

Bin Wang

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Professional Summary

LLM, NLP, Speech, and Agent-based systems form the core areas of my research. I received my Ph.D. from the University of Southern California (USC) and have since worked across leading research environments including MiroMind, A*STAR I2R, and the National University of Singapore. My work has resulted in over 40 publications in top-tier venues such as ACL, EMNLP, NAACL, and ACM KDD, along with multiple best paper awards. Key contributions include developing state-of-the-art reasoning and multimodal models, leading the national MERaLiON Audio-LLM initiative, and creating widely adopted open-source agentic frameworks. I have also mentored more than 10 junior researchers and interns, supporting their growth and enabling impactful research outcomes. I aim to continue driving high-quality research and contributing to vibrant, collaborative AI communities.

Education

University of Southern California (USC)

Doctor of Philosophy, Electrical Engineering and Computer Science
Advisor: C.-C. Jay Kuo (ACM Fellow, IEEE Fellow)

August 2017 - May 2021
Los Angeles, CA, USA

University of Electronic Science and Technology of China (UESTC)

B.Eng, Electronic Information Engineering, Rank: 2/351

September 2013 - June 2017
Chengdu, China

City University of Hong Kong (CityU)

Undergraduate Exchange Student, GPA: 4.3/4.3

September 2015 - January 2016
Hong Kong

Work Experience

MiroMind.ai

AI Research Scientist

May 2025 - Present
Singapore

Institute for Infocomm Research (I²R), A*STAR

Scientist, Tech Lead for National Multimodal LLM Project

April 2023 - April 2025
Singapore

National University of Singapore (NUS)

Research Fellow, Advisor: Haizhou Li (IEEE Fellow)

September 2021 - March 2023
Singapore

JD.com, AI Research USA

Research Intern, Advisor: Jing Huang, Guangtao Wang

May 2020 - August 2020
Mountain View, USA

University of Southern California (USC)

Research Associate, Advisor: C.-C. Jay Kuo

August 2017 - May 2021
Los Angeles, USA

Ontario Tech University

Research Intern, Advisor: Haoxiang Lang

July 2016 - October 2016
Toronto, Canada

Highlighted Projects

Deep Research Agent and AGI, MiroMind

Lead (Framework) | Team of 5-10

May 2025 - Now
Singapore, Global

- Pioneered the development of open-source agentic foundation platform **MiroFlow** and agentic foundation model **Miro-Thinker** for intelligent decision-making that combines reasoning, long-term memory, and agentic workflows to handle multi-step tasks.
- Developed model and workflow has topped in multiple highly competitive agentic benchmarks, including GAIA, HLE, BrowseComp, FutureX, and others.
- The open-source project has achieved over 600 stars within 2 months and has been deployed for internal products.
- For reasoning models, we released **MiroMind-M1** models and a survey.

Speech and Audio LLM, A*STAR, Singapore National LLM Project (S\$70 Million) | October 2023 - April 2025

(Co-)Lead (Data, Evaluation, Training) | Team of 6

Singapore

- Led the development of rigorous evaluation methodologies, including **AudioBench** and **SeaEval**, to ensure robust model performance across speech processing, language understanding, and localized applications.
- Developed open-source **MERaLiON AudioLLM**, with hands-on experience in large-scale training using over 200 H100 GPUs (over 10k model downloads each month).
- Led data cleaning, preparation, and open-sourcing of **Singlish speech understanding** datasets, designing multimodal alignment to advance audio-language modeling for real-world and industry applications (over 50k downloads each month).

Teaching Experience

Teaching Assistant | University of Southern California

Fall 2018 – Spring 2021

Mentored students and enhanced course comprehension by developing and delivering weekly lectures, tutorials, and office hours. 20 hours a week.

- **Applied and Cloud Computing for Electrical Engineers** (Graduate Level Course) (Spring 2021)
- **Applied Linear Algebra for Engineering** (Year 1-2 Undergrad.) (Fall 2020)
- **Computer Programming for Electrical Engineers** (Year 1-2 Undergrad.) (Spring 2020)
- **Introduction to Digital Signal Processing** (Year 4 Undergrad and Graduate Students.) (Spring 2019, Fall 2018)

Honors & Awards

- **Best Paper Award** (\$300), SUMEval Workshop, COLING 2025
- **Sadaoki Furui Prize Paper Award** (\$1000), APSIPA, 2024
- **Best Paper Award** (\$200), C3NLP Workshop, ACL, 2024
- **Sadaoki Furui Prize Paper Award** (\$1000), APSIPA, 2022
- **GSG Research Travel Grant**, USC, 2019
- **Starlight EEE Student** (1/600), School of Electrical Engineering, UESTC, 2017
- **Excellent Graduate of Sichuan Province** (<1%), China, 2017
- **National Scholarship**, (<2%), China, 2016
- **Tanglixin Scholarship** (¥10,000 yearly), 2016
- **National Scholarship** (<2%, ¥8000), China, 2015
- **Samsung Scholarship** (¥5000), UESTC, 2015
- **Student Leadership Award**, UESTC, 2014

Publications (15+ First Authored Publications, Full record: [Google Scholar](#))

- MiroMind Team (including **Bin Wang**, Song Bai, Lidong Bing, Carson Chen, Guanzheng Chen, Yuntao Chen, Zhe Chen, Ziyi Chen, Jifeng Dai, Xuan Dong, and others).
MiroThinker: Pushing the Performance Boundaries of Open-Source Research Agents via Model, Context, and Interactive Scaling
Technical Report, 2025 (🏆1,100+ GitHub Stars)
- Shiqian Su, Sen Xing, Xuan Dong, Muyan Zhong, **Bin Wang**, Xizhou Zhu, Yuntao Chen, Wenhui Wang, Yue Deng, Pengxiang Zhu, Ziyuan Liu, Tiantong Li, Jiaheng Yu, Zhe Chen, Lidong Bing, Jifeng Dai.
MiroFlow: Towards High-Performance, Robust, and Open-Source Reproducible Agent Framework for General Research Tasks
Under Submission, CVPR 2026 (🏆1,300+ GitHub Stars)
- Jeremy H. M. Wong, Muhammad H. M., Hardik B. Sailor, Shuo Sun, Kye Min Tan, **Bin Wang**, Qiongqiong Wang, Wenyu Zhang, Xunlong Zou, Nancy F. Chen, Ai Ti Aw.
Train Multi-Modal LLMs to Understand Diverse Speech Paralinguistics by Distilling from Teachers with Meta-Information Prompts
AAAI 2026 Workshop on Audio-Centric AI
- Wenyu Zhang, Yingxu He, Geyu Lin, Zhuohan Liu, Shuo Sun, **Bin Wang**, Xunlong Zou, Jeremy H. M. Wong, Qiongqiong Wang, Hardik B. Sailor, Nancy F. Chen, Ai Ti Aw.
Beyond Classification: Towards Speech Emotion Reasoning with Multitask AudioLLMs
ACL 2026
- Yiming Gao, **Bin Wang**, Chengwei Wei, Shuo Sun, AiTi Aw.
IFEval-Audio: Benchmarking Instruction-Following Capability in Audio-based Large Language Models
ACL 2026
- Xingxuan Li*, ..., **Bin Wang***, Zhanfeng Mo, ..., Lidong Bing.
MiroMind-M1: An Open-Source Advancement in Mathematical Reasoning via Context-Aware Multi-Stage Policy Optimization
Technical Report, 2025
- Chengwei Wei, **Bin Wang**, Jung-jae Kim, Nancy F. Chen.
Towards Spoken Mathematical Reasoning: Benchmarking Speech-based Models over Multi-faceted Math Problems
ArXiv and Under Review, 2025
- Chong Zhang*, Yue Deng*, Xiang Lin*, **Bin Wang***, Dianwen Ng, Hai Ye, Xingxuan Li, Yao Xiao, Zhanfeng Mo, Qi Zhang, Lidong Bing.
100 Days After Deepseek-R1: A Survey on Replication Studies and More Directions for Reasoning Language Models
Technical Survey, 2025
- Jeremy H. M. Wong, Muhammad Huzaifah, Hardik B. Sailor, Shuo Sun, Kye Min Tan, **Bin Wang**, Qiongqiong Wang, Wenyu Zhang, Xunlong Zou, Nancy F. Chen, Ai Ti Aw.
Diversity and Complementarity of Speech Encoders across Diverse Tasks in a Multi-modal Large Language Model
ASRU 2025

- Yizhou Peng, **Bin Wang**, Yi-Wen Chao, Ziyang Ma, Haoyang Zhang, Hexin Liu, Xie Chen, Eng Siong Chng. NTU Speechlab LLM-Based Multilingual ASR System for the Interspeech MLC-SLM Challenge 2025 MLC-SLM Challenge, Interspeech 2025
- Samuel Cahyawijaya, Holy Lovenia, ..., **Bin Wang**, ..., Peerat Limkonchotiwat. Crowdsource, Crawl, or Generate? Creating SEA-VL, a Multicultural Vision-Language Dataset for Southeast Asia ACL 2025
- Shuanghong Huang, Chong Feng, Xiang Lin, **Bin Wang**, Yuhang Guo, Ming Yan, Hao Wu. Optimizing Cross-Modality Alignment Module for Audio Large Language Models Data Intelligence, 2025
- **Bin Wang***, Xunlong Zou*, Shuo Sun, Wenyu Zhang, Yingxu He, Zhuohan Liu, Chengwei Wei, Nancy F. Chen, Ai Ti Aw. MNSC: Advancing Singlish Speech Understanding with Carefully Curated Corpora ASRU 2025
- Yingxu He*, Zhuohan Liu*, Shuo Sun*, **Bin Wang***, Wenyu Zhang*, Xunlong Zou*, Nancy F. Chen, Ai Ti Aw. MERaLiON-AudioLLM: Advancing Speech and Language Understanding for Singapore ACL 2025
- Chengwei Wei, **Bin Wang**, Jung-jae Kim, Guimei Liu, Nancy F. Chen. CoinMath: Harnessing the Power of Coding Instruction for Math LLMs ACL Findings 2025
- **Bin Wang**, Xunlong Zou, Geyu Lin, Shuo Sun, Zhuohan Liu, Wenyu Zhang, Zhengyuan Liu, Ai Ti Aw, Nancy F. Chen. AudioBench: A Universal Benchmark for Audio Large Language Models NAACL 2025
- Wenyu Zhang, Shuo Sun, **Bin Wang**, Xunlong Zou, Zhuohan Liu, Yingxu He, Geyu Lin, Nancy F. Chen, Ai Ti Aw. MoWE-Audio: Multitask AudioLLMs with Mixture of Weak Encoders IEEE ICASSP 2025
- Geyu Lin, **Bin Wang**, Zhengyuan Liu, Nancy F. Chen. CrossIn: An Efficient Instruction Tuning Approach for Cross-Lingual Knowledge Alignment SUMEval-2, COLING 2025 ( **Best Paper Award**)
- **Bin Wang**, Chengwei Wei, Zhengyuan Liu, Geyu Lin, Nancy F. Chen. Resilience of Large Language Models for Noisy Instructions EMNLP Findings 2024
- Ayrton San Joaquin, **Bin Wang**, Zhengyuan Liu, Nicholas Asher, Brian Lim, Philippe Muller, Nancy F. Chen. In2Core: Leveraging Influence Functions for Coreset Selection in Instruction Finetuning of Large Language Models EMNLP Findings 2024
- Holy Lovenia, ..., **Bin Wang**, ..., Ayu Purwarianti, Sebastian Ruder, William Tjhi. SEACrowd: A Multilingual Multimodal Data Hub and Benchmark Suite for Southeast Asian Languages EMNLP 2024
- Yan Xiao, Yaochu Jin, **Bin Wang**, Yan Zhang, Kuangrong Hao, Haizhou Li. Zero-Shot Relation Classification Through Inference on Category Attributes IEEE Transactions on Neural Networks and Learning Systems, 2024
- **Bin Wang**, Geyu Lin, Zhengyuan Liu, Chengwei Wei, Nancy F. Chen. CRAFT: Extracting and Tuning Cultural Instructions from the Wild C3NLP, ACL 2024 ( **Best Paper Award**)
- **Bin Wang***, Zhengyuan Liu*, Xin Huang, Fangkai Jiao, Yang Ding, Ai Ti Aw, Nancy F. Chen. SeaEval for Multilingual Foundation Models: From Cross-Lingual Alignment to Cultural Reasoning NAACL 2024
- Yun-Cheng Wang, Xiou Ge, **Bin Wang**, C.-C. Jay Kuo. AsyncET: Asynchronous Learning for Knowledge Graph Entity Typing with Auxiliary Relations ACM KDD 2024
- Xiou Ge, Yun-Cheng Wang, **Bin Wang**, C.-C. Jay Kuo. Knowledge Graph Embedding with 3D Compound Geometric Transformations APSIPA TSIP 2024
- Xiou Ge, Yun-Cheng Wang, **Bin Wang**, C.-C. Jay Kuo. Knowledge Graph Embedding: An Overview APSIPA TSIP 2024
- Ridong Jiang, Wei Shi, **Bin Wang**, Chen Zhang, Yan Zhang, Chunlei Pan, Jung Jae Kim, Haizhou Li. Speech-Aware Multi-Domain Dialogue State Generation with ASR Error Correction Modules DSTC11, SIGDial 2023
- **Bin Wang**, Zhengyuan Liu, Nancy F. Chen. Instructive Dialogue Summarization with Query Aggregations EMNLP 2023
- **Bin Wang**, Haizhou Li. Relational Sentence Embedding for Flexible Semantic Matching RepL4NLP, ACL 2023

- Yun-Cheng Wang, Xiou Ge, **Bin Wang**, C.-C. Jay Kuo.
GreenKGC: A Lightweight Knowledge Graph Completion Method
ACL 2023
- Xiou Ge, Yun-Cheng Wang, **Bin Wang**, C.-C. Jay Kuo.
CompoundE: Compounding Geometric Operations for Knowledge Graph Completion
ACL 2023
- Chengwei Wei, Yun-Cheng Wang, **Bin Wang**, C.-C. Jay Kuo.
An Overview on Language Models: Recent Developments and Outlook
APSIPA TSIP 2023
- Xiou Ge, Yun-Cheng Wang, **Bin Wang**, C.-C. Jay Kuo.
TypeEA: Type-Associated Embedding for Knowledge Graph Entity Alignment
APSIPA TSIP 2023
- Chengwei Wei, **Bin Wang**, C.-C. Jay Kuo.
SynWMD: Syntax-aware Word Mover's Distance for Sentence Similarity Evaluation
Pattern Recognition Letters 2023
- **Bin Wang**, Chen Zhang, Yan Zhang, Yiming Chen, Haizhou Li.
Analyzing and Evaluating Faithfulness in Dialogue Summarization
EMNLP 2022
- Yiming Chen, Yan Zhang, **Bin Wang**, Zuozhu Liu, Haizhou Li.
Generate, Discriminate and Contrast: A Semi-Supervised Sentence Representation Learning Framework
EMNLP 2022
- **Bin Wang**, C.-C. Jay Kuo, Haizhou Li.
Just Rank: Rethinking Evaluation with Word and Sentence Similarities
ACL 2022
- Yun-Cheng Wang, Xiou Ge, **Bin Wang**, C.-C. Jay Kuo.
KGBoost: A Classification-Based Knowledge Base Completion Method with Negative Sampling
Pattern Recognition Letters 2022
- Xiou Ge, Yun-Cheng Wang, **Bin Wang**, C.-C. Jay Kuo.
CORE: A Knowledge Graph Entity Type Prediction Method via Complex Space Regression and Embedding
Pattern Recognition Letters 2022
- Chengwei Wei, **Bin Wang**, C.-C. Jay Kuo.
Task-Specific Dependency-based Word Embedding Methods
Pattern Recognition Letters 2022
- Xie Tian, **Bin Wang**, C.-C. Jay Kuo.
GraphHop: An Enhanced Label Propagation Method for Node Classification
IEEE Transactions on Neural Networks and Learning Systems 2022
- Kaitai Zhang, **Bin Wang**, Hong-Shuo Chen, Xuejing Lei, Ye Wang, C.-C. Jay Kuo.
PEDENet: Image Anomaly Localization via Patch Embedding and Density Estimation
Pattern Recognition Letters 2022
- **Bin Wang**, Chen Zhang, Chengwei Wei, Haizhou Li.
A Focused Study on Sequence Length for Dialogue Summarization
arXiv 2209.11910, 2022
- Danqing Luo, Chen Zhang, Jiahui Xu, **Bin Wang**, Yiming Chen, Yan Zhang, Haizhou Li.
Enhancing Black-Box Few-Shot Text Classification with Prompt-Based Data Augmentation
arXiv 2209.11910, 2022
- Kaitai Zhang*, **Bin Wang***, Wei Wang, Fahad Sohrab, Moncef Gabbouj, C.-C. Jay Kuo.
AnomalyHop: An SSL-based Image Anomaly Localization Method
IEEE VCIP 2021
- Kaitai Zhang, **Bin Wang**, Hong-Shuo Chen, Xuejing Lei, Ye Wang, C.-C. Jay Kuo.
Dynamic Texture Synthesis by Incorporating Long-range Spatial and Temporal Correlations
IEEE ISSCS 2021
- **Bin Wang**, Guangtao Wang, Jing Huang, Jiaxuan You, Jure Leskovec, C.-C. Jay Kuo.
Inductive Learning on Commonsense Knowledge Graph Completion
IEEE IJCNN 2021
- **Bin Wang**, C.-C. Jay Kuo.
SBERT-WK: A Sentence Embedding Method by Dissecting BERT-based Word Models
IEEE/ACM Transactions on Audio, Speech, and Language Processing 2020
- **Bin Wang**, Fenxiao Chen, Yun-Cheng Wang, C.-C. Jay Kuo.
Efficient Sentence Embedding via Semantic Subspace Analysis
IEEE ICPR 2020
- Fenxiao Chen, Yun-Cheng Wang, **Bin Wang**, C.-C. Jay Kuo.
Graph Representation Learning: A Survey
APSIPA TSIP 2020 ( Sadaoki Furui Prize Paper Award)
- **Bin Wang***, Angela Wang*, Fenxiao Chen, Yun-Cheng Wang, C.-C. Jay Kuo.
Evaluating Word Embedding Models: Methods and Experimental Results
APSIPA TSIP 2019 ( Sadaoki Furui Prize Paper Award)

- **Bin Wang**, Fenxiao Chen, Angela Wang, C.-C. Jay Kuo.
Post-Processing of Word Representations via Variance Normalization and Dynamic Embedding
IEEE ICME 2019
- Yeji Shen, Yuhang Song, Hanhan Li, Shahab Kamali, **Bin Wang**, C.-C. Jay Kuo.
K-Covers for Active Learning in Image Classification
ICME 2019 Workshop
- Fenxiao Chen, **Bin Wang**, C.-C. Jay Kuo.
Deepwalk-Assisted Graph PCA (DGPCA) for Language Networks
IEEE ICASSP 2019
- **Bin Wang**, Yunze Li, Haoxiang Lang, Ying Wang.
Hand Gesture Recognition and Motion Estimation using the Kinect Sensor
Mechatronic Systems and Control 2019
- Fenxiao Chen, **Bin Wang**, C.-C. Jay Kuo.
Graph-Based Deep-Tree Recursive Neural Network (DTRNN) for Text Classification
IEEE SLT 2018

Academic Services

- **Area Chair**, ACL Rolling Review, 2025
- **Lead Guest Editor**, APSIPA TSIP Special Issue on Pretrained Large Language Models for Information Processing, 2024
- **EMNLP 2023 Publication Chair**, Singapore
- **EMNLP 2023 Local Organizing Team**, Singapore
- **Editor Board Member**, APSIPA TSIP, 2022-2025
- **Session Chair**, Data Mining and Knowledge Discovery I, IJCNN, 2021
- **Reviewer**, ACL, EMNLP, NAACL, ICASSP, IEEE/ACM TASLP, ICME, etc.

Skills

Proficient: *Python, PyTorch, LATEX*

Intermediate: *C++, TensorFlow, HTML*

Open-Source Projects: <https://github.com/BinWang28>

Languages: Mandarin (Native) and English (Professional)