

Austin Tripp | Curriculum Vitae

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*Nanomaterials researcher turned machine learning practitioner.
I want to help artificial intelligence accelerate scientific research.*

Experience

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 Intern

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
- Independently made deep learning models with Tensorflow and Keras
- Contributed to a talk and demonstration at 2018 Game Developers Conference

Pierre-Nicholas Roy Group, University of Waterloo

Waterloo, ON

Statistical Mechanics Research Project

Sep 2017 – Present

- Investigating hamiltonian approximation with neural networks in weakly-coupled quantum systems
- Replaced numerical integration with analytic approximation for hydrogen dimer systems

Joanna Aizenberg Lab, Harvard University

Cambridge, MA

Research Assistant

Sep 2016 – Apr 2017

- Developed stimuli-responsive photonic crystals for vapour sensing
- Created first-principles physics models to improve sensor performance using COMSOL
- Implemented kernel-based machine learning algorithms to predict liquid mixture compositions
- Journal publication in preparation

Frank Gu Lab, University of Waterloo

Waterloo, ON

Junior Researcher

Jan 2016 – Aug 2016

- Designed and implemented pilot-scale production of titania photocatalyst for water treatment
- Increased catalyst production by a factor of 1000 and decreased unit cost by 40%
- Co-author on [paper](#) examining the photocatalyzed degradation of organic compounds in water

Neverfrost Inc. (presently Alchemy Nano)

Kitchener, ON

Product Engineer

May 2015 – Dec 2015

- Designed and scaled-up synthesis of proprietary nanoparticles
- Performed experiments and made mechanistic model from scientific literature
- Used statistical analysis of synthesis parameters to tune synthesis procedure

Education

University of Waterloo

Waterloo, ON, Canada

BASc in Nanotechnology Engineering, Option in Mathematics

Sep 2014 – Apr 2019

- Dean's Honours List (96% cumulative average)
- First in class 4 out of 6 terms

Skills

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

Simulations: COMSOL, MAPLE, Finite Element Method, Monte Carlo

Machine Learning: Neural networks, Bayesian models, SVM, embeddings

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

Software: git, Linux, vim, L^AT_EX, Adobe Illustrator

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

2014: University of Waterloo First in Class Engineering Scholarship

Publications

- [1] 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](https://doi.org/10.1016/j.watres.2018.05.011). URL: <http://www.sciencedirect.com/science/article/pii/S0043135418303737>.
- [2] **Austin Tripp**, Ida Pavlichenko, Elijah Shirman, Timothy Wong, Jake Ferguson, Edric Lin, and Joanna Aizenberg. "High-Accuracy Diffusion-Mediated Photonic Vapor Sensors". Conference Poster. Boston Photonics Centennial Conference, Feb. 25, 2017.

Languages

I really enjoy learning languages. These are the languages I have studied:

Native: English

Intermediate: French, Mandarin, Esperanto, German

B1-B2 level

Beginner: Japanese, Turkish, Korean

A1-A2 level

Basic: Toki Pona, Spanish, Greek

Reached the end of my resume? Let's [get in touch](#).