Xiangming Gu

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Education

- **National University of Singapore** — Singapore
  PhD candidate, Integrative Sciences and Engineering Programme — *2021/08 – Present*
  Majored in Computer Science, Advisor: Prof. Ye Wang, GPA: 4.80/5.0
- **Tsinghua University** — Beijing, China
  B.E. in Electronic Engineering, B.S. in Finance, GPA: 3.80/4.0 — *2017/08 – 2021/06*

Experience

- **Sea AI Lab (Shoppee's parent company)** — Singapore
  Research Intern — *2023/03 – Present*
  - **Host**: *Dr. Tianyu Pang and Dr. Chao Du.*
  - **Activity**: *Conduct research projects on (i) memorization in diffusion models; (ii) infectious jailbreak on (multimodal) large language models based multi-agent systems; (iii) interpretability and bias of large language models.*
- **National University of Singapore** — Singapore
  Exchange Student — *2020/01 – 2020/05*
  - **Host**: *Department of Electrical and Computer Engineering*
  - **Activity**: *Take undergraduate courses with a GPA of 4.88/5.00.*

Research Interests

- **Machine Learning**: Fundamental research for generative models, (multimodal) large language models and AI agents.
- **Singing/Speech**: Application of machine learning, e.g. multimodal learning, multi-distribution learning (domain adaptation, fairness), to singing/speech techniques.

Preprints

* denotes equal contribution, †denotes correspondence.

1. **Xiangming Gu**, Chao Du†, Tianyu Pang†, Chongxuan Li, Min Lin, Ye Wang†. On Memorization in Diffusion Models. *arXiv preprint arXiv:2310.02664*, 2023

Publications (Google Scholar)

* denotes equal contribution, †denotes correspondence.

1. **Xiangming Gu***, Xiaosen Zheng*, Tianyu Pang*†, Chao Du, Qian Liu, Ye Wang†, Jing Jiang†, Min Lin. Agent Smith: A Single Image Can Jailbreak One Million Multimodal LLM Agents Exponentially Fast. *International Conference on Machine Learning.* (**ICML**), 2024.

2. **Xiangming Gu**, Longshen Ou, Wei Zeng, Jianan Zhang, Nicholas Wong, Ye Wang†. Automatic Lyric Transcription and Automatic Music Transcription from Multimodal Singing. *ACM Transactions on Multimedia Computing Communications and Applications* (**TOMM**), 2024.

3. **Xiangming Gu**, Wei Zeng, Ye Wang†. Elucidate Gender Fairness in Singing Voice Transcription. *ACM International Conference on Multimedia* (**MM**), 2023.

4. **Xiangming Gu***, Longshen Ou*, Danielle Ong, Ye Wang†. MM-ALT: A Multimodal Automatic Lyric Transcription System. *ACM International Conference on Multimedia* (**MM**), 2022. (***Oral, Top Paper Award***)

5. Hengguan Huang†, **Xiangming Gu**, Hao Wang, Chang Xiao, Hongfu Liu, Ye Wang†. Extrapolative Continuous-time Bayesian Neural Network for Predictive Streaming Domain Adaptation. *Conference on Neural Information Processing Systems* (**NeurIPS**), 2022.

6. Longshen Ou*, **Xiangming Gu***, Ye Wang†. Transfer Learning of wav2vec 2.0 for Automatic Lyric Transcription. *International Society for Music Information Retrieval Conference* (**ISMIR**), 2022.

7. Yixin Wang, Wei Wei, **Xiangming Gu**, Xiaohong Guan, Ye Wang†. Disentangled Adversarial Domain Adaptation for Phonation Mode Detection in Singing and Speech. *IEEE Transactions on Audio, Speech and Language Processing* (**TASLP**), 2023.

8. Wei Wei*, Hengguan Huang*, **Xiangming Gu**, Hao Wang, Ye Wang†. Unsupervised Mismatch Localization in Cross-Modal Sequential Data with Application to Mispronunciations Localization. *Transactions on Machine Learning Research* (**TMLR**), 2022.

9. Youze Xue, Jiansheng Chen†, **Xiangming Gu**, Huimin Ma, Hongbing Ma. Boosting Monocular 3D Human Pose Estimation with Part Aware Attention. *IEEE Transactions on Image Processing* (**TIP**), 2022.

10. Boyu Zhang, Penghui Yang, **Xiangming Gu**, Hongen Liao†. Laser Endoscopic Manipulator Using Spring-reinforced Multi-DoF Soft Actuator. In *IEEE/RSJ International Conference on Intelligent Robots and Systems* (**IROS**), also in *IEEE Robotics and Automation Letter* (**RA-L**), 2021.

Honors and Awards

- Research Incentive Award (School of Computing, National University of Singapore) 2023
- Research Achievement Award (School of Computing, National University of Singapore) 2022
- MM'22 Top Paper Award (Association for Computing Machinery) 2022
- MM'22 Student Travel Grant (Association for Computing Machinery) 2022
- President's Graduate Fellowship (National University of Singapore) 2021
- Visiting Undergraduate Student Scholarship (Tsinghua University) 2020
- Tsinghua's Friend- Zheng Geru Scholarship (Tsinghua University) 2018

Professional Services

- **Conference Reviewer**: EMNLP 2024, NeurIPS 2024, MM 2024, ECCV 2024, IJCAI 2024, ICCV 2023, AISTATS 2021
- **Journal Reviewer**: TASLP, RA-L

Teaching

- **Teaching Assistant** National University of Singapore
  CS4347/CS5647, Sound and Music Computing *Fall 2024*
- **Teaching Assistant** National University of Singapore
  CS6212, Topics in Media *Spring 2024*
- **Teaching Assistant** National University of Singapore
  CS5242, Neural Networks and Deep Learning *Spring 2023*
- **Teaching Assistant** National University of Singapore
  CS3244: Machine Learning *Fall 2022*
- **Teaching Assistant** National University of Singapore
  CS4243: Computer Vision and Pattern Recognition *Spring 2022*

Technical Skills

- **Coding**: Python, Matlab, Shell, C/C++, Html, Verilog, Assembly language, LaTeX, ...
- **Libraries**: PyTorch, Tensorflow, Huggingface, SpeechBrain, ...