

# Juhan Bae, *Curriculum Vitae*

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EDUCATION      **University of Toronto**, Toronto, ON, Canada

Ph.D., Computer Science Sep. 2019 - Present

- [Machine Learning Group](#)
- Committee: Roger Grosse (supervisor), David Duvenaud (chair), Jimmy L. Ba (regular member)

B.Sc. Hons., Computer Science and Statistics Sep. 2015 - Nov. 2019

- Graduated with High Distinction
- Focus on Artificial Intelligence

PEER-  
REVIEWED  
PUBLICATIONS

- [1] **Efficient Parametric Approximations of Neural Network Function Space Distance**  
Nikita Dhawan, Sheldon Huang, [Juhan Bae](#), Roger Grosse  
International Conference on Machine Learning ([ICML 2023](#)), Hawaii, USA.
- [2] **Multi-Rate VAE: Train Once, Get the Full Rate-Distortion Curve**  
[Juhan Bae](#), Michael Zhang, Michael Ruan, Eric Wang, So Hasegawa, Jimmy Ba, Roger Grosse  
International Conference on Learning Representations ([ICLR 2023](#)), Kigali, Rwanda.  
**Oral Presentation — Acceptance Rate = 91/4956  $\approx$  1.8%**
- [3] **If Influence Functions are the Answer, Then What is the Question?**  
[Juhan Bae](#), Nathan Ng, Alston Lo, Marzyeh Ghassemi, Roger Grosse  
Advances in Neural Information Processing Systems ([NeurIPS 2022](#)), Louisiana, USA.
- [4] **Amortized Proximal Optimization**  
[Juhan Bae](#)<sup>\*</sup>, Paul Vicol<sup>\*</sup>, Jeff Z. HaoChen, Roger Grosse (<sup>\*</sup>: Equal Contributions)  
Advances in Neural Information Processing Systems ([NeurIPS 2022](#)), Louisiana, USA.
- [5] **Analyzing Monotonic Linear Interpolation in Neural Network Loss Landscapes**  
James Lucas, [Juhan Bae](#), Michael Zhang, Stanislav Fort, Richard Zemel, Roger Grosse  
The International Conference on Machine Learning ([ICML 2021](#)), Virtual.
- [6] **Delta-STN: Efficient Bilevel Optimization for Neural Networks using Structured Response Jacobians**  
[Juhan Bae](#), Roger Grosse  
Advances in Neural Information Processing Systems ([NeurIPS 2020](#)), Virtual.
- [7] **Fast 6DoF Pose Estimation with Synthetic Textureless CAD model for Mobile Applications**  
Bowen Chen, [Juhan Bae](#), Dibyendu Mukherjee  
International Conference on Image Processing ([ICIP 2019](#)), Taipei, Taiwan.
- [8] **Monotonic Linear Interpolation of Neural Network Parameters**  
James Lucas, [Juhan Bae](#), Michael Zhang, Richard Zemel, Jimmy Ba, Roger Grosse  
Optimization for Machine Learning ([NeurIPS 2020 Workshop](#)), Virtual.
- [9] **Eigenvalue Corrected Noisy Natural Gradient**  
[Juhan Bae](#), Guodong Zhang, Roger Grosse  
Bayesian Deep Learning ([NeurIPS 2018 Workshop](#)), Montreal, Canada.
- [10] **Learnable Pooling Methods for Video Classification**  
Sebastian Kmiec, [Juhan Bae](#), Ruijian An  
Large-Scale Video Understanding ([ECCV 2018 Workshop](#)), Munich, Germany.  
**Oral Presentation**

PEER-  
REVIEWED  
WORKSHOP  
PUBLICATIONS

TECHNICAL REPORTS	<p>[11] <b>Studying Large Language Model Generalization with Influence Functions</b>  Roger Grosse*, <b>Juhan Bae</b>*, Cem Anil*, Nelson Elhage, Alex Tamkin, Amirhossein Tajdini, Benoit Steiner, Dustin Li, Esin Durmus, Ethan Perez, Evan Hubinger, Kamilé Lukošiuūtė, Karina Nguyen, Nicholas Joseph, Sam McCandlish, Jared Kaplan, Samuel R. Bowman (*: Equal Contributions). 2023.</p> <p>[12] <b>Benchmarking Neural Network Training Algorithms</b>  George E. Dahl*, Frank Schneider*, Zachary Nado*, Naman Agarwal*, Chandramouli Shama Sastry†, Philipp Hennig†, Sourabh Medapati†, Runa Eschenhagen†, Priya Kasimbeg†, Daniel Suo†, <b>Juhan Bae</b>†, Justin Gilmer†, Abel L. Peirson†, Bilal Khan†, Rohan Anil†, Mike Rabbat†, Shankar Krishnan‡, Daniel Snider‡, Ehsan Amid‡, Kongtao Chen‡, Chris J. Maddison‡, Rakshith Vasudev‡, Michal Badura‡, Ankush Garg‡, Peter Mattson‡ (*, †, ‡: Equal Contributions). 2023.</p>
PROFESSIONAL EXPERIENCE	<p><b>Anthropic</b> Feb. 2023 - Aug. 2023  <i>Resident</i></p> <p><b>Microsoft Research</b> Jun. 2021 - Sep. 2021  <i>Research Intern</i></p> <p><b>Vector Institute</b> Aug. 2018 - Apr. 2019  Research Assistant</p> <p><b>Epson Research</b> May. 2017 - Mar. 2019  <i>Software Developer - Algorithm Research</i></p>
GRANTS AND AWARDS	<p>Vector Institute Research Grant 2020 - 2023</p> <p>Expert Reviewer at ICML 2021</p> <p>Top Reviewer at NeurIPS 2020</p> <p>Top Reviewer at ICML 2020</p> <p>Faculty of Arts &amp; Science Fellowship 2020 - 2023</p> <p>St.Michael's College Silver Medal 2019</p> <p>St.Micheal's College Scholarship 2017, 2018</p> <p>Dean's List Scholar 2016 - 2019</p>
TEACHING	<p><b>University of Toronto, Toronto, ON</b></p> <p><i>Instructor</i></p> <ul style="list-style-type: none"> <li>• TUSK (Machine Learning Software Foundations) 2022</li> <li>• CSC311 (Introduction to Machine Learning) 2020</li> </ul> <p><i>Teaching Assistant</i></p> <ul style="list-style-type: none"> <li>• CSC2702 (Technical Entrepreneurship) 2022</li> <li>• HLP101 (Undergraduate CS Course Help Centre) 2022</li> <li>• CSC2541 (Neural Network Training Dynamics) 2022</li> <li>• STA314 (Statistical Methods for Machine Learning I) 2021</li> <li>• CSC110 (Foundations of Computer Science I) 2021</li> <li>• CSC320 (Introduction to Visual Computing) 2021</li> <li>• CSC412 (Probabilistic Learning and Reasoning) 2020</li> <li>• CSC165 (Mathematical Expression and Reasoning for CS) 2019</li> <li>• CSC165 (Mathematical Expression and Reasoning for CS) 2016</li> </ul> <p><b>Vector Institute, Toronto, ON</b></p> <p><i>Teaching Assistant</i></p> <ul style="list-style-type: none"> <li>• AI Certificate: Deep Learning 2 2020</li> <li>• AI Certificate: Deep Learning 1 2019</li> </ul>

PATENTS [13] **Methods and Systems for Training an Object Detection Algorithm using Synthetic Images**  
Dibyendu Mukherjee, Bowen Chen, **Juhan Bae**  
**US11107241B2, 2021**

PROFESSIONAL *Journal Reviewer*

SERVICE

- Transactions on Machine Learning Research (TMLR)

*Conference Reviewer*

- Conference on Neural Information Processing Systems (NeurIPS)
- Society for Artificial Intelligence and Statistics (AISTATS)
- International Conference on Learning Representations (ICLR)
- International Conference on Machine Learning (ICML)

*Workshop Reviewer*

- Tiny Papers Showcase Day (ICLR)

SUPERVISIONS	Nishkrit Desai (UofT undergraduate)	2023
	Alston Lo (UofT undergraduate)	2022
	Eric Wang (UofT undergraduate → Software developer at Clearpath)	2022
	Michael Ruan (UofT undergraduate → Software developer at AMD)	2022
	Yuchen Wang (UofT undergraduate → Masters student at Stanford)	2020