Rajeev Verma

PhD Candidate at the University of Amsterdam

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PhD Student in Machine Learning. Research bridges prediction and decision-making through calibration, learning to defer, imprecise probabilities, and safe statistics.

Research Interests

Decision theory, uncertainty quantification, calibration, human-AI collaboration, learning to defer, AI safety, imprecise probabilities

EDUCATION

PhD in Machine Learning — Jan 2023 – present
AMLab, University of Amsterdam (UvA) — Amsterdam, Netherlands

- Advisors: Eric Nalisnick (Johns Hopkins University), Christian A. Naesseth (UvA)
- Research on decision-making, imprecise probabilities, and safe statistics.

Master of Science in Artificial Intelligence — Sep 2020 – Sep 2022
University of Amsterdam (UvA) — Amsterdam, Netherlands

- Thesis: *On the Calibration of Learning to Defer Systems.*
- **Nominated** for the Amsterdam AI thesis award and UvA-wide thesis award. Covered by UvA News and featured on amsterdamsciencepark.nl.

Bachelor of Technology in Electrical Engineering — Aug 2015 – Aug 2019
Indian Institute of Technology Patna — Patna, India

- Thesis: *Knowledge Graph Representation Learning Based Drug Informatics*.
- **Nominated** for the best thesis award at the institute. Undergraduate research at the AI-NLP-ML lab on NLP, and at Nanyang Technological University on random-walk based graph representation learning.

PUBLICATIONS

[1]equal contribution

Selected Conference Articles

1. Alexander Timans[1], **Rajeev Verma**[1], Eric Nalisnick, Christian A. Naesseth. On Continuous Monitoring of Risk Violations under Unknown Shift. *Uncertainty in Artificial Intelligence (UAI)*, 2025.
2. **Rajeev Verma**, Volker Fischer, Eric Nalisnick. On Calibration in Multi-Distribution Learning. *ACM Conference on Fairness, Accountability, and Transparency (FAccT)*, 2025.
3. Dharmesh Tailor, Aditya Patra, **Rajeev Verma**, Putra Manggala, Eric Nalisnick. Learning to Defer to a Population: A Meta-Learning Approach. *Conference on Artificial Intelligence and Statistics (AISTATS)*, 2024. *Oral, Student paper award (top 1%)*.
4. **Rajeev Verma**[1], Daniel Barrejón[1], Eric Nalisnick. Learning to Defer to Multiple Experts: Consistent Surrogate Losses, Confidence Calibration, and Conformal Ensembles. *Conference on Artificial Intelligence and Statistics (AISTATS)*, 2023.
5. **Rajeev Verma**, Eric Nalisnick. Calibrated Learning to Defer with One-vs-All Classifiers. *International Conference on Machine Learning (ICML)*, 2022.

Selected Workshop Articles

1. **Rajeev Verma**[1], Rabanus Derr[1], Christian A. Naesseth, Volker Fischer, Eric Nalisnick. So What are *Good* Imprecise Forecasts? *EurIPS Workshop: Epistemic Intelligence in Machine Learning*, 2025. *work in progress*
2. Anurag Singh, Julian Rodemann, **Rajeev Verma**, Siu Lun Chau, Krikamol Muandet. Incentive Aware AI Regulation. *EurIPS Workshop: Beyond Regulation, Private Governance & Oversight Mechanisms for AI*, 2025. *Oral; work in progress*.

3. Jakub Podolak, **Rajeev Verma**. Read Your Own Mind: Reasoning Helps Surface Self-Confidence Signals in LLMs. *EMNLP Workshop: Uncertainty-Aware NLP*, 2025. *as advisor*.
4. **Rajeev Verma**, Volker Fischer, Eric Nalisnick. On the Calibration of Conditional-Value-at-Risk. *ICML Workshop: Next Generation of AI Safety*, 2024.

EXPERIENCE

Visiting Researcher — Summer 2025
Rational Intelligence Lab *CISPA Helmholtz Center for Information Security* — Saarbrücken, Germany

- Visiting and collaborating with Krikamol Muandet at the Rational Intelligence lab investigating human-AI decision-making with misaligned AI, borrowing tools from economics literature on persuasion and delegation.

Research Assistant — July 2018 – Sep 2021
AI-NLP-ML Lab *Indian Institute of Technology Patna* — Patna, India

- Worked on natural language processing problems on scholarly data, resulting in publications at JCDL, ACL, and other venues.

Software Design Engineer — Aug 2019 – July 2020
Telestream — Bengaluru, India

- Developed video deinterlacing algorithms and image processing pipelines for video quality monitoring of commercial content.

MISCELLANEOUS

Awards and Honors

- Amsterdam AI Thesis award (as advisor; for the thesis on studying fairness in two-sided markets), Outstanding Student Paper Award (as co-author; AISTATS 2024), NeurIPS Top Reviewer (2023), ICML Participation Grant (2022), Microsoft Research Travel Award (2019)

Talks and Presentations

- Invited talk: "On Continuous Monitoring of Risk Violations under Unknown Shift" (CISPA). *Slides*.
- Oral presentation: "On Calibration in Multi-Distribution Learning" (FAccT 2025).
- Invited talk: "On Calibration in Multi-Distribution Learning" (2nd Workshop on Learning Under Weakly Structured Information, Tübingen AI Center). *Slides*.
- Talk: "On the Calibration of Systems that Learn to Defer to Experts" (EPIC Research group, Swansea University).
- Talk: "On the Calibration of Systems that Learn to Defer to Experts" (ICAI). *Slides*.

Technical Skills

- Programming: Python (PyTorch, NumPy, scikit-learn), Git, LaTeX
- Methods: Bayesian inference, conformal prediction, calibration, statistical learning theory, safe statistics (e-values) and game-theoretic probability

Reviewing

- NeurIPS 2023-2025; ICLR 2023, 2025; ICML 2023-2025; UAI 2024-2025; ACL 2021, 2025

Teaching and Advising

- Teaching Assistant for Human-in-the-machine learning (2023), Deep Learning 2 (2024), and Machine Learning 2 (2025) at Master AI program, UvA
- Supervised three master's projects:
  1. *Equity by Design: Fairness-Driven Recommendations in Two-Sided Markets*. (Awarded the Amsterdam AI Thesis award),
  2. *On Reliable Confidence Scoring for LLMs: Domain Shifts and Test-Time Compute* (published at the EMNLP 2025 workshop on UncertaiNLP),
  3. *Detecting Object Tracking Failure via Sequential Testing*.