

Ritwik Vashistha

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SUMMARY

PhD student with expertise in statistical modeling and machine learning for analyzing complex and high-dimensional data. Committed to developing robust and reliable models to enable accurate data-driven decision-making.

EDUCATION

The University of Texas at Austin , Austin, TX PhD in Statistics, GPA 3.98/4	Aug 2022 - Jul 2026
Indian Institute of Technology Kanpur , Kanpur, India MS in Statistics, CPI 9.5/10 (Class Rank: 2/50)	Aug 2020 - May 2022
University of Delhi , Delhi, India BS in Statistics, CGPA 9.15/10 (Class Rank: 3/35)	Aug 2017 - Jul 2020

WORK EXPERIENCE

Pfizer May 2021 – Nov 2021

Data Science Intern

- Implemented penalized regression models and Bayesian methods in R for high-dimensional survival analysis in the context of the JAVELIN Bladder 100 clinical trial data.
- Identified key biomarkers predictive of survival outcomes in urothelial cancer patients.
- Collaborated with a cross-continental team to conduct research, culminating in a research publication.

PUBLICATIONS

- Vashistha, R., & Farahi, A.** (2024). "U-Trustworthy Models. Reliability, Competence, and Confidence in Decision-Making". Proceedings of the AAAI Conference on Artificial Intelligence.
- Vashistha, R., Noor, Z., Dasgupta, S., Pu, J., & Deng, S.** (2023). "Application of Statistical Machine Learning in Biomarker Selection". Nature Scientific Reports.

RESEARCH PROJECTS

Hypothesis Testing and Learning with Noisy Data Aug 2024 – Ongoing

- Formulated a kernel-based framework for analyzing noisy datasets using Maximum Mean Discrepancy, enabling robust statistical testing under noise.
- Derived probabilistic bounds to quantify the impact of noise on hypothesis testing and verified results using extensive simulations in Python (JAX).

I-trustworthy Models

Oct 2023 – Apr 2024

- Proposed a trustworthiness framework to evaluate probabilistic classifiers for inference-related tasks using local calibration and kernel-based hypothesis testing.
- Developed the Kernel Local Calibration Error (KLCE) to quantify local miscalibration, providing theoretical convergence guarantees and practical diagnostic tools.
- Mentored an undergraduate student in developing a Python package to operationalize the research outcomes.
- To appear in Proceedings of Machine Learning Research (accepted at AISTATS 2025 conference).

U-Trustworthy Models

May 2023 – Sep 2023

- Developed a trustworthiness framework to evaluate ML classifiers for decision-making tasks.
- Empirically validated theoretical results through extensive experiments in Python (JAX).
- Presented results and findings at AAAI-24 Conference, Vancouver.

PROGRAMMING SKILLS

- Proficient in Python (NumPy, pandas, scikit-learn, TensorFlow, JAX), R, and SQL; Familiar with C/C++. Experienced in statistical modeling, data wrangling, and machine learning pipelines.

ACHIEVEMENTS AND AWARDS

- Professional Development Award* for presenting research at Interactive Causal Learning Conference 2023.
- College of Natural Sciences PhD Fellowship* for duration of PhD at University of Texas at Austin.
- All India Rank 16* in the Joint Admission Test for Masters in 2020 among 3473 candidates.
- Academic Excellence Award* in 2017-18 (University of Delhi) and 2020-21 (IIT Kanpur).