GEOFF PLEISS, CURRICULUM VITAE

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ACADEMIC POSITIONS AND EDUCATION

2023– UNIVERSITY OF BRITISH COLUMBIA (Vancouver, BC, Canada)
Assistant Professor, Department of Statistics (2023–)
Associate Member, Department of Computer Science (2023–)
Centre for Artificial Intelligence Decision-Making and Action (CAIDA)
Artificial Intelligence Methods for Scientific Impact (AIM-SI) Cluster

2023– VECTOR INSTITUTE (Toronto, ON, Canada)
CIFAR AI Chair (2024–)
Faculty Member (2023–)

2020–2023 COLUMBIA UNIVERSITY (New York, NY, USA)
Postdoctoral Research Scientist, Zuckerman Institute
Supervisor: John P. Cunningham

2015–2020 CORNELL UNIVERSITY (Ithaca, NY, USA)
PhD, Computer Science (2020)
MSc, Computer Science (2018)
Committee: Kilian Q. Weinberger (chair), Andrew Gordon Wilson, Karthik Sridharan
Dissertation: A Scalable and Flexible Framework for Gaussian Processes via Matrix-Vector Multiplication

2009–2013 OLIN COLLEGE OF ENGINEERING (Needham, MA, USA)
B.Sc., Engineering (2013)
Concentration: Computing with Applied Mathematics

OTHER RELEVANT EXPERIENCE

2019–2020 ASAPP, INC. (Ithaca, NY, USA)
Research Intern

2018 MICROSOFT, INC. (Redmond, WA, USA)
Research Intern

2013–2015 PIVOTAL INC. (New York, NY, USA)
Software Engineer

HONOURS AND AWARDS

2024	Canada CIFAR AI Chair
2023	AISTATS Top Reviewer (top 10%)
2022	NeurIPS "I Can't Believe It's Not Better" Workshop – Most Surprising Result Award
2022	AISTATS Top Reviewer (top 10%)
2020	NeurIPS Top Reviewer (top 10%)
2019	NeurIPS Top Reviewer (top 50%)
2017	National Science Foundation Graduate Research Fellowship (honorable mention)
2016	National Science Foundation Graduate Research Fellowship (honorable mention)
2012	Barry M. Goldwater Scholarship (honorable mention)
2009	Olin Merit Scholarship (4 year full-tuition recipient)

PUBLICATIONS

* *denotes equal author contribution (shared first-authorship).*

Citation Statistics

All statistics are based on Google Scholar, with manual corrections for errors.

Total citations of all publications: $14{,}500+$

Total citations of top-three most cited publications: $10{,}000+$

Publications (including technical reports) with $100+$ citations: 13

Publications (including technical reports) with $10+$ citations: 29

Preprints Under Submission

[U1] Jason Yoo, Yingchen He, Saeid Naderiparizi, Dylan Green, Gido M. van de Ven, **Geoff Pleiss**, and Frank Wood. Lifelong learning of video diffusion models from a single video stream. *arXiv preprint arXiv:2406.04814*, 2025.

[U2] Mahdi Ebrahimi Kahou, James Yu, Jesse Perla, and **Geoff Pleiss**. How inductive bias in machine learning aligns with optimality in economic dynamics. *arXiv preprint arXiv:2406.01898*, 2024.

[U3] Alexandre Bouchard-Côté, Trevor Campbell, **Geoff Pleiss**, and Nikola Surjanovic. MCMC-driven learning. *arXiv preprint arXiv:2402.09598*, 2024.

Refereed Conference Publications

In machine learning, conferences are considered prestegious venues for publication. All venues listed here are highly selective (acceptance rate $20-30\%$*) and have peer-reviewing and refereeing processes similar to journals.*

[C1] Tim G. Zhou, Evan Shelhamer, and **Geoff Pleiss**. Asymmetric duos: Sidekicks improve uncertainty. In *Neural Information Processing Systems*, 2025. [SPOTLIGHT PRESENTATION—TOP 3.2% OF SUBMISSIONS].

[C2] Niclas Dern, John P. Cunningham, and **Geoff Pleiss**. Theoretical limitations of ensembles in the age of overparameterization. In *International Conference on Machine Learning*, 2025. [ORAL PRESENTATION—TOP 1% OF SUBMISSIONS].

[C3] Natalie Maus, Kyurae Kim, **Geoff Pleiss**, David Eriksson, John P. Cunningham, and Jacob R. Gardner. Approximation-aware Bayesian optimization. In *Neural Information Processing Systems*, 2024. [SPOTLIGHT PRESENTATION—TOP 4% OF SUBMISSIONS].

[C4] Jonathan Wenger, Kaiwen Wu, Philipp Hennig, Jacob R. Gardner, **Geoff Pleiss**, and John P. Cunningham. Computation-aware Gaussian processes: Model selection and linear-time inference. In *Neural Information Processing Systems*, 2024.

[C5] Agustinus Kristiadi, Felix Strieth-Kalthoff, Marta Skreta, Pascal Poupart, Alán Aspuru-Guzik, and **Geoff Pleiss**. A sober look at LLMs for material discovery: Are they actually good for Bayesian optimization over molecules? In *International Conference on Machine Learning*, 2024.

[C6] Jinsoo Yoo, Yunpeng Liu, Frank Wood, and **Geoff Pleiss**. Layerwise proximal replay: A proximal point method for online continual learning. In *International Conference on Machine Learning*, 2024.

[C7] Kaiwen Wu, Jonathan Wenger, Hadyn Jones, **Geoff Pleiss**, and Jacob R. Gardner. Large-scale Gaussian processes via alternating projection. In *Artificial Intelligence and Statistics*, 2024.

[C8] Andres Potapczynski*, Marc Anton Finzi*, **Geoff Pleiss**, and Andrew Gordon Wilson. CoLA: Exploiting compositional structure for automatic and efficient numerical linear algebra. In *Neural Information Processing Systems*, 2023.

[C9] Alexandre Capone, Sandra Hirche, and **Geoff Pleiss**. Sharp calibrated Gaussian processes. In *Neural Information Processing Systems*, 2023.

[C10] Jonathan Wenger, **Geoff Pleiss**, Marvin Pförtner, Philipp Hennig, and John P. Cunningham. Posterior and computational uncertainty in Gaussian processes. In *Neural Information Processing Systems*, 2022.

[C11] Taiga Abe*, E. Kelly Buchanan*, **Geoff Pleiss**, Richard Zemel, and John P. Cunningham. Deep ensembles work, but are they necessary? In *Neural Information Processing Systems*, 2022.

[C12] Luhuan Wu, **Geoff Pleiss**, and John P. Cunningham. Variational nearest neighbor Gaussian processes. In *International Conference on Machine Learning*, 2022.

[C13] Jonathan Wenger, **Geoff Pleiss**, Philipp Hennig, John P. Cunningham, and Jacob R. Gardner. Preconditioning for scalable Gaussian process hyperparameter optimization. In *International Conference on Machine Learning*, 2022. [ORAL PRESENTATION—TOP 2% OF SUBMISSIONS].

[C14] **Geoff Pleiss** and John P. Cunningham. The limitations of large width in neural networks: A deep Gaussian process perspective. In *Neural Information Processing Systems*, 2021.

[C15] Anthony L. Caterini*, Gabriel Loaiza-Ganem*, **Geoff Pleiss**, and John P. Cunningham. Rectangular flows for manifold learning. In *Neural Information Processing Systems*, 2021.

[C16] Andres Potapczynski*, Luhuan Wu*, Dan Biderman*, **Geoff Pleiss**, and John P. Cunningham. Bias-free scalable Gaussian processes via randomized truncations. In *International Conference on Machine Learning*, 2021.

[C17] Luhuan Wu*, Andrew Miller*, Lauren Anderson, **Geoff Pleiss**, David Blei, and John P. Cunningham. Hierarchical inducing point Gaussian process for inter-domain observations. In *Artificial Intelligence and Statistics*, 2021.

[C18] **Geoff Pleiss**, Martin Jankowiak, David Eriksson, Anil Damle, and Jacob R. Gardner. Fast matrix square roots with applications to Gaussian processes and Bayesian optimization. In *Neural Information Processing Systems*, 2020.

[C19] **Geoff Pleiss**, Tianyi Zhang, Ethan Elenberg, and Kilian Q. Weinberger. Identifying mislabeled data using the area under the margin ranking. In *Neural Information Processing Systems*, 2020.

[C20] Martin Jankowiak, **Geoff Pleiss**, and Jacob R. Gardner. Deep sigma point processes. In *Uncertainty in Artificial Intelligence*, 2020.

[C21] Martin Jankowiak, **Geoff Pleiss**, and Jacob R. Gardner. Parametric Gaussian process regressors. In *International Conference on Machine Learning*, 2020.

[C22] Yurong You*, Yan Wang*, Wei-Lun Chao*, Divyansh Garg, **Geoff Pleiss**, Bharath Hariharan, Mark Campbell, and Kilian Q. Weinberger. Pseudo-Lidar++: Accurate depth for 3D object detection in autonomous driving. In *International Conference on Learning Representations*, 2020.

[C23] Ke Wang*, **Geoff Pleiss***, Jacob R. Gardner, Stephen Tyree, Kilian Q. Weinberger, and Andrew Gordon Wilson. Exact Gaussian processes on a million data points. In *Neural Information Processing Systems*, 2019.

[C24] Jacob R. Gardner*, **Geoff Pleiss***, David Bindel, Kilian Q. Weinberger, and Andrew Gordon Wilson. GPyTorch: Blackbox matrix-matrix Gaussian process inference with GPU acceleration. In *Neural Information Processing Systems*, 2018. [SPOTLIGHT PRESENTATION—TOP 4% OF SUBMISSIONS].

[C25] **Geoff Pleiss**, Jacob R. Gardner, Andrew Gordon Wilson, and Kilian Q. Weinberger. Constant time predictive distributions for Gaussian processes. In *International Conference on Machine Learning*, 2018.

[C26] Jacob R. Gardner, **Geoff Pleiss**, Ruihan Wu, Andrew Gordon Wilson, and Kilian Q. Weinberger. Product kernel interpolation for scalable Gaussian processes. In *Artificial Intelligence and Statistics*, 2018.

[C27] **Geoff Pleiss***, Manish Raghavan*, Felix Wu, Jon Kleinberg, and Kilian Q. Weinberger. On fairness and calibration. In *Neural Information Processing Systems*, 2017.

[C28] Chuan Guo*, **Geoff Pleiss***, Yu Sun*, and Kilian Q. Weinberger. On calibration of modern neural networks. In *International Conference on Machine Learning*, 2017.

[C29] Paul Upchurch*, Jacob Gardner*, **Geoff Pleiss**, Kavita Bala, Robert Pless, Noah Snavely, and Kilian Q. Weinberger. Deep feature interpolation for image content changes. In *Computer Vision and Pattern Recognition*, 2017.

[C30] Gao Huang*, Yixuan Li*, **Geoff Pleiss**, Zhuang Liu, John E. Hopcroft, and Kilian Q. Weinberger. Snapshot ensembles: Train 1, get m for free. In *International Conference on Learning Representations*, 2017.

Journal Publications

[J1] Blakesley Burkhart, Thavisha E. Dharmawardena, Shmuel Bialy, Thomas J. Haworth, Fernando Cruz Aguirre, Young-Soo Jo, B.G. Andersson, Haeun Chung, Jerry Edelstein, Isabelle Grenier, Erika T. Hamden, Wonyong Han, Keri Hoadley, Min-Young Lee, Kyoung-Wook Min, Thomas Müller, Kate Pattle, J. E. G. Peek, **Geoff Pleiss**, David Schiminovich, Kwang-Il Seon, Andrew Gordon Wilson, and Catherine Zucker. A nearby dark molecular cloud in the local bubble revealed via h_2 fluorescence. *Nature Astronomy*, pages 1–9, 2025.

[J2] Taiga Abe, E. Kelly Buchanan, **Geoff Pleiss**, and John P. Cunningham. Pathologies of predictive diversity in deep ensembles. *Transactions on Machine Learning Research*, 2024. [FEATURED PAPER—TOP 2% OF SUBMISSIONS].

[J3] Jordan Venderley, Michael Matty, Krishnanand Mallayya, Matthew Krogstad, Jacob Ruff, **Geoff Pleiss**, Varsha Kishore, David Mandrus, Daniel Phelan, Lekhanath Poudel, Andrew Gordon Wilson, Kilian Q. Weinberger, Puspa Upreti, Michael R. Norman, Stephan Rosenkranz, Ray Osborn, and Eun-Ah Kim. Harnessing interpretable and unsupervised machine learning to address big data from modern x-ray diffraction. *Proceedings of the National Academy of Sciences*, 119(24), 2022.

[J4] Gao Huang*, Zhuang Liu*, **Geoff Pleiss**, Laurens van der Maaten, and Kilian Q. Weinberger. Convolutional networks with dense connectivity. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2019.

[J5] James Knighton, **Geoff Pleiss**, Elizabeth Carter, Steven Lyon, M. Todd Walter, and Scott Steinschneider. Potential predictability of regional precipitation and discharge extremes using synoptic-scale climate information via machine learning: An evaluation for the eastern continental United States. *Journal of Hydrometeorology*, 20(5):883–900, 2019.

Technical Reports and Workshop Proceedings

[R1] Alexandre Capone, Kamron Zaidi, Tianyu Xu, Brian Yang, **Geoff Pleiss**, and Jeff Schneider. CaliPSo: Calibrated predictive models with sharpness as loss function. In *ICML Workshop on Methods and Opportunities at Small Scale*, 2025.

[R2] Tristan Cinquin, Stanley Lo, Felix Strieth-Kalthoff, Alán Aspuru-Guzik, **Geoff Pleiss**, Robert Balmer, Tim G. J. Rudner, Vincent Fortuin, and Agustinus Kristiadi. What actually matters for materials discovery: Pitfalls and recommendations in Bayesian optimization. In *Symposium on Advances in Approximate Bayesian Inference, Workshop Track*, 2025.

[R3] Agustinus Kristiadi, Felix Strieth-Kalthoff, Sriram Ganapathi Subramanian, Vincent Fortuin, Pascal Poupart, and **Geoff Pleiss**. How useful is intermittent, asynchronous expert feedback for Bayesian optimization? In *Symposium on Advances in Approximate Bayesian Inference, Workshop Track*, 2024.

[R4] E. Kelly Buchanan, **Geoff Pleiss**, Yixin Wang, and John P. Cunningham. The effects of ensembling on long-tailed data. In *NeurIPS "Heavy Tails in ML: Structure, Stability, Dynamics" Workshop*, 2023.

[R5] Taiga Abe*, E. Kelly Buchanan*, **Geoff Pleiss**, and John P. Cunningham. The best deep ensembles sacrifice predictive diversity. In *NeurIPS "I Can't Believe It's Not Better!" Workshop*, 2022. [ORAL PRESENTATION].

[R6] Martin Jankowiak and **Geoff Pleiss**. Scalable cross validation losses for Gaussian process models. *arXiv preprint arXiv:2105.11535*, 2021.

[R7] Elliott Gordon-Rodriguez, Gabriel Loaiza-Ganem, **Geoff Pleiss**, and John P. Cunningham. Uses and abuses of the cross-entropy loss: Case studies in modern deep learning. In *NeurIPS "I Can't Believe It's Not Better!" Workshop*, 2020. [ORAL PRESENTATION].

[R8] **Geoff Pleiss***, Danlu Chen*, Gao Huang, Tongcheng Li, Laurens van der Maaten, and Kilian Q. Weinberger. Memory-efficient implementation of DenseNets. *arXiv preprint arXiv:1707.06990*, 2017.

SELECTED OPEN SOURCE

Co-Founder and Maintainer

2018– GPyTorch
https://gpytorch.ai

2022– LinearOperator
https://linear-operator.readthedocs.io

2023– CoLA (Compositional Linear Algebra)
https://cola.readthedocs.io/

PATENTS

[P1] Tianyi Zhang, Sam Altschul, Kilian Weinberger, Michael Griffiths, and **Geoff Pleiss**. Trend detection via machine learning models, September 2023. US Patent #11,763,230.

GRANTS

Illuminating the Chemical Universe: Can Machine Learning be Used to Fill Critical Knowledge gaps in Astrochemistry?

2025 New Frontiers in Research Fund—Exploration (co-PI, with Ilsa Cooke)

Solving Adversarial Examples with DP-guided Diffusion Models

2025 UBC Data Science Institute Postdoctoral Matching Fund (co-PI, with Mathias Lecuyer)

2025 CIFAR AI Catalyst Grant (co-PI, with Mathias Lecuyer and Nidhi Hegde)

Probabilistic Models for Complex and Large-Scale Scientific Discovery

2024 NSERC Discovery (PI)

2024 NSERC Early Career Supplement (PI)

INVITED TALKS

Lessons Learned from Developing and Maintaining Open Source Software

Mar. 2025 Joint Statistics Seminar, University of British Columbia / Simon Fraser University (Vancouver, BC, Canada)

Foundation Models for Science: Combining LLMs and Black-Box Optimization for Materials Discovery

Nov. 2024 SLAS Data Science and AI Symposium (Boston, MA, USA)

June 2024 Adaptive Experimentation Workshop, Meta Inc. (New York, NY, USA)

May 2024 AI In Medicine Meeting, Karolinska Institute (Stockholm, Sweden)

Ensembles in the Age of Overparameterization: Promises and Pathologies

Feb. 2025 Centre for Advancing Responsible and Ethical Artificial Intelligence (CARE-AI) Seminar, Guelph University (Virtual)

Oct. 2024 Centre for Artificial Intelligence Decision-Making and Action (CAIDA) Seminar, University of British Columbia (Vancouver, BC, Canada)

June 2024 Statistical Society of Canada Annual Meeting (St. John's, NL, Canada)

Troubling Trajectories for Uncertainty Quantification and Decision Making with Neural Networks

April 2024 Academic Seminar, Two Sigma Investments LP (New York, NY, USA)

Dec. 2023 Vector Distinguished Talk Series, Vector Institute (Toronto, ON, Canada)

Bridging The Gap Between Deep Learning and Probabilistic Modeling

Spring 2022 Various universities

Understanding Neural Networks through Gaussian Processes, and Vice Versa

Oct. 2021 Artificial Intelligence Seminar, University College London (Virtual)

GPyTorch: A Scalable and Flexible Framework for Gaussian Processes via Matrix-Vector Multiplication

Dec. 2020 Machine Learning for Nuclear Data Workshop (Virtual)
May 2020 Columbia University (Virtual)

From $N = 1{,}000$ to $N = 1{,}000{,}000$: Scaling Gaussian Process Inference with Matrix Multiplication and GPU Acceleration

Nov. 2019 Computer Science Colloquium, Cornell University (Ithaca, NY, USA)
May 2019 Symposium on Bayesian Optimization, Uber AI (San Francisco, CA, USA)

CONTRIBUTED TALKS

July 2025 *Theoretical Limitations of Ensembles in the Age of Overparameterization*
International Conference on Machine Learning (Vancouver, BC, Canada)

Aug. 2024 *Task-Aware Scalable Gaussian Processes*
Joint Statistical Meeting (Portland, OR, USA)

Feb. 2024 *Blurring the Distinction Between Data Collection and Computation in Gaussian Processes*
SIAM UQ Conference (Trieste, Italy)

Dec. 2018 *GPyTorch: Blackbox Matrix-Matrix Gaussian Process Inference with GPU Acceleration*
Neural Information Processing Systems (Montreal, QC, Canada)

July 2018 *Constant Time Predictive Distributions for Gaussian Processes*
International Conference on Machine Learning (Stockholm, Sweden)

Aug. 2017 *On Calibration of Modern Neural Networks*
International Conference on Machine Learning (Sydney, Australia)

INVITED LECTURES

May 2024 Swedish NDPIA "AI Applications in Infection Biology" Course (Rånäs, Sweden)
Machine Learning Fundamentals I and II

TEACHING

University of British Columbia

Spring 2025 STAT 547U — Topics in Deep Learning Theory
Fall 2024 STAT 406 — Methods for Statistical Learning
Fall 2023 STAT 520P — Bayesian Optimization

Advising and Supervision

Student Supervision

2025–	Logan Yates (PhD), Department of Statistics, UBC
2025–	Isaac Rankin (PhD), Department of Statistics, UBC
2025–	Tim Zhou (MSc $\rightarrow$ PhD), Department of Computer Science, UBC (co. Evan Shelhamer)
2025–	Zachary Lau (MSc), Department of Statistics, UBC
2024–	Donney Fan (PhD), Department of Computer Science, UBC (co. Mark Schmidt)
2024–2025	Joey Hotz (MSc), Department of Statistics, UBC
2025	Nathan Cantafio (BSc), UBC
2024–2025	Timothy Zhou (BSc), UBC
2024	Tommy Xu (BSc), UBC

Research Intern Supervision

2025	Tristan Cinquin, Vector Institute
2024	Colin Doumont, Vector Institute
2024	Niclas Dern, Vector Institute
2024	Felix Fu, Vector Institute

Research Committee Membership (Excluding Direct Supervision)

2025–	Puneesh Deora (PhD), Department of Electrical and Computer Engineering, UBC
2025–	Naitong Chen (PhD), Department of Statistics, UBC
2024–	Nikola Surajonovic (PhD), Department of Statistics, UBC

External Research Committee Membership

2024	Daniel Molinuevo, EPFL (Master's Thesis Expert Examiner)
2024	Paul E. Chang, Aalto University (Doctoral Thesis Pre-Examiner)

Professional Service

Area Chair / Action Editor

International Conference on Machine Learning (2022–2025)
International Conference on Learning Representations (2024–2026)
International Joint Conference on Artificial Intelligence (2023)
Neural Information Processing Systems (2022–2025)
Transactions on Machine Learning Research (2024–2025)

Organizing Committee Member

UBC AIM-SI Workshop AI-Guided Scientific Discovery (2025)

ICML Workshop on Championing Open-source DEvelopment in Machine Learning (CODEML) (2025)

UBC Seminar on Equity, Diversity, and Inclusion in Statistics (2024–2025)

NeurIPS Workshop on Gaussian Processes, Spatiotemporal Modeling, and Decision-Making Systems (2022)

Virtual Seminar on Gaussian Processes, Spatiotemporal Modeling, and Decision-Making Systems (2022–2023)

Panelist

Uncertainty Estimation in LLM-Generated Content: ICML Workshop (2025)

Scientific Software Development Panel: Dagstuhl Seminar on Probabilistic Numerical Methods (2021)

Grant Reviewer

New Frontiers in Research Fund (NFRF) Exploration Grants (2026)

Journal Reviewer

Bernoulli (2022)

Journal of Machine Learning Research (2019–2022)

SIAM/ASA Journal on Uncertainty Quantification (2024)

SIAM Journal on Scientific Computing (2025)

Transactions on Machine Learning Research (2022–2023)

Transactions on Pattern Analysis and Machine Intelligence (2020–2021)

Conference Reviewer

AAAI Conference on Artificial Intelligence (2017)

Artificial Intelligence and Statistics (2019–2026)

International Conference on Learning Representations (2022)

International Conference on Machine Learning (2019–2021)

Neural Information Processing Systems (2018–2021)

Uncertainty in Artificial Intelligence (2018)

Workshop Reviewer

NeurIPS Workshop on Bayesian Decision-making and Uncertainty (2024–2025)

NeurIPS "I Can't Believe It's Not Better" Workshop (2023)

NeurIPS "Your Model is Wrong: Robustness and Misspecification in Probabilistic Modeling" Workshop (2021)

Other

NeurIPS—workshop proposal reviewer (2024–2025)

Media Appearances

May 2024	Vector Institute Research Blog: The known unknowns: Vector researcher Geoff Pleiss digs deep into uncertainty to make ML models more accurate
May 2023	"The Ensembles Podcast"

Outreach

Fall 2020	LatinX in AI NeurIPS mentorship program
Spring 2018	Cornell "Expand Your Horizons" (STEM workshop for middle school girls)
Spring 2017	Cornell "GRASSHOPR" (After-school CS class at local middle school)
Spring 2016	Cornell "Expand Your Horizons"
Spring 2016	"Code4Kids" (After-school CS class at local elementary school)