Elaine Lau

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Education

MILA, McGill University May 2022 – May 2025
Montreal, Canada | Master of Computer Science
Supervisor: Doina Precup (collab. with Emmanuel Bengio). **Award:** DeepMind M.Sc. Fellowship ($21,000).
Thesis: Reinforcement Learning for Diverse and Controllable Solution Generation.

McGill University Sep 2017 – Apr 2022
Montreal, Canada | B.Sc. in Statistics and Computer Science

Experience

Scale AI
Machine Learning Research Engineer
Mar 2024 – Present
New York City, NY

- Partnered with strategic customers and external research groups to design custom **reasoning datasets** and **training pipelines**, directly closing **$X million** in new contracts.
- Led the creation and development of reasoning datasets to enhance LLMs' reasoning capabilities, significantly improving **pass@k metrics** in math and stem domains.
- Developed the **Browser Agent Red-teaming Toolkit (BrowserART)**: 100 adversarial behaviors and 40 websites to robustly test and mitigate harmful interactions. (code)
- Built an automated, **multi-agent** data-review pipeline that filters low-quality code examples in real time.

Valence Labs Recursion
Machine Learning Researcher Intern
Sep 2023 – Feb 2024
Montreal, QC

- Developed **QGFN**, combining GFlowNets with an action-value estimate into mixture policies to optimize performance while maintaining solution diversity, essential for drug discovery.
- Achieved a **4**× improvement in detecting diverse, high-reward modes on domain benchmarks. Paper accepted at **NeurIPS 2024**. (code)

Scale AI
Machine Learning Research Engineer Intern
May 2023 – Aug 2023
San Francisco, CA

- Integrated a **multimodal model**, significantly enhancing **small-object detection** and **image retrieval**.
- Designed object-level **similarity search** functionality, improving retrieval tasks and overall performance.
- Developed user-friendly endpoints, improving usability and facilitating adoption by other users.

NVIDIA
Data Scientist Intern
Jan 2022 – Apr 2022
Santa Clara, CA

- Designed a **decision-making model** that detects usefulness of user feedback in GeForce NOW (GFN) Cloud Gaming.
- Integrated an end-to-end pipeline in GFN data science team to improve the efficiency and productivity in examining feedback.
- Conducted statistical analysis of user behavior and system telemetry to inform heuristic design.

Vector Institute
Applied Machine Learning Intern
Sep 2021 – Dec 2021
Toronto, ON

- Prototyped an empathetic customer support chatbot combining **GPT-2** for generation and **BERT** for understanding, exploring novel approaches to context-aware dialogue systems.
- Experimented with **knowledge infusion**, custom loss functions, and specialized decoding strategies to enhance response quality and empathy in conversational AI.
- Fine-tuned **BERT** using **masked language modeling** and supervised learning, evaluating performance on dialogue understanding tasks.

Publications & Patent

Under Review	**Rubrics as Rewards: Reinforcement Learning Beyond Verifiable Domains** A. Gunjal, A. Wang, **E. Lau**, V. Nath, Y. He, B. Liu, S. Hendryx. (arXiv)
Under Review	**Adaptive Guidance Accelerates Reinforcement Learning of Reasoning Models** V. Nath, **E. Lau**, A. Gunjal, M. Sharma, N. Baharte, Ss Hendryx. (arXiv)
ICLR 2025	**Refusal-Trained LLMs Are Easily Jailbroken As Browser Agents** P. Kumar, **E. Lau**, S. Vijayakumar, T. Trinh, . . . Z. Wang. (arXiv | code)
NeurIPS 2024	**QGFN: Controllable Greediness with Action Values** **E. Lau**, S. Z. Lu, L. Pan, D. Precup, E. Bengio. (arXiv | code)
NeurIPS 2023 (Workshop)	**DGFN: Double Generative Flow Networks** **E. Lau**, N. M. Vemgal, D. Precup, E. Bengio. (arXiv)
ICML 2023 (Workshop)	**An Empirical Study of the Effectiveness of Using a Replay Buffer on Mode Discovery in GFlowNets** N. Vemgal, **E. Lau**, D. Precup.
AAAI 2023	**Deep Conservative Reinforcement Learning for Personalization of Mechanical Ventilation Treatment** F. Kondrup*, T. Jiralerspong*, **E. Lau***, N. de Lara, J. Shkrob, M. D. Tran, D. Precup, S. Basu. (* equal contrib) (proceedings | arXiv)
ICLR 2022	**Policy Gradients Incorporating the Future** D. Venuto, **E. Lau**, D. Precup, O. Nachum. (arXiv)
EMNLP 2022 (Industry)	**Bringing the State-of-the-Art to Customers: A Neural Agent Assistant Framework for Customer Service Support** S. Obadinma, F. K. Khattak, S. Wang, T. S. Sidhom, **E. Lau**, S. Robertson, . . . F. Rudzicz, E. Dolatabadi.
Patent	**HeuristicSystematic Decision-Making for User Feedback Based on User Behavior and System Telemetry** N. Chorakhalikar, **E. Lau**, A. Arunachalam, B. Todur.

Invited Talks

AAAI @ Web Agents 2025	*Refusal-Trained LLMs Are Easily Jailbroken As Browser Agents* Presented by **E. Lau** (joint work with P. Kumar, S. Vijayakumar, T. Trinh, . . . Z. Wang).

Technical Skills

Programming	Python, Java, C, R, OCaml, JavaScript, MATLAB, SQL
Frameworks & Tools	PyTorch, TensorFlow, Pandas, Matplotlib, Flask, scikit-learn, AWS, Azure, Git, Tableau, DBeaver
Relevant Coursework	Natural Language Processing, Computer Vision, Applied Machine Learning, Database Systems, Time Series Analysis, Generalized Linear Models, Stochastic Processes, Introduction to Data Science
Teaching Assistant	Programming Languages & Paradigms, Natural Language Processing, Applied Machine Learning
Languages	English, Mandarin, Cantonese