

Clement Fung

Networks, Systems and Security Lab
Department of Computer Science
University of British Columbia

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SUMMARY

My current research interests include the security and privacy of distributed systems. Most notably, I am interested in distributed multi-party machine learning and corresponding attacks and defenses on these system. Lately, I am especially interested in the security and privacy issues surrounding Google's federated learning.

PUBLICATIONS

Non-refereed submissions

- Clement Fung, Chris J.M. Yoon, Ivan Beschastnikh.
Mitigating Sybils in Federated Learning Poisoning.
arXiv Pre-print August 2018.

In Submission

- Clement Fung, Chris J.M. Yoon, Ivan Beschastnikh.
Mitigating Sybils in Federated Learning Poisoning.
In submission to NDSS 2019.
- Clement Fung, Jamie Koerner, Stewart Grant, Ivan Beschastnikh.
Dancing in the Dark: Private Multi-Party Machine Learning in an Untrusted Setting.
In submission to PETS 2019.

EDUCATION

MSc, Computer Science

2016 - present

University of British Columbia, Vancouver, BC

MSc Supervisor: Ivan Beschastnikh.

Cumulative GPA: 88 / 100

Achievements:

- UBC CS Department Graduate Teaching Assistant Award, 2017
- UBC CS Department Student Service Award, 2017

Research Projects:

- Biscotti: A secure, private blockchain-based system for multi-party machine learning
- FoolsGold: A sybil-resilient federated learning protocol against model poisoning
- TorMentor: A system for distributed, collaborative, anonymous machine learning
- InsuLearn: A system for distributed learning on private medical data
- DistributedClocks: A library for vector clock instrumentation of distributed systems

Graduate Courses:

- CPSC 532R - Graphical Models (*Prof. Siamak Ravanbakhsh*)
- CPSC 540 - Advanced Machine Learning (*Prof. Mark Schmidt*)
- CPSC 538W - Data At Scale (*Prof. Andrew Warfield*)
- CPSC 538B - Distributed Systems (*Prof. Ivan Beschastnikh*)
- CPSC 536F - Algorithmic Game Theory (*Prof. Hu Fu*)
- CPSC 340 - Machine Learning (*Prof. Mark Schmidt*)

BASc, Honours, Systems Design Engineering

2011 - 2016

University of Waterloo, Waterloo, ON

Cumulative GPA: 88 / 100

Achievements:

- Sanford Fleming Award for Co-operative Proficiency - *Achievement in Co-op and Academics*
- Graduated with Dean's Honour's Distinction - *4x Dean's List*
- Dean's Honour's List, Winter 2016
- Dean's Honour's List, Winter 2013 - *Ranked 2nd / 81 students*
- Dean's Honour's List, Spring 2012 - *Ranked 2nd / 85 students*
- Dean's Honour's List, Fall 2011 - *Ranked 3rd / 94 students*

Awards:

- W.W. King Exchange Fellowship, Winter 2015 - *\$500*
- President's International Experience Award, Winter 2014 - *\$1500*
- Sanford Fleming Award, Fall 2013, Outstanding Communication in Work Term Report - *\$300*
- Colonel Hugh Heasley Engineering Scholarship, Fall 2011 - *\$10000*
- University of Waterloo President's Scholarship of Distinction, Fall 2011 - *\$2000*

Research Projects:

- Driven: A system for intelligent annotation and analysis of lane changes based on dashcam videos
- FridgeMate: A mobile application and intelligent image recognition system for annotation of food in refrigerators

Coursera Online

2014 - present

- Machine Learning - *Stanford University*
- Mining Massive Datasets - *Stanford University*
- Game Theory II: Advanced Applications - *Stanford University and University of British Columbia*
- Chinese For Beginners I and II - *Peking University*

TEACHING EXPERIENCE

Teaching Assistant

Sept 2016 - present

University of British Columbia

- CPSC 210: Software Construction
Instructors: Norman Hutchinson, Ryan Vogt, Jonatan Schroeder

Fall 2016

- CPSC 210: Software Construction Winter 2017
Instructors: Norman Hutchinson, Paul Carter, Mehrdad Oveisi
- CPSC 340: Machine Learning Fall 2017
Instructor: Mark Schmidt
- CPSC 340: Machine Learning Winter 2018
Instructor: Michael Gelbart

PROFESSIONAL EXPERIENCE

Software Engineering Intern June - August 2015
LinkedIn Corporation, Sunnyvale, CA, USA

- Analytics Team: Online Relevance Infrastructure

Software Engineering Intern September 2014 - December 2014
LinkedIn Corporation, Mountain View, CA, USA

- Distributed Data Systems: Project Voldemort

Software Engineering Intern January 2014 - April 2014
Voicebox Technologies, Bellevue, WA, USA

- Server and Tools team

Software Developer May 2013 - August 2013
Ontario Institute for Cancer Research, Toronto, ON

- Software developer in Paul Boutros' bioinformatics research group

Software Developer September 2012 - December 2012
pVelocity, Toronto, ON

QA Analyst January 2012 - April 2012
pVelocity, Toronto, ON