

# WANG ZHIYUAN

## PERSONAL INFORMATION

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

Status: Master Degree Candidate

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[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 **Prof. Xiaoshuang Shi** and **Prof. 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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### ① Uncertainty Quantification/Decomposition:

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 [EAAI].

### ② Conformal Prediction/Statistical Verification:

1. 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 user-specified coverage of admissible responses in open-ended scenarios for the first time [EMNLP 2024].
2. 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].
3. 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

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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\*, Kaidi Xu. Word-Sequence Entropy: Towards Uncertainty Estimation in Free-Form Medical Question Answering Applications and Beyond. Engineering Applications of Artificial Intelligence (**EAAI, IF=8**), 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. **Zhiyuan Wang**, Jinhao Duan, Qingni Wang, Xiaofeng Zhu, Tiaolong Chen, Xiaoshuang Shi\*, Kaidi Xu\*. COIN: Uncertainty-Guarding Selective Question Answering for Foundation Models with Provable Risk Guarantees.
2. Binyu Tan<sup>†</sup>, **Zhiyuan Wang**<sup>†</sup> (co-first author), Xiaofeng Zhu, Fumin Shen\*, Xiaoshuang Shi\*, Kaidi Xu. Conformal Lesion Segmentation for 3D Medical Images.
3. One paper on two-stage risk control comprising (1) abstention-aware sampling size calibration with PAC-style coverage guarantees and (2) conformalized filtering, work in progress.
4. 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, 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 |