# Frieda Rong

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https://friedeggs.github.io


## Education

**Ph.D. Computer Science, Stanford University** Sep. 2020 – present

Rotation adviser: Associate Prof. Percy Liang. Tentative: Assistant Prof. Jiajun Wu, Assistant Prof. Stefano Ermon

**B.Math. University of Waterloo** Sep. 2015 – Dec. 2019

- Triple major in Computer Science, Pure Mathematics, and Combinatorics & Optimization
- GPA: 92/100. Selected coursework: Randomized Algorithms (graduate, ), Spectral Graph Theory and High Dimensional Expanders (graduate, ), Semidefinite Optimization, Measure & Integration, Functional Analysis
- Selected course reports:
  *Spectral Graph Sparsification Using Short Cycle Decompositions* CS 761
  *Combinatorial Expansion in Simplicial Complexes* CS 860

## Research Experience

**Uber Advanced Technologies Group** Toronto, Canada

*Research Intern / Scientist* Sep. 2018 – Sep. 2020

Advisor: Prof. Raquel Urtasun. Direct supervisor: Shenlong Wang

Image synthesis for self-driving car research. Interned fall 2018, part-time in 2019, full-time research scientist from Jan. 2020 to Sep. 2020.

**University of Waterloo Combinatorics & Optimization Dept.** Waterloo, Canada

*Undergraduate Research Assistant* May 2019 – Aug. 2019

Advisor: Associate Prof. Peter Nelson

Research in extremal graph theory. Proved a sparse arithmetic extension of the Szemerédi Regularity Lemma to $\mathbb{F}_2^n$ towards a conjecture on the critical number of triangle-free binary matroids.

**University of Waterloo AI Lab** Waterloo, Canada

*Undergraduate Research Assistant, Part-time* Jan. 2017 – Apr. 2017

Advisor: Prof. Pascal Poupart

Extended existing sum product network (a deep architecture) codebase to implement recurrent sum product networks in TensorFlow for sequence modelling.

## Industry Experience

**Petuum** Pittsburgh, PA

*Software Engineering Intern* Jan. 2018 – Apr. 2018

*Petuum* is an enterprise machine learning startup founded by Dr. Eric Xing (CMU) in 2016. Team Manager: Hao Zhang. Direct Manager: Adam Schwab.

- Modified TensorFlow core source code to reduce training time for distributed models with sparse tensors through more efficient gradient updates and reduced data transfers under parameter server model (*Medium blog post* written post-internship by Adam Schwab)
- Researched and wrote distributed support vector machine and kernel support vector machine solvers using a proprietary distributed machine learning framework in C++

**Siri Machine Learning Platform** Cupertino, CA

*Natural Language Intern* May 2017 – Aug. 2017

Direct manager: William P. Li

- Deployed internal visualization web app for model introspection and data exploration
- Investigated root cause analysis of model errors
- Presented poster at company-wide internal data science conference and to VP of Siri

## Languages & Skills

Python, C++, TensorFlow, PyTorch

## Awards & Honors

Stanford University School of Engineering Graduate Fellowship 2020

NSERC Undergraduate Student Research Award 2019

University of Waterloo Faculty of Mathematics René Descartes National Scholarship 2015 – 2019

- Highest valued of ~15 National scholarships awarded by the Faculty

Google Code Jam Top 1000 (t-shirt prize) 2017

- Global competitive programming challenge

William Lowell Putnam Mathematical Competition Top 250 2016

William Lowell Putnam Mathematical Competition Top 350 2015

University of Waterloo President's Scholarship of Distinction Entrance Award 2015

## Campus Activities

University of Waterloo Data Science Club, *Co-President with Nicholas Vadivelu* Fall 2019

- Managed a dozen executives to organize weekly talks, workshops, and events for a student society with a social following in the thousands.

Math Faculty Teaching Assistant Various

- Marking TA: Math 147 (Calculus 1, Advanced), Math 148 (Calculus 2, Advanced)
- Residence TA: Math 135 (Algebra)

Orientation Leader Fall 2016

## Talks

(In order of recency:) Differentiable Rendering: Overview (CogAI Reading Group, *slides*), *Denoising Diffusion Probabilistic Models* paper review (Uber ATG Reading Group, *slides*), Intro to Statistics for Data Science/Machine Learning (UWaterloo Data Science Club, *slides*), Variational Autoencoders (UWaterloo Data Science Club, *slides*), Arrow's Impossibility Theorem (Computer Science Club), *Obfuscated Gradients Give a False Sense of Security* paper review (Borealis AI NLP Reading Group, *slides*), *The Multiplicative Weights Update Method* (Pure Math Club), *An application of expander graphs in coding theory* (UW Seminars), *The Johnson-Lindenstrauss Lemma* (UW Seminars), t-Stochastic Neighbour Embedding (Siri NL Reading Group), PixelCNN paper review (UW AI Lab Reading Group)