nalisnick@jhu.edu enalisnick.github.io

Academic Employment

Assistant Professor, Tenure Track
Department of Computer Science
Johns Hopkins University
March 2024 - present

Assistant Professor, Tenure Track

Amsterdam Machine Learning Lab

University of Amsterdam

September 2020 - February 2024

Postdoctoral Research AssociateUniversity of CambridgeComputational and Biological Learning LaboratorySeptember 2018 to September 2020

Industrial Employment

Research ScientistGoogle DeepMind
Part time, one day per week (20% FTE)

February 2019 to January 2020

Research Scientist InternGoogle DeepMindSupervisor: Balaji LakshminarayananSummer 2018

Applied Scientist InternAmazonSupervisors: Vijai Mohan, Eiman ElnahrawyFall 2016

Research InternSupervisor: Hugo Larochelle
Summer 2016

Research InternMicrosoftSupervisors: Rich Caruana, Nick CraswellSummer 2015

Research Scientist InternAmazonSupervisors: Vijai Mohan, Rahul BhagatSummer 2014

Education

Ph.D. Computer Science 2013 - 2018

University of California, Irvine

Dissertation: On Priors for Bayesian Neural Networks

Advisor: Padhraic Smyth

M.S. Computer Science 2012 - 2013

Lehigh University

Thesis: Automatic Methods for Tracking Sentiment Dynamics in Plays

Advisor: Henry S. Baird

${\bf B.S.}$ Computer Science & English Literature

2008 - 2012

Lehigh University

Honors Thesis: A Combinatorial Explanation for a Conjecture of Fomin & Zelevinsky

Advisor: Mark Skandera

Honors and Awards

Oral presentation (8% of accepted papers), ECCV		2024
Outstanding Student Paper (as supervisor, 7 of 546 accepted paper)	oers), AISTATS	2024
Google Award for Inclusion Research		2024
Notable Paper (32 of 496 accepted papers), AISTATS		2023
Veni Laureate, Dutch Research Council		2021
Scholar, European Lab for Learning and Intelligent Systems (EL	LIS) Society	2021
Top / Best Reviewer	NeurIPS 2017, ICML 2019, ICML	2020
Honorable Mention for Best Poster Award, SoCal ML Symposiu	m	2017

Academic Supervision

CURRENT PHD CANDIDATES

Andrea Wynn (with Anqi Liu)	Johns Hopkins University, 2024 -	
Rajeev Verma (with Christian Naesseth, Volker Fischer)	University of Amsterdam, 2023 -	
Alexander Timans University of Amsterdam, 202 (with Christian Naesseth, Kaspar Sakmann, Christoph-Nikolas Straehle)		
Metod Jazbec (with Dan Zhang)	University of Amsterdam, 2022 -	
Mona Schirmer (with Dan Zhang)	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 -	

FORMER PHD CANDIDATES

James Allingham (external advisor via ELLIS)

Thesis: Improving Deep Learning with Probabilistic Approaches

2019 - 2024

First position after graduation: Research Scientist, Google DeepMind

Mrinank Sharma (with Tom Rainforth and Yee Whye Teh)
Thesis: *Uncertainty Estimation with Small and Large Models*First position after graduation: Research Scientist, Anthropic

University of Oxford 2020 - 2024

MASTERS STUDENTS

Johns Hopkins University: Yizirui Fang (2024), Runzhou Chen (2024)

University of Amsterdam: Jaap Stefels (2023), Thomas Jurriaans (2023), Mark Fokkema (2023), Arsen Sheverdin (2023), Nils Lehmann (2022), Shuai Wang (2022), Rajeev Verma (2022), Daniël Nobbe (2021).

VISITING STUDENTS

University of Amsterdam: Rutger Hendrix (2023), Javier Antorán (2022), Daniel Barrejón (2022).

Teaching

Human-in-the-Loop Machine Learning (Graduate)	Johns Hopkins University, 2024
Human-in-the-Loop Machine Learning (Graduate)	University of Amsterdam, 2023
Machine Learning I (Graduate)	University of Amsterdam, 2023
Introduction to Machine Learning (Undergraduate)	University of Amsterdam, 2020 - 2022
Bayesian Deep Learning Module, Deep Learning II (Graduate)	University of Amsterdam, 2022 - 2023
Project in AI (Graduate)	University of Amsterdam, 2021

Professional Service

Organization / Leadership Roles

2024 - present	
2022 - 2023	
2021 - 2022	
2019, 2021	
2020	
Area Chair / Senior Program Committee	
2021 - present	
2021 - present	
2021 - present	
2022	
2021	

Journal Reviewing	
American Statistical Association (JASA)	2020 - presen
Machine Learning Research (JMLR)	2018 - presen
Journal of Econometrics	2022
Advances in Statistical Analysis	2020
Neural Processing Letters	2019
Conference Reviewing	
Conference on Computer Vision and Pattern Recognition (CVPR)	2024
Neural Information Processing Systems (NeurIPS)	2016 - 2021
International Conference on Learning Representations (ICLR)	2018 - 2024
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
Grant Reviewing	
US Army Research Office	2024
Johns Hopkins Discovery Awards	2024
U.SIsrael Binational Science Foundation	2023
Institutional Service	
Data science admissions committee, Johns Hopkins University	2024 - presen
Computer science curriculum committee, Johns Hopkins University	2024 - presen
Cognitive science faculty hiring committee, Johns Hopkins University	2024
AI education program committee, University of Amsterdam	2021 - 2024
Faculty hiring committee, Machine Learning Lab, University of Amsterdam	202
Doctoral Committees	
Federico Bergamin, Technical University of Denmark	2024

Advances in Deep Generative Models, Approximate Inference, and their Applications

Uncertainty and the Medical Interview	2024
Bertrand Charpentier, Technical University of Munich Uncertainty Estimation for Independent and Non-Independent Data	2024
Kamil Deja, Warsaw University of Technology Data Representations in Generative Modelling	2023
ChangYong Oh, University of Amsterdam Bayesian Optimization on Non-Conventional Search Spaces	2023
Emiel Hoogeboom, University of Amsterdam Normalizing Flows and Diffusion Models for Discrete and Geometric Data	2023
Shi Hu, University of Amsterdam Uncertainty, Robustness and Safety in Artificial Intelligence	2022

Publications

* Denotes equal contribution

JOURNAL ARTICLES

- 1. S. Amiri, **E. Nalisnick**, A. Belloum, S. Klous, L. Gommans. Practical Modelling of Mixed-Tailed Data with Normalizing Flows. In *Transactions on Machine Learning Research* (TMLR), 2024.
- 2. **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.
- 3. 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

- 4. U. Khurana, E. Nalisnick, and A. Fokkens. DefVerify: Do Hate Speech Models Reflect Their Dataset's Definition? In *Proceedings of the 31st International Conference on Computational Linguistics* (COLING), 2025.
- 5. M. Jazbec*, A. Timans*, T. H. Veljković, K. Sakmann, D. Zhang, C. A. Naesseth, **E. Nalisnick**. Fast yet Safe: Early-Exiting with Risk Control. In *Advances in Neural Information Processing Systems* (NeurIPS), 2024.
- J. U. Allingham, B. K. Mlodozeniec, S. Padhy, J. Antoran, D. Krueger, R. E. Turner, E. Nalisnick, J. M. Hernández-Lobato. A Generative Model of Symmetry Transformations. In *Advances in Neural Information Processing Systems* (NeurIPS), 2024.
- 7. U. Khurana, **E. Nalisnick**, A. Fokkens, and S. Swayamdipta. Crowd-Calibrator: Can Annotator Disagreement Inform Calibration in Subjective Tasks? In *Proceedings of the 1st Conference on Language Modeling* (COLM), 2024.

8. A. Timans, C.-N. Straehle, K. Sakmann, and **E. Nalisnick**. Adaptive Bounding Box Uncertainties via Two-Step Conformal Prediction. In *Proceedings of the 18th European Conference on Computer Vision* (ECCV), 2024. *Oral presentation (8% of accepted papers)*.

- 9. M. Jazbec, P. Forré, S. Mandt, D. Zhang, and **E. Nalisnick**. Early-Exit Neural Networks with Nested Prediction Sets. In *Proceedings of the 40th Conference on Uncertainty in Artificial Intelligence* (UAI), 2024.
- D. Tailor, A. Patra, R. Verma, P. Manggala, and E. Nalisnick. Learning to Defer to a Population: A
 Meta-Learning Approach. In Proceedings of the 27th International Conference on Artificial Intelligence
 and Statistics (AISTATS), 2024. Oral presentation, outstanding student paper (1% of accepted papers).
- 11. M. Jazbec, J. U. Allingham, D. Zhang, and E. Nalisnick. Towards Anytime Classification in Early-Exit Architectures by Enforcing Conditional Monotonicity. In *Advances in Neural Information Processing Systems* (NeurIPS), 2023.
- 12. D. Tailor, M. E. Khan, and **E. Nalisnick**. Exploiting Inferential Structure in Neural Processes. In *Proceedings of the 39th Conference on Uncertainty in Artificial Intelligence* (UAI), 2023.
- 13. 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.
- 14. 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.
- 15. 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. 'Notable' oral presentation (6% of accepted papers).
- 16. 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.
- 17. 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.
- 18. 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.
- 19. **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.
- 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.
- 21. **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.

22. **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.

- 23. **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.
- 24. 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.
- 25. **E. Nalisnick** and P. Smyth. Learning Priors for Invariance. In *Proceedings of the 21st International Conference on Artificial Intelligence and Statistics* (AISTATS), 2018.
- 26. **E. Nalisnick** and P. Smyth. Learning Approximately Objective Priors. In *Proceedings of the 33rd Conference on Uncertainty in Artificial Intelligence* (UAI), 2017.
- 27. **E. Nalisnick** and P. Smyth. Stick-Breaking Variational Autoencoders. In *Proceedings of the 5th International Conference on Learning Representations* (ICLR), 2017.
- 28. **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.
- 29. **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.
- 30. **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)

- 31. Y. Fang and **E. Nalisnick**. Learning to Defer with an Uncertain Rejector via Conformal Prediction. *Bayesian Decision-Making and Uncertainty*, NeurIPS 2024.
- 32. R. Williams, E. Nalisnick, and A. Holbrook. Autoregressive Generative Modeling of Weighted Graphs. *Learning on Graphs Conference*, Extended Abstract Track, 2024.
- 33. R. Verma, V. Fischer, and **E. Nalisnick**. On the Calibration of Conditional-Value-at-Risk. *Next Generation of AI Safety*, ICML 2024.
- 34. N. Lehmann, N. M. Gottschling, S. Depeweg, and **E. Nalisnick**. Uncertainty Aware Tropical Cyclone Wind Speed Estimation from Satellite Data. *Machine Learning for Remote Sensing*, ICLR 2024. *Oral presentation*.
- 35. M. Schirmer, D. Zhang, and **E. Nalisnick**. Beyond Top-Class Agreement: Using Divergences to Forecast Performance under Distribution Shift. *Distribution Shifts*, NeurIPS 2023.
- 36. N. Lehmann, N. M. Gottschling, S. Depeweg, and **E. Nalisnick**. A Comparison of Uncertainty Quantification Methods for Earth Observation Image Regression Data. *Uncertainty Quantification for Computer Vision*, ICCV 2023.
- 37. 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.
- 38. S. Wang and **E. Nalisnick**. Active Learning for Multilingual Fingerspelling Corpora. *Adaptive Experimental Design and Active Learning in the Real World*, ICML 2022.
- 39. J. U. Allingham and **E. Nalisnick**. A Product of Experts Approach to Early-Exit Ensembles. *Dynamic Neural Networks*, ICML 2022.
- 40. P. Manggala, H. Hoos, and **E. Nalisnick**. Bayesian Weak Supervision via an Optimal Transport Approach. *Human-Machine Collaboration and Teaming*, ICML 2022.
- 41. 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.
- 42. 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.
- 43. 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.
- 44. P. Manggala, H. Hoos, and **E. Nalisnick**. Bayesian Regression from Multiple Sources of Weak Supervision. *Machine Learning for Data*, ICML 2021.
- 45. Y. Zhang and E. Nalisnick. On the Inconsistency of Bayesian Inference for Misspecified Neural Networks. *Symposium on Advances in Approximate Bayesian Inference*, 2021.
- 46. **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.
- 47. **E. Nalisnick** and J. M. Hernández-Lobato. Automatic Depth Determination for Bayesian ResNets. *Bayesian Deep Learning*, NeurIPS 2018.
- 48. 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.
- 49. D. Ji, **E. Nalisnick**, and P. Smyth. Mondrian Processes for Flow Cytometry Analysis. *Machine Learning for Health*, NeurIPS 2017.
- 50. **E. Nalisnick** and P. Smyth. Variational Inference with Stein Mixtures. *Advances in Approximate Bayesian Inference*, NIPS 2017.
- 51. E. Nalisnick and P. Smyth. The Amortized Bootstrap. *Implicit Models*, ICML 2017. *Oral presentation*.
- 52. **E. Nalisnick**, L. Hertel, and P. Smyth. Approximate Inference for Deep Latent Gaussian Mixtures. *Bayesian Deep Learning*, NeurIPS 2016.
- 53. 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

International Venues, Large National Venues, Keynotes

TEF	RNATIONAL VENUES, LARGE NATIONAL VENUES, KEYNOTES	
1.	Bayes Plays the Lottery: A Study of Partially Stochastic Neural Networks Dagstuhl Seminar on Rethinking Bayes in the Age of Modern AI	2024 Wadern, Germany
2.	The Boons of Being Less Bayesian: a Study of Partially Stochastic Neural Invited Session on <i>Advances in Inference and Theory for Bayesian Neural N</i> JOINT STATISTICAL MEETINGS (JSM)	
3.	Detecting Distribution Shift with Deep Generative Models DUTCH SOCIETY OF PATTERN RECOGNITION AND IMAGE PROCESSING	2023 Amsterdam, Netherlands
4.	Towards Anytime Uncertainty Estimation in Early-Exit Neural Networks Workshop on <i>Uncertainty Quantification for Computer Vision</i> International Conference on Computer Vision (ICCV)	2023 Paris, France
5.	Learning to Defer to One, Multiple, or a Population of Expert(s) ELLIS Workshop on Robust Machine Learning (RobustML)	2023 Helsinki, Finland
6.	Bayesian Learning & Uncertainty Quantification Mediterranean Machine Learning Summer School	2023 Thessaloniki, Greece
7.	Towards Anytime Computation in Deep Architectures Dagstuhl Seminar on Deep Generative Models	2023 Wadern, Germany
8.	Towards Informative Priors for Bayesian Deep Learning Dagstuhl Seminar on Tractable Probabilistic Models	2022 Wadern, Germany
9.	Predictive Complexity Priors GenU Workshop: Gen. Models and Uncertainty Quantification	2021 Copenhagen, Denmark
10.	Detecting Distribution Shift with Deep Generative Models Workshop on <i>Invertible Neural Nets, Normalizing Flows, and Explicit Likel</i> International Conference on Machine Learning (ICML)	2020 ihood Models (INNF+) Virtual
11.	Normalizing Flows for Tractable Probabilistic Modeling and Inference T-Prime, NeurIPS Social	2019 Vancouver, Canada

DEPARTMENT SEMINARS, COMPANIES, LOCAL EVENTS

- 1. Learning to Defer to One, Multiple, or a Population of Expert(s) 2023 2024
 AMAZON, JOHNS HOPKINS APPLIED PHYSICS LABORATORY
- 2. Efficient Collection of Sign Language Data
 GALLAUDET UNIVERSITY
 2024

3.	Towards a Statistical Foundation for Human-AI Collaboration	2023
	Univ. of Tübingen / Bosch AI, Oregon State Univ.: Computer Science, Johns Hopkins Computer Science, George Washington Univ.: Computer Science	Univ.:
4.	On the Calibration of Learning-to-Defer Systems Univ. of California, Riverside: Computer Science, Univ. of Manchester: Statistics	2022
5.	Predictive Complexity Priors Univ. of Edinburgh: ANC Seminar, Imperial College: Statistics, Alan Turing Institut	2021 ге
6.	Detecting Distribution Shift with Deep Generative Models Sydney Machine Learning Meetup	2020
7.	Building and Critiquing Models for Probabilistic Deep Learning University College London: Gatsby Unit, Carnegie Mellon Univ.: Statistics, Uni North Carolina: Computer Science, Univ. of Amsterdam: Informatics	2020 V. OF
8.	Deep Learning & Statistics: Bridging the Gap with Prob. Structure Univ. of California, Santa Barbara: Statistics	2020
9.	Deep Learning Under Covariate Shift Univ. of California, Irvine: AI/ML Seminar	2019
10.	Deep Learning: A Synthesis from Probabilistic Foundations 2018 RAND Corporation: Statistics, Univ. of California, Irvine: Statistics	- 2019
11.	Evaluating Deep Generative Models on Out-of-Distribution Inputs Univ. of Oxford: Statistics, Camaliml (MSR Cambridge), Univ. of Cambridge: LTL Sem	2019 Inar
12.	Structured Shrinkage Priors for Neural Networks Imperial College: Statistics	2018
13.	Approximate Inference for Frequentist Uncertainty Estimation SoCal ML Symposium	2017
14.	Deep Generative Models with Stick-Breaking Priors Univ. of California, Irvine: AI/ML Seminar, OpenAI	2017
Gene	eral Audience, Outreach	
1.	Discussed Human-AI Collaboration on the Faculty Factory Podcast	2024
2.	AI Risks: From Today to Doomsday — An Academic Panel Discussion Amsterdam ELLIS Unit	2023