Zhenjiang **Zhao**

Ph.D. Student

The University of Electro-Communications, Tokyo, Japan

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Research Interest

I am deeply interested in Boolean satisfiability problem (SAT) and algorithmic fairness. In previous years, I focused on the speed-up of SAT solvers. More recently, I am working on applications of SAT in the realm of algorithmic fairness. Specifically, I've been developing an efficient and diversity-aware approach for the fairness testing of machine learning, leveraging sampling techniques from the SAT domain.

Education

Ph.D.	The University of Electro-Communications, Tokyo, Japan	*2023 - pres.*
M.Eng.	The University of Electro-Communications, Tokyo, Japan	*2021 - 2023*
B.Math.	The School of Mathematics and Computational Science, Xiangtan University, Xiangtan, China	*2014 - 2018*

Publications

Zhenjiang Zhao, Takahisa Toda, and Takashi Kitamura. Efficient Fairness Testing Through Hash-Based Sampling. In Proceedings of Search-Based Software Engineering 2022. (Paper Link)

Takashi Kitamura, **Zhenjiang Zhao**, and Takahisa Toda. Applying Combinatorial Testing to Verification-Based Fairness Testing. In Proceedings of Search-Based Software Engineering 2022. (Paper Link)

Zhenjiang Zhao, and Takahisa Toda. Note on CDCL Inference with Similar Learnt Clauses (in Japanese). In Proceedings of the Annual Conference of JSAI 2022. (Paper Link)

Awards, Fellowships, & Grants

2023 - 2026	**The Next Generation Researcher Challenge Research Program of the University of Electro-Communications**, the Japan Science and Technology Agency	*183,750 yen / month*
2022	**Scholarship for international student**, the Japan Educational Exchanges and Services	*100,000 yen*
2021	**MEXT Honors Scholarship**, the Japan Student Services Organization	*48,000 yen*

Poster Presentations

** presenting author*

Zhenjiang Zhao*, Takahisa Toda, and Takashi Kitamura. Consideration of Fairness Testing Method Based on a Complete Search for Paths in Decision Tree. In Special Interest Group on Machine Learning Systems Engineering, Jun 2023.

Zhenjiang Zhao*, Takahisa Toda, and Takashi Kitamura. Fairness Testing of Machine Learning Model. In Programming Symposium, Information Processing Society of Japan, Jan 2023.

Zhenjiang Zhao*. Paper Introduction: Efficient Fairness Testing Through Hash-Based Sampling (SSBSE2022). In IPSJ/SIGSE Winter Workshop, Jan 2023.

Zhenjiang Zhao*, Takahisa Toda, and Takashi Kitamura. Fairness Testing Method 'VBT-X' and Its Future Challenges. In Workshop of Information-Based Induction Sciences, Nov 2022.

Zhenjiang Zhao*, Takahisa Toda, and Takashi Kitamura. VBT-X: A Fairness Testing Method of Machine Learning Model. In Workshop of Fundamentals of Software Engineering, Nov 2022.

Research Experience

2022 - pres.	**Research and development on verification testing of machine learning systems and cyber-physical systems**, the National Institute of Advanced Industrial Science and Technology, Research Assistant
2021	**Research on modeling the function of air traffic control**, the Electronic Navigation Research Institute, Research Assistant

Teaching Experience

Fall 2023	**Complex Analysis**, Teaching Assistant
Fall 2022	**Computer Literacy**, Teaching Assistant
Fall 2022	**Complex Analysis**, Teaching Assistant
Spring 2022	**Fundamental Programming**, Teaching Assistant

Competition Experience

2022	**SAT Competition**, 3rd on the CaDiCaL Hacks Track
2021	**Yamato Transport 5 Days data competition**, Victory
2021	**Yamato Transport Hackathon: the SDGs Challenge**, Victory
2017	**Contemporary Undergraduate Mathematical Contest in Modeling**, Second Prize
2016	**Contemporary Undergraduate Mathematical Contest in Modeling**, Second Prize