLM: Unifying Audio and Text with Multimodal LLMs for Generalized Respiratory Health Prediction.
   Yuwei Zhang, Tong Xia, Aaqib Saeed, Cecilia Mascolo.
   Machine Learning for Health (ML4H), 2024, PMLR.
4. Uncertainty-Aware Personalized Federated Learning for Realistic Healthcare Applications.
   Yuwei Zhang, Tong Xia, Abhirup Ghosh, Cecilia Mascolo.
   Machine Learning for Health (ML4H), 2024, PMLR.
5. Structural Hole Theory in Social Network Analysis: A Review.
   Zihang Lin#, **Yuwei Zhang**#, Qingyuan Gong, Yang Chen, Atte Oksanen, Aaron Yi Ding.
   IEEE Transactions on Computational Social Systems (TCSS).

RESEARCH EXPERIENCE

Sensor-Language Foundation Models (SensorLM) **Google**

Advisors: Dr. Yuzhe Yang, Dr. Xin Liu, and Dr. Daniel McDuff *Mar. 2025 – Aug. 2025*

- Developed SensorLM, a family of multimodal foundation models pre-trained on unprecedented 60 million hours of wearable sensor data from 100K individuals to interpret health and activity signals
- Proposed a hierarchical caption generation pipeline addressing the lack of paired text for sensor data, enabling large-scale sensor-language alignment pretraining (using objectives such as CLIP, CoCa and SigLIP)
- Enabled and evaluated new model capabilities, including zero-shot classification, cross-modal retrieval and sensor captioning, achieving state-of-the-art performance on diverse tasks
- Paper published in NeurIPS 2025

Multimodal LLMs for Generalized Respiratory Health Prediction **University of Cambridge**

Advisor: Prof. Cecilia Mascolo *Jul. 2024 – Sep. 2024*

- Pioneered the use of LLMs to jointly model patient history and audio data for respiratory health screening
- Extended LLMs for audio-text fusion ability and fine-tuned 10 different LLMs using Low Rank Adapters (LoRA)
- Curated a large instruction-tuning set; conducted experiments demonstrating notable improvement and strong zero-shot abilities (4.6% improvement on trained tasks and 7.9% on 5 unseen tasks)
- Paper published in ML4H 2024 and presented at NeurIPS'24 AIM-FM Workshop

OPERA: Pretraining and Benchmarking Open Respiratory Acoustic Models **University of Cambridge**
Advisor: Prof. Cecilia Mascolo *Sep. 2023 – Jul. 2024*

- Curated large-scale respiratory datasets from various sources to create a robust dataset for model pre-training
- Pre-trained three open-source respiratory acoustic models using self-supervised learning (CL and MAE)
- Established a comprehensive benchmark of 19 health condition inference and lung function estimation tasks; conducted experiments where OPERA models outperform general audio models on 16 out of the 19 tasks
- Paper published in NeurIPS 2024

INTERNSHIP EXPERIENCE

Student Researcher **Google**
Advisors: Dr. Yuzhe Yang, Dr. Dimitris Spathis, Dr. Xin Liu, and Dr. Daniel McDuff *Mar. 2025 – present*

- Collaborated with a team of researchers on large-scale self-supervised learning models, multimodal large language models, and agent systems for analyzing wearable sensor data in health applications
- First-authored paper published at NeurIPS 2025 and co-authored papers under submission.

Research Intern **Shanghai Artificial Intelligence Laboratory**
Advisor: Dr. Jingjing Qu *Mar. 2022 – Sep. 2022*

- Conducted a global survey of digital contact tracing apps and policies; analyzed social media data using LDA and social network analysis, revealing diverse stakeholder impacts. Paper published in *Big Data & Society*.

Research Assistant **Fudan University**
Advisor: Prof. Yang Chen *Sep. 2019 – Jun. 2022*

- Analyzed spatial and temporal patterns of mobile user behaviors and mood patterns; developed LSTM and GCN-based models for app usage prediction; reviewed structural hole theory in social network analysis.

LEADERSHIP EXPERIENCE

Women@CL Committee **University of Cambridge**

- Treasurer (2023-2024), Tech Event Chair (2024-2026)
- Organizing seminars and events highlighting and supporting women and non-binary individuals' achievements in computing research, leadership and enterprise

Student Hall Manager **Fudan University**

- Led a 40-member student volunteer team as Vice Director of the center (2020-2021)

Student Union, School of Computer Science **Fudan University**

- Led the video team, producing popular films, organizing events, and coordinating student teams (2019)

TEACHING AND MENTORING

- **Part II Project Supervisor:** *AI Agents for Mobile Health Data Analysis* 2025
- **MPhil Project Supervisor:** *Federated Learning for Acoustic Foundation Models for Healthcare* 2024
- **Teaching Assistant:** *Mobile Health* 2024 – 2026
  Delivered coursework on ML for mobile health, enhancing students' understanding of new technical concepts.
- **Undergraduate Supervisor:** *Machine Learning and Real-world Data* 2023 – *2025*
  Supervised and mentored undergraduate students to help them understand ML methods in real-world contexts.

SKILLS

- **Knowledgeable In**: Machine Learning, Deep Learning, AI for Health, Multimodal LLM, Self-supervised Learning
- **Programming**: Python (PyTorch, Keras, scikit-learn), Swift, Java, MATLAB, C/C++, Go, HTML, CSS

SELECTED AWARDS

- Examiners' Prize for a Highly Commended MPhil Project Report (**Top 2**) 2023
- Student Travel Award, KDD 2023 2023
- Chiang Chen Overseas Fellowship (**10 awardees yearly**) 2022
- Shanghai Scholarship (**Top 1%**) 2021
- Chinese National Scholarship (**Top 1%**) 2019 & 2020
- Freshman Admission Scholarship of Tengfei College, Fudan University (**Top 2%**) 2018