Eric Nalisnick

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Academic Employment

Assistant Professor, Tenure Track — University of Amsterdam
Amsterdam Machine Learning Lab — September 2020 - present

Postdoctoral Research Associate — University of Cambridge
Computational and Biological Learning Laboratory — September 2018 to September 2020

Industrial Employment

Research Scientist — Google DeepMind
Part time, one day per week (20% FTE) — February 2019 to January 2020

Research Scientist Intern — Google DeepMind
Supervisor: Balaji Lakshminarayanan — Summer 2018

Applied Scientist Intern — Amazon
Supervisors: Vijai Mohan, Eiman Elnahrawy — Fall 2016

Research Intern — Twitter
Supervisor: Hugo Larochelle — Summer 2016

Research Intern — Microsoft
Supervisors: Rich Caruana, Nick Craswell — Summer 2015

Research Scientist Intern — Amazon
Supervisors: Vijai Mohan, Rahul Bhagat — Summer 2014

Education

Ph.D. Computer Science — 2013 - 2018
University of California, Irvine
Dissertation: *On Priors for Bayesian Neural Networks*

M.S. Computer Science — 2012 - 2013
Lehigh University
Thesis: *Automatic Methods for Tracking Sentiment Dynamics in Plays*

B.S. Computer Science & English Literature — 2008 - 2012
Lehigh University
Honors Thesis: *A Combinatorial Explanation for a Conjecture of Fomin and Zelevinsky*

Academic Honors and Awards

Veni Laureate, Dutch Research Council (NWO) 2021

ELLIS Scholar, *European Lab for Learning and Intelligent Systems Society* 2021

Top / Best Reviewer NeurIPS 2017, ICML 2019, ICML 2020

Research Funding

Principal Investigator

Continual Learning under Human Guidance June 2022 - 2026
€280,000
Veni, Talent Programme, Dutch Research Council (NWO): Science Domain
Single Principal Investigator, Acceptance Rate: 16%.

Co-Investigator

UvA-Bosch Delta Lab November 2021 - 2026
Gift funding for 10 PhD students from the Bosch Group.
Role: Supervisor for 4 PhD students.
PIs: Theo Gevers, Jan-Willem van de Meent.

Hybrid Intelligence Centre January 2020 - 2030
Gravitation Programme, Dutch Research Council (NWO)
Role: Co-supervisor for 2 PhD students.
PIs: F. v. Harmelen, C. Jonker, M. d. Rijke, R. Verbrugge, P. Vossen, M. Welling.

Academic Supervision

PhD Candidates

Rajeev Verma University of Amsterdam, 2023 -

Alexander Timans University of Amsterdam, 2022 -

Metod Jazbec University of Amsterdam, 2022 -

Mona Schirmer University of Amsterdam, 2022 -

Dharmesh Tailor University of Amsterdam, 2021 -

Saba Amiri (with Adam Belloum and Sander Klous) University of Amsterdam, 2021 -

Putra Manggala (with Holger Hoos) University of Amsterdam, 2021 -

Urja Khurana (with Antske Fokkens) Vrije University Amsterdam, 2020 -

Mrinank Sharma (with Tom Rainforth and Yee Whye Teh) University of Oxford, 2020 -

Masters Students

Nils Lehmann University of Amsterdam, 2022

Shuai Wang	University of Amsterdam, 2022
Rajeev Verma	University of Amsterdam, 2022
Arsen Sheverdin	University of Amsterdam, 2021 -
Daniël Nobbe	University of Amsterdam, 2021

Teaching

Introduction to Machine Learning (*Leren*), University of Amsterdam — 2020 - 2022
∼ 180 Undergraduate Students, ∼ 12 Teaching Assistants

Bayesian Deep Learning Module, Deep Learning II, University of Amsterdam — 2022
123 Graduate Students, 5 Teaching Assistants

Project in AI, University of Amsterdam — 2021

Professional Service

Organization

Anomaly Detection for Scientific Discovery	2021 - present
Tractable Probabilistic Modeling, UAI Workshop	2022
Bayesian Deep Learning, NeurIPS Workshop	2021
Bayesian Deep Learning, ELLIS Workshop / NeurIPS Meetup	2020
Bayesian Deep Learning, NeurIPS Workshop	2019

Area Chair / Senior Program Committee

Uncertainty in Artificial Intelligence (UAI)	2021 - present
Neural Information Processing Systems (NeurIPS)	2021 - present
International Conference on Machine Learning (ICML)	2021 - present
Artificial Intelligence and Statistics (AIStats)	2022
International Conference on Learning Representations (ICLR)	2021

Editorial Board

Editor, Probabilistic Methods for Deep Learning, Special Issue of *Entropy*	2021

Journal Reviewing

American Statistical Association (JASA)	2020 - present
Machine Learning Research (JMLR)	2018 - present
Advances in Statistical Analysis	2020 - present

Conference Reviewing

Neural Information Processing Systems (NeurIPS)	2016 - 2021
International Conference on Learning Representations (ICLR)	2018 - present
International Conference on Machine Learning (ICML)	2018 - 2021
Artificial Intelligence and Statistics (AIStats)	2019 - 2021
Uncertainty in Artificial Intelligence (UAI)	2019 - 2020
Hybrid Human-Artificial Intelligence (HHAI)	2022
Association for the Advancement of Artificial Intelligence (AAAI)	2020 - 2021
International Joint Conference on Artificial Intelligence (IJCAI)	2019

Departmental / Institute Service

Education program committee for Bachelors and Masters of AI	2021 - present
Hiring committee for one AMLab / ELLIS unit faculty position	2021
Hiring committee for two AMLab faculty positions	2021

Doctoral Committees

Shi Hu, *Uncertainty, Robustness and Safety in Artificial Intelligence*	2022

Publications

* Denotes equal contribution

Journal Articles

1. **E. Nalisnick**, P. Smyth, and D. Tran. A Brief Tour of Deep Learning from a Statistical Perspective. *Annual Review of Statistics and Its Application*, 2023 (to appear).
2. G. Papamakarios*, **E. Nalisnick***, D. J. Rezende, S. Mohamed, and B. Lakshminarayanan. Normalizing Flows for Probabilistic Modeling and Inference. *Journal of Machine Learning Research* (JMLR), 2021.

Conference Articles

3. J. Antoran*, S. Padhy*, R. Barbano, **E. Nalisnick**, D. Janz, and J. M. Hernández-Lobato. Sampling-Based Inference for Large Linear Models, with Application to Linearised Laplace. In *Proceedings of the 11th International Conference on Learning Representations* (ICLR), 2023.

4. R. Verma*, D. Barrejón*, and **E. Nalisnick**. Learning to Defer to Multiple Experts: Consistent Surrogate Losses, Confidence Calibration, and Conformal Ensembles. In *Proceedings of the 26th International Conference on Artificial Intelligence and Statistics* (AISTATS), 2023.

5. M. Sharma, S. Farquhar, **E. Nalisnick**, and T. Rainforth. Do Bayesian Neural Networks Need To Be Fully Stochastic? In *Proceedings of the 26th International Conference on Artificial Intelligence and Statistics* (AISTATS), 2023.

6. R. Verma and **E. Nalisnick**. Calibrated Learning to Defer with One-vs-All Classifiers. In *Proceedings of the 39th International Conference on Machine Learning* (ICML), 2022.

7. J. Antoran, D. Janz, J. U. Allingham, E. Daxberger, R. Barbano, **E. Nalisnick**, and J. M. Hernández-Lobato. Adapting the Linearised Laplace Model Evidence for Modern Deep Learning. In *Proceedings of the 39th International Conference on Machine Learning* (ICML), 2022.

8. E. Daxberger, **E. Nalisnick***, J. U. Allingham*, J. Antoran*, and J. M. Hernández-Lobato. Expressive yet Tractable Bayesian Deep Learning via Subnetwork Inference. In *Proceedings of the 38th International Conference on Machine Learning* (ICML), 2021.

9. **E. Nalisnick**, J. Gordon, and J. M. Hernández-Lobato. Predictive Complexity Priors. In *Proceedings of the 24th International Conference on Artificial Intelligence and Statistics* (AISTATS), 2021.

10. R. Pinsler, J. Gordon, **E. Nalisnick**, and J. M. Hernández-Lobato. Bayesian Batch Active Learning as Sparse Subset Approximation. In *Advances in Neural Information Processing Systems* (NeurIPS), 2019.

11. **E. Nalisnick**, J. M. Hernández-Lobato, and P. Smyth. Dropout as a Structured Shrinkage Prior. In *Proceedings of the 36th International Conference on Machine Learning* (ICML), 2019.

12. **E. Nalisnick***, A. Matsukawa*, Y. W. Teh, D. Gorur, and B. Lakshminarayanan. Hybrid Models with Deep and Invertible Features. In *Proceedings of the 36th International Conference on Machine Learning* (ICML), 2019.

13. **E. Nalisnick**, A. Matsukawa, Y. W. Teh, D. Gorur, and B. Lakshminarayanan. Do Deep Generative Models Know What They Don't Know? In *Proceedings of the 7th International Conference on Learning Representations* (ICLR), 2019.

14. D. Ji, **E. Nalisnick**, Y. Qian, R. Scheuermann, and P. Smyth. Bayesian Trees for Automated Cytometry Data Analysis. In *Proceedings of Machine Learning for Healthcare* (MLHC), 2018.

15. **E. Nalisnick** and P. Smyth. Learning Priors for Invariance. In *Proceedings of the 21st International Conference on Artificial Intelligence and Statistics* (AISTATS), 2018.

16. **E. Nalisnick** and P. Smyth. Learning Approximately Objective Priors. In *Proceedings of the 33rd Conference on Uncertainty in Artificial Intelligence* (UAI), 2017.

17. **E. Nalisnick** and P. Smyth. Stick-Breaking Variational Autoencoders. In *Proceedings of the 5th International Conference on Learning Representations* (ICLR), 2017.

18. **E. Nalisnick**, B. Mitra, N. Craswell, and R. Caruana. Improving Document Ranking with Dual Word Embeddings. In *Proceedings of the 25th World Wide Web Conference* (WWW), 2016.

19. **E. Nalisnick** and H. Baird. Character-to-Character Sentiment Analysis in Shakespeare's Plays. In *Proceedings of the 51st Annual Meeting of the Association for Computational Linguistics* (ACL), 2013.

20. **E. Nalisnick** and H. Baird. Extracting Sentiment Networks from Shakespeare's Plays. In *Proceedings of the 12th International Conference on Document Analysis and Recognition* (ICDAR), 2013.

Peer-Reviewed Workshop Articles (Without Conference Version)

21. J. U. Allingham, J. Antoran, S. Padhy, **E. Nalisnick**, and J. M. Hernández-Lobato. Learning Generative Models with Invariance to Symmetries. *Symmetry and Geometry in Neural Representations*, NeurIPS 2022.

22. S. Wang and **E. Nalisnick**. Active Learning for Multilingual Fingerspelling Corpora. *Adaptive Experimental Design and Active Learning in the Real World*, ICML 2022.

23. R. Verma, D. Barrejón, and **E. Nalisnick**. On the Calibration of Learning to Defer to Multiple Experts. *Human-Machine Collaboration and Teaming*, ICML 2022.

24. J. U. Allingham and **E. Nalisnick**. A Product of Experts Approach to Early-Exit Ensembles. *Dynamic Neural Networks*, ICML 2022.

25. P. Manggala, H. Hoos, and **E. Nalisnick**. Bayesian Weak Supervision via an Optimal Transport Approach. *Human-Machine Collaboration and Teaming*, ICML 2022.

26. U. Khurana, I. Vermeulen, **E. Nalisnick**, M. van Noorloos, and A. Fokkens. Hate Speech Criteria: A Modular Approach to Task-Specific Hate Speech Definitions. *Online Abuse and Harms*, NAACL 2022.

27. S. Amiri, A. Belloum, **E. Nalisnick**, S. Klous, and L. Gommans. On the Impact of Non-IID Data on the Performance and Fairness of Differentially Private Federated Learning. *Dependable and Secure Machine Learning*, DSN 2022.

28. U. Khurana, **E. Nalisnick**, and A. Fokkens. How Emotionally Stable is ALBERT? Testing Robustness with Stochastic Weight Averaging on a Sentiment Analysis Task. *Evaluation and Comparison of NLP Systems*, EMNLP 2021.

29. P. Manggala, H. Hoos, and **E. Nalisnick**. Bayesian Regression from Multiple Sources of Weak Supervision. *Machine Learning for Data*, ICML 2021.

30. Y. Zhang and **E. Nalisnick**. On the Inconsistency of Bayesian Inference for Misspecified Neural Networks. *Symposium on Advances in Approximate Bayesian Inference*, 2021.

31. **E. Nalisnick**, A. Matsukawa, Y. W. Teh, and B. Lakshminarayanan. Detecting Out-of-Distribution Inputs to Deep Generative Models Using Typicality. *Bayesian Deep Learning*, NeurIPS 2019.

32. **E. Nalisnick** and J. M. Hernández-Lobato. Automatic Depth Determination for Bayesian ResNets. *Bayesian Deep Learning*, NeurIPS 2018.

33. O. Rybakov, V. Mohan, A. Misra, S. LeGrand, R. Joseph, K. Chung, S. Singh, Q. You, **E. Nalisnick**, L. Dirac, and R. Luo. The Effectiveness of a Two-Layer Neural Network for Recommendations. Workshop Track, ICLR 2018.
34. D. Ji, **E. Nalisnick**, and P. Smyth. Mondrian Processes for Flow Cytometry Analysis. *Machine Learning for Health*, NeurIPS 2017.
35. **E. Nalisnick** and P. Smyth. Variational Inference with Stein Mixtures. *Advances in Approximate Bayesian Inference*, NIPS 2017.
36. **E. Nalisnick** and P. Smyth. The Amortized Bootstrap. *Implicit Models*, ICML 2017.
37. **E. Nalisnick**, L. Hertel, and P. Smyth. Approximate Inference for Deep Latent Gaussian Mixtures. *Bayesian Deep Learning*, NeurIPS 2016.
38. J. Park, M. Blume-Kohout, R. Krestel, **E. Nalisnick**, and P. Smyth. Analyzing NIH Funding Patterns over Time with Statistical Text Analysis. *Scholarly Big Data*, AAAI 2016.

Patents

1. E. M. H. Elnahrawy, V. Mohan, and **E. Nalisnick**. Generation and Use of Model Parameters in Cold-Start Scenarios. U.S. Patent Number 10,726,334. 28 July 2020.

Invited Talks

1. On the Calibration of Learning-to-Defer Systems, Univ. of California, Riverside 2022
2. Towards Informative Priors for Bayesian Deep Learning, Dagstuhl Seminar 2022
3. On the Calibration of Learning-to-Defer Systems, Univ. of Manchester, Stat. Seminar 2022
4. Predictive Complexity Priors, University of Edinburgh, ANC Seminar 2021
5. Predictive Complexity Priors, Generative Models and Uncertainty Quantification 2021
6. Predictive Complexity Priors, Imperial College Statistics Seminar 2021
7. Predictive Complexity Priors, Alan Turing Institute 2020
8. Detecting Distribution Shift with Deep Generative Models, Sydney ML Meetup 2020
9. Detecting Distribution Shift with Deep Generative Models, INNF+, ICML Workshop 2020
10. Building and Critiquing Models for Probabilistic Deep Learning, Gatsby Unit, UCL 2020
11. Building and Critiquing Models for Probabilistic Deep Learning, Carnegie Mellon Univ. 2020
12. Building and Critiquing Models for Probabilistic Deep Learning, Univ. of North Carolina 2020
13. Deep Learning & Statistics: Bridging the Gap with Prob. Structure, Univ. of Amsterdam 2020
14. Deep Learning & Statistics: Bridging the Gap with Prob. Structure, UC Santa Barbara 2020
15. Deep Learning Under Covariate Shift, UCI AI/ML Seminar 2019
16. Normalizing Flows for Tractable Probabilistic Modeling and Inference, T-Prime, NeurIPS 2019

17. Deep Learning: A Synthesis from Probabilistic Foundations, RAND Corp Stats. Seminar 2019
18. Evaluating Deep Generative Models on Out-of-Distribution Inputs, Oxford Stats. Seminar 2019
19. Do Deep Generative Models Know What They Don't Know?, CamAIML (MSR Cambridge) 2019
20. Do Deep Generative Models Know What They Don't Know?, Cambridge LTL Seminar 2019
21. Structured Shrinkage Priors for Neural Networks, Imperial College Statistics Seminar 2018
22. Deep Learning: A Synthesis from Probabilistic Foundations, UCI Statistics Seminar 2018
23. Approximate Inference for Frequentist Uncertainty Estimation, SoCal ML Symposium 2017
24. Deep Generative Models with Stick-Breaking Priors, UCI AI/ML Seminar 2017
25. Alternative Priors for Deep Generative Models, OpenAI 2017