

# Zhiyuan Wang

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

Status: Master Degree Candidate

Email: yhzywang@gmail.com

Google Scholar Profile | Homepage

## EDUCATION

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University of Electronic Science and Technology of China (UESTC)

Sep 2023 — Jun 2026

Master in Computer Science and Technology

Cumulative GPA: 3.62/4.00

Co-advised by Xiaoshuang Shi and Kaidi Xu (Drexel University)

Chongqing University of Posts and Telecommunications (CQUPT)

Sep 2019 — Jun 2023

Bachelor in Internet of Things Engineering (Hons)

Cumulative GPA: 3.65/4.00 (Rank 1/153)

## RESEARCH

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### a. Know when to trust GenAI outputs:

1. 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.

### b. Statistical guarantees via conformal prediction:

1. ConU assumes each sampling set contains 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 user-specified coverage of admissible responses in open-ended scenarios for the first time.
2. TRON proposes a conformal score for calibrating sampling size, limiting the average probability that sampling sets fail to cover admissible responses. It then develops the nonconformity score based on semantic frequency, rigorously controlling the miscoverage rate by two user-specified risk levels.
3. SConU maintains the integrity of the calibration set and introduces the notion of minimum risk level. It also develops two selective conformal p-values to assess exchangeability through significance tests, providing finite-sample guarantees for retained test samples in interdisciplinary contexts.

## PUBLICATIONS

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### Published Papers:

1. **Zhiyuan Wang**, Qingni Wang, Yue Zhang, Tianlong Chen, Xiaofeng Zhu, Xiaoshuang Shi\*, Kaidi Xu\*. SConU: Selective Conformal Uncertainty in Large Language Models. Annual Meeting of the Association for Computational Linguistics (ACL), Main, 2025
2. Qingni Wang, Tiantian Geng, **Zhiyuan Wang**, Teng Wang, Bo Fu\*, Feng Zheng\*. Sample then Identify: A General Framework for Risk Control and Assessment in Multimodal Large Language Models. International Conference on Learning Representations (ICLR), Spotlights, 2025.
3. **Zhiyuan Wang**, Jinhao Duan, Chenxi Yuan, Qingyu Chen, Tianlong Chen, Yue Zhang, Ren Wang, Xiaoshuang Shi\*, and Kaidi Xu. Word-Sequence Entropy: Towards Uncertainty Estimation in Free-Form Medical Question Answering Applications and Beyond. Engineering Applications of Artificial Intelligence (EAAI), JCR Q1 (IF=7.5), 2025.
4. **Zhiyuan Wang**, Jinhao Duan, Lu Cheng, Yue Zhang, Qingni Wang, Xiaoshuang Shi\*, Kaidi Xu, Hengtao Shen, Xiaofeng Zhu. ConU: Conformal Uncertainty in Large Language Models with Correctness Coverage Guarantees. Conference on Empirical Methods in Natural Language Processing (EMNLP), Findings, 2024.

5. Jin Sun, Xiaoshuang Shi\*, **Zhiyuan Wang**, Kaidi Xu, Heng Tao Shen, Xiaofeng Zhu. Caterpillar: A Pure-MLP Architecture with Shifted-Pillars-Concatenation. ACM International Conference on Multimedia (MM), Poster, 2024.

**Preprints:**

1. One paper on multi-stage risk control comprising conformalized sampling and user-specified relevance calibration (co-first author), work in progress.
2. One paper on uncertainty decomposition in large vision-language models (co-first author), work in progress.

**ACADEMIC SERVICES**

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**Program Committee Member of Conferences:**

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| • 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 (IJCAL)         | 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 |

**Journal Reviewer:**

- Neural Networks (NN)

**HONORS AND AWARDS**

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|-----------------------------------|------------------|
| • Academic Youth Award            | 2025             |
| • Outstanding Graduate Student    | 2024             |
| • 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 |