Zhiyuan Wang

PERSONAL INFORMATION

Institution: University of Electronic Science and Technology of China (UESTC)

Status: Master Degree Candidate (second-year)

Email: yhzywang[at]gmail[dot]com

Homepage | Google Scholar | Semantic Scholar

EDUCATION

MS **University of Electronic Science and Technology of China** Sep 2023 – Jun 2026
Computer Science and Technology

- GPA: 3.62/4.0
- Co-advised by Prof. Xiaoshuang Shi and Prof. Kaidi Xu (Drexel)

BS **Chongqing University of Posts and Telecommunication (Hons)** Sep 2023 – Jun 2026
Internet of Things Engineering

- GPA: 3.65/4.0 (Rank 1/153)

RESEARCH

Uncertainty Quantification/Decomposition:

- WSE calibrates predictive entropy by assessing semantic relevance at both the word (token) and sentence levels, highlighting the weights of keywords and highly consistent sentences in uncertainty quantification [**EAAI 2025**].

Conformal Prediction/Risk Control:

- ConU assumes that each sampling set covers at least one admissible response and develops the nonconformity score by correlating it with the uncertainty of reliable semantics within the sampling set of each calibration data point, ensuring desired coverage of admissible responses in open-ended scenarios for the first time [**EMNLP 2024**].
- TRON develops a conformal score for calibrating sampling size, limiting the average probability that sampling sets fail to cover admissible responses. It then defines the nonconformity score based on semantic frequency to identify high-quality responses, rigorously controlling the miscoverage rate by two user-specified risk levels [**ICLR 2025**].
- SConU maintains the integrity of the calibration set and introduces the notion of minimum manageable risk level. It also develops two selective conformal p-values to assess exchangeability via significance tests, providing finite-sample guarantees for the selected test samples in interdisciplinary contexts [**ACL 2025**].

PUBLICATIONS

Published Papers:

1. SConU: Selective Conformal Uncertainty in Large Language Models
   Zhiyuan Wang, Qingni Wang, Yue Zhang, Tianlong Chen, Xiaofeng Zhu, Xiaoshuang Shi*, Kaidi Xu*
   Annual Meeting of the Association for Computational Linguistics (**ACL**), Main, 2025
2. Sample then Identify: A General Framework for Risk Control and Assessment in Multimodal Large Language Models
   Qingni Wang, Tiantian Geng, **Zhiyuan Wang**, Teng Wang, Bo Fu*, Feng Zheng*
   International Conference on Learning Representations (**ICLR**), Spotlights, 2025
3. Word-Sequence Entropy: Towards Uncertainty Estimation in Free-Form Medical Question Answering Applications and Beyond
   Zhiyuan Wang, Jinhao Duan, Chenxi Yuan, Qingyu Chen, Tianlong Chen, Yue Zhang, Ren Wang, Xiaoshuang Shi*, Kaidi Xu
   Engineering Applications of Artificial Intelligence (**EAAI, IF=8**), 2025

4. ConU: Conformal Uncertainty in Large Language Models with Correctness Coverage Guarantees
   Zhiyuan Wang, Jinhao Duan, Lu Cheng, Yue Zhang, Qingni Wang, Xiaoshuang Shi*, Kaidi Xu, Hengtao Shen, Xiaofeng Zhu
   Conference on Empirical Methods in Natural Language Processing (**EMNLP**), Findings, 2024
5. Caterpillar: A Pure-MLP Architecture with Shifted-Pillars-Concatenation
   Jin Sun, Xiaoshuang Shi*, **Zhiyuan Wang**, Kaidi Xu, Heng Tao Shen, Xiaofeng Zhu
   ACM International Conference on Multimedia (**MM**), Poster, 2024

Preprints:

1. COIN: Uncertainty-Guarding Selective Question Answering for Foundation Models with Provable Risk Guarantees
   Zhiyuan Wang, Jinhao Duan, Qingni Wang, Xiaofeng Zhu, Tiaolong Chen, Xiaoshuang Shi*, Kaidi Xu*
2. Conformal Lesion Segmentation for 3D Medical Images
   Binyu Tan†, **Zhiyuan Wang**† **(co-first author)**, Jinhao Duan, Fumin Shen*, Xiaoshuang Shi*, Kaidi Xu
3. One paper on two-stage risk control comprising (1) abstention-aware sampling size calibration with PAC-style coverage guarantees and (2) conformalized filtering, currently in progress in collaboration with Qingni Wang.
4. One paper on uncertainty decomposition in large vision-language models (**co-first author**), currently in progress in collaboration with Jinhao Duan.

ACADEMIC SERVICES

Program Committee Member of Conferences:

- International Conference on Learning Representations (ICLR) 2025
- Workshop on Large Language Models and Generative AI for Health at AAAI (GenAI4Health@AAAI) 2025
- Survey Track for International Joint Conference on Artificial Intelligence (IJCAI) 2025
- Annual Meeting of the Association for Computational Linguistics (ACL) 2025
- Conference on Empirical Methods in Natural Language Processing (EMNLP) 2025
- ACM International Conference on Multimedia (MM) 2025
- Annual Conference on Neural Information Processing Systems (NeurIPS) 2025
- International Joint Conference on Natural Language Processing & Asia-Pacific Chapter of the Association for Computational Linguistics (IJCNLP & AACL) 2025

Journal Reviewer:

- Neural Networks (NN)

HONORS AND AWARDS

- Academic Youth Award 2025
- Outstanding Graduate Student 2024, 2025
- Outstanding Student Scholarship 2023, 2024
- Honours Degrees 2023
- Provincial Merit Student 2022
- National Scholarship 2021, 2022
- The First Prize Scholarship 2020, 2021, 2022
- Merit Student 2020, 2021, 2022