Austin Tripp | Resume

austintripp.ca • austin-tripp • austinjtripp

Machine learning researcher with a materials science background.
I want to help artificial intelligence accelerate scientific research.

Education

University of Cambridge — **Cambridge, UK**
PhD in Engineering — *Oct 2019 – Present*
- Cambridge Machine Learning Group (website)
- Supervised by José Miguel Hernández-Lobato (website)

University of Waterloo — **Waterloo, Ontario, Canada**
BASc in Nanotechnology Engineering, Option in Mathematics — *Sep 2014 – Jun 2019*
- Graduated with Distinction, Dean's Honours List

Experience

Data61 — **Melbourne, AU**
Visiting Postgraduate Student — *Jul 2019 – Sep 2019*
- Applied machine learning methods to nanomaterials data to replace expensive computations
- Used supercomputing for large-scale parallel evaluation of machine learning models with `hyperopt`
- Explored the use of self-organizing maps as rich features for nanoparticle property prediction

ContextLogic (Wish) — **San Francisco, CA**
AI Research Intern — *May 2018 – Aug 2018*
- Created embeddings of Wish's products using multi-objective *word2vec* techniques
- Engineered novel RNN-based recommender model for cold-start recommendations
- Collaborated with designers and businesspeople to apply AI to diverse company problems

NVIDIA — **Toronto, ON**
Deep Learning Engineer — *Jan 2018 – Apr 2018*
- Applied phase-function neural networks to generate realistic video game character animation
- Coordinated a multi-disciplinary team including artists, animators, and engineers
- Contributed to a talk and demonstration at 2018 Game Developers Conference

Joanna Aizenberg Lab, Harvard University — **Cambridge, MA**
Research Assistant — *Sep 2016 – Apr 2017*
- Developed stimuli-responsive photonic crystals for vapour sensing
- Used first-principles physics models to improve sensor performance using COMSOL
- Implemented kernel-based machine learning algorithms to predict liquid mixture compositions

Skills

Programming: Python, Java, MATLAB, SQL, C++, Bash

Libraries: tensorflow, pytorch, scikit-learn, nltk, pandas, numpy, jupyter, matplotlib

Software: git, Linux, vim, LaTeX, Adobe Illustrator, COMSOL, MAPLE, Anki

Awards and Honours

2017: Correlation-One Datathon: International Finalist

2017: University of Waterloo First in Class Engineering Scholarship

2017: Sanford Fleming Foundation Technical Speaker Competition Award

Selected Publications

[1] **Austin Tripp**, Erik Daxberger, and José Miguel Hernández-Lobato. "Sample-Efficient Optimization in the Latent Space of Deep Generative Models via Weighted Retraining". In: *Advances in Neural Information Processing Systems*. Ed. by H. Larochelle, M. Ranzato, R. Hadsell, M. F. Balcan, and H. Lin. Vol. 33. Curran Associates, Inc., 2020, pp. 11259–11272. URL: https://proceedings.neurips.cc/paper/2020/file/81e3225c6ad49623167a4309eb4b2e75-Paper.pdf.

[2] **Austin Tripp**, Gregor N.C. Simm, and José Miguel Hernández-Lobato. "MolStove: Accessible Molecular Simulation for Machine Learining". In: *International Conference on Learning Representations Workshop on Fundamental Science in the AI Era*. 2020.

[3] Adam Marr, Thomas Halverson, **Austin Tripp**, and Pierre-Nicholas Roy. "Vibrational Raman Shifts of Spin Isomer Combinations of Hydrogen Dimers and Isotopologues". In: *The Journal of Physical Chemistry A* 124.34 (2020). PMID: 32787001, pp. 6877–6888. DOI: 10.1021/acs.jpca.0c04092. URL: https://doi.org/10.1021/acs.jpca.0c04092.

[4] Tim Leshuk, Kerry M. Peru, Diogo de Oliveira Livera, **Austin Tripp**, Patrick Bardo, John V. Headley, and Frank Gu. "Petroleomic analysis of the treatment of naphthenic organics in oil sands process-affected water with buoyant photocatalysts". In: *Water Research* 141 (2018), pp. 297 –306. ISSN: 0043-1354. DOI: 10.1016/j.watres.2018.05.011. URL: http://www.sciencedirect.com/science/article/pii/S0043135418303737.

Languages

Native: English

Intermediate: French, Mandarin, Esperanto *B1-B2 level*

Beginner: German, Japanese, Turkish, Korean, Spanish *A1-A2 level*

Basic: Toki Pona, Spanish, Italian