Jonathan P. Lorraine

Toronto, Canada • Maintains Dual Citizenship in US & Canada
(416) 912-0863 • jonlorraine@gmail.com • linkedin.com/in/jonlorraine • jonlorraine.com

Machine Learning Research Scientist

With 8+ years of experience in AI, I skillfully bridge the gap between academia and industry. As a working Research Scientist and recent PhD, I've collaborated with academic experts and top tech companies to drive innovative projects and publish high-impact papers, gaining 1000+ citations. Fueled by a passion for deciphering complex technical challenges and creating future-focused solutions, my expertise places me at the forefront of AI, and I'm eager to explore and influence its next wave.

CORE COMPETENCIES

Machine Learning (ML) • Artificial Intelligence (AI) • Generative AI • Research & Innovation • Quantitative Analysis
Software Engineering • Distributed Computing • Scalable ML Systems • End-to-End Solutions Development & Deployment
Technical Leadership • Strategic Insight • Global Interdisciplinary Collaboration • Talent Development • Mentoring

EXPERIENCE

NVIDIA | Toronto, Canada   4/2022-Present
Research Scientist

- Perform research on generative modeling with 3D applications within Sanja Fidler's team at NVIDIA's Toronto AI Lab, leveraging findings to support development of new generative AI products.
- Develop software, author research papers, create presentations, and strategize about new research agendas in collaboration with teams of scientists, engineers, and product group leaders.

Select Achievements

- Designed method to train text-to-3D object generation model, reducing processing speed from 15+ minutes to real-time. Successfully authored paper detailing method, accepted at top field conference (ICCV2023).
- Collaborated on 10+ patent filings for generative AI solutions, including text-to-3D object generation model and variance reduction techniques to boost generated content quality.

GOOGLE | Mountain View, US   11/2021-3/2022
Research Scientist (Internship)

- Blended research and applied engineering to create end-to-end AutoML platform adopted company-wide, facilitating development of production-ready models.
- Designed method used by team to select design choices (hyperparameters), resulting in significant increase in production performance while using ~10x less computational resources. Led publication of paper detailing method: "Task Selection for AutoML System Evaluation."
- Fostered innovation by applying ML expertise to mentor senior engineers and promote cutting-edge methods.

FACEBOOK AI RESEARCH (FAIR) (NOW: META AI) | Menlo Park, US   5/2021-10/2021
Research Scientist (Internship)

- Worked with Jakob Foerster and team of five to improve machine learning in multi-agent systems. Authored spotlight paper on research findings at The International Conference on Autonomous and Multiagent Systems (AAMAS2022).
- Advised product teams on state-of-the-art hyperparameter optimization techniques, leveraging personal research to enhance model performance and efficiency across various projects.

ADDITIONAL EXPERIENCE

VECTOR INSTITUTE FOR ARTIFICIAL INTELLIGENCE | Toronto, Canada   5/2018-Present
Graduate Researcher   Ⅴ
- Conducted research on hyperparameter optimization, learning in games, nested optimization, and more as part of post-graduate graduate degree program collaboration with the University of Toronto.
- Authored 10+ papers accepted for presentation to top ML conferences, including NeurIPS, AISTATS and ICML.

UNIVERSITY OF TORONTO | Toronto, Canada   8/2018-5/2023
Lead Teaching Assistant – Department of Computer Science
- Designed content, conducted lectures, and organized grading for 10+ Computer Science courses, including four graduate-level courses on ML topics such as Deep Learning and Natural Language Computing.
- Supervised and guided teams of up to eight Teaching Assistants, creating a collaborative work environment that enhanced instructional quality and student support.
- Mentored undergraduate and graduate students, assisting them in finding compelling opportunities for continuing education and post-graduate research.

EDUCATION

UNIVERSITY OF TORONTO   *Expected 1/2024*
Doctor of Philosophy (Ph.D.), Computer Science; Machine Learning Group
- Thesis: "Scalable Nested Optimization for Deep Learning"
- Advised by Professor David Duvenaud.

UNIVERSITY OF TORONTO   2018
Master of Science, Applied Computing; Focus in Data Science *(GPA: 4.0/4.0)*. Joint Statistics & Computer Science program.

UNIVERSITY OF TORONTO   2016
Honors Bachelor of Science; Double Major in Computer Science & Mathematics; Minor in Economics *(High Distinction)*

TECHNICAL

- **Tools:** AWS, Google Cloud, Docker, Kubernetes, Apache tools, PyTorch, TensorFlow, SciKit, Python, Java, C++, CUDA, LaTeX, OpenCV, NLTK, Jupyter Notebook, Pandas, SQL, MongoDB, Git, Trello, Visual Studio, Shell, Linux
- **Concepts:** Generative Modeling, Hyperparameter Optimization, Computer Vision (CV), AutoML, Natural Language Processing (NLP), Transfer Learning, Time-Series Data, Model Safety, Reinforcement Learning, Multi-Agent Systems

SELECT PUBLICATIONS

- Lorraine, J., et al. "ATT3D: Amortized Text-to-3D Object Synthesis." International Conference on Computer Vision (ICCV2023).
- Lorraine, J., et al. "Complex Momentum for Optimization in Games." International Conference on Artificial Intelligence and Statistics (AISTATS2022).
- Lorraine, J., et al. "Optimizing Millions of Hyperparameters by Implicit Differentiation." International Conference on Artificial Intelligence and Statistics (AISTATS2020).
- Lorraine, J., and Duvenaud, D. "Stochastic Hyperparameter Optimization through Hypernetworks." Advances in Neural Information Processing Systems (NeurIPS2018).

ADDITIONAL CAREER ACCOMPLISHMENTS & RECOGNITIONS

- Secured $100K+ in research funding, including grants from NSERC, The Vector Institute, and MITACS.
- Cited 1000+ times across various academic publications and invited to talk at 25+ events.
- Mentored multiple undergraduate students now enrolled in PhD programs at MIT, University of Toronto, and more.
- Participated in 10+ patent filings for generative AI technologies.
- Served as Reviewer for numerous conferences, including CVPR, ICML, AISTATS, NeurIPS, and ICLR.