Clement Fung

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Website: *https://clementfung.github.io/*

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
- Muhammad Shayan, Clement Fung, Chris J.M. Yoon, Ivan Beschastnikh.
  Biscotti: A Ledger for Private and Secure Peer-to-Peer Machine Learning.
  In submission to NSDI 2019.

- Clement Fung, Chris J.M. Yoon, Ivan Beschastnikh.
  Mitigating Sybils in Federated Learning Poisoning.
  In submission to EuroS&P 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 - 2018
University of British Columbia, Vancouver, BC
MSc Supervisor: Ivan Beschastnikh.
Cumulative GPA: 88 / 100

Thesis:
- Dancing in the Dark: Private Multi-Party Machine Learning in an Untrusted Setting

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

TEACHING EXPERIENCE

Teaching Assistant   Sept 2016 - Dec 2018
University of British Columbia

- CPSC 210: Software Construction   Fall 2016
  Instructors: Norman Hutchinson, Ryan Vogt, Jonatan Schroeder
- 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

- DSCI 523: Data Wrangling   Fall 2018
  Instructor: Jenny Bryan, Rodolfo Lourenzutti
- DSCI 571: Supervised Learning   Fall 2018
  Instructor: Mikchael Gelbart, Varada Kolhatkar

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