Bin Wang, PhD

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Research Interests

Natural Language Processing, Speech Processing, Large Language Models (LLMs), Multimodal LLMs, Machine Learning, Representation Learning.

Education

University of Southern California (USC) — *Aug. 2017 - May. 2021*
Doctor of Philosophy, Major: Electrical Engineering — Los Angeles, USA
Supervisor: C.-C. Jay Kuo

University of Southern California (USC) — *Aug. 2017 - May. 2019*
Master of Science, Major: Electrical Engineering — Los Angeles, USA

University of Electronic Science and Technology of China (UESTC) — *Sep. 2013 - June 2017*
Bachelor of Engineering, Major: Electronic Information Engineering — Chengdu, China

City University of Hong Kong (CityU) — *Sep. 2015 - Jan. 2016*
Exchange Student, GPA: 4.3/4.3 — Hong Kong

Work Experience

Institute for Infocomm Research (I^{2}R), A*STAR — *Apr. 2023 - Now*
Scientist, Tech Lead for National Multimodal LLM Programme — Singapore

National University of Singapore (NUS) — *Sep. 2021 - Mar. 2023*
Research Fellow, Supervisor: Prof. Haizhou Li — Singapore

JD.com, Inc. AI Research Center — *May 2020 - Aug. 2020*
Research Intern, Supervisor: Jing Huang — Mountain View, USA

University of Southern California (USC) — *Aug. 2017 - May 2021*
Research Associate, Supervisor: C.-C. Jay Kuo — Los Angeles, USA

Ontario Tech University — *July 2016 - Oct. 2016*
Research Intern, Supervisor: Haoxiang Lang — Toronto, Canada

Research & Project Experience

National Multimodal LLM, A*STAR — *Oct 2023 - Present*
Tech Lead (Evaluation), NRF Grant (S$70M) — Singapore

- Leading the development of rigorous evaluation methodologies, including **AudioBench** and **SeaEval**, to ensure model performance across multiple modalities, languages, and domains.
- Co-led a team of six engineers and researchers to open-source **MERaLiON AudioLLM** and the **Multitask National Speech Corpus** dataset, enabling advancements in audio-language modeling for the community.
- Overseeing the creation and alignment of multimodal datasets to enhance the model's capabilities and ensure real-world applicability.

Publication (Full record: Google Scholar)

- **Bin Wang***, Xunlong Zou*, Shuo Sun, Wenyu Zhang, Yingxu He, Zhuohan Liu, Chengwei Wei, Nancy F. Chen, AiTi Aw. Advancing Singlish Understanding: Bridging the Gap with Datasets and Multimodal Models, Submission to ACL 2025
- Yingxu He*, Zhuohan Liu*, Shuo Sun*, **Bin Wang***, Wenyu Zhang*, Xunlong Zou*, Nancy F. Chen, Ai Ti Aw. MERaLiON-AudioLLM: Bridging Audio and Language with Large Language Models, Submission to ACL 2025 Demo
- Chengwei Wei, **Bin Wang**, Jung-jae Kim, Guimei Liu, Nancy F. Chen. CoinMath: Harnessing the Power of Coding Instruction for Math LLMs, Submission to ACL 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, Submission to 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
- **Bin Wang**, Geyu Lin, Zhengyuan Liu, Nancy F. Chen. CrossIn: An Efficient Instruction Tuning Approach for Cross-Lingual Knowledge Alignment, SUMEval-2, COLING 2025
- **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**, 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 Service

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

Teaching Experience

Teaching Assistant | University of Southern California
Scope: Lead discussion, lectures, tutorials, and host office hours. 20 hours/week.
- Course: Applied and Cloud Computing for Electrical Engineers *Spring 2021*
Instructor: Brandon Franzke
- Course: Applied Linear Algebra for Engineering *Fall 2020*
Instructor: Antonio Ortega
- Course: Computer Programming for Electrical Engineers *Spring 2020*
Instructor: Sandeep Gupta
- Course: Introduction to Digital Signal Processing *Spring 2019, Fall 2018*
Instructor: Richard Leahy, Robert Popoli

Honors & Awards

- Best Paper Award, Workshop on Cross-Cultural Considerations in NLP (C3NLP), co-located with ACL, 2024
- Sadaoki Furui Prize Paper Award, APSIPA, 2024
- Sadaoki Furui Prize Paper Award, APSIPA, 2022
- GSG Research Travel Grant, USC, 2019
- Excellent Graduate (<1%), Sichuan, China, 2017
- National Scholarship (<2%), Sichuan, China, 2016
- Tanglixin Scholarship, Sichuan, China, 2016
- National Scholarship (<2%), Sichuan, China, 2015
- Samsung Scholarship, China, 2015
- Student Leadership Award, China, 2014

Skills

Proficient: *Python, PyTorch, LaTeX*
Intermediate: *C++, TensorFlow, HTML*
Open-Source Projects: `https://github.com/BinWang28`
Languages: Mandarin (Native) and English (Professional)