Aaron Mishkin

amishkin@cs.stanford.edu www.cs.stanford.edu/~amishkin/

Education

Current – 2020 | **PhD in Computer Science**, Stanford University
Optimization for Machine Learning
Advisor: Dr. Mert Pilanci

2020 – 2018 | **MSc in Computer Science**, University of British Columbia
Thesis: *Interpolation, Growth Conditions, and Stochastic Gradient Descent*
Advisor: Dr. Mark Schmidt

2018 – 2013 | **BSc in Computer Science (Honors)**, University of British Columbia
Honors Thesis: *Limited Memory Methods for Variational Inference*
Honors Advisor: Dr. David Poole

Publications

Sharan Vaswani, Reza Babanezhad, Jose Gallego, **Aaron Mishkin**, Simon Lacoste-Julien, and Nicolas Le Roux. "To Each Optimizer a Norm, To Each Norm its Generalization." *arXiv preprint*, 2020. [arXiv]

Sharan Vaswani, **Aaron Mishkin**, Issam Laradji, Mark Schmidt, Gauthier Gidel, and Simon Lacoste-Julien. "Painless Stochastic Gradient: Interpolation, Line-Search, and Convergence Rates." *Neural Information Processing Systems (NeurIPS)*, 2019. [arXiv]

Aaron Mishkin, Frederik Kunstner, Didrik Nielsen, Mark Schmidt, and Mohammad Emtiyaz Khan. "SLANG: Fast Structured Covariance Approximations for Bayesian Deep Learning with Natural-Gradient", *Neural Information Processing Systems (NeurIPS)*, 2018. [arXiv]

Aaron Mishkin. "Web ValueCharts: Analyzing Individual and Group Preferences with Interactive, Web-based Visualizations", Extended Abstract in *Review of Undergraduate Computer Science*, 2017. [pdf]

Experience

May - Aug 2019 | **Applied Science Intern**, Amazon Development Center Germany GmbH
Advisors: Dr. Cédric Archambeau and Dr. Matthias Seeger
Investigated meta-learning approaches to cold-start active learning. Implemented foMAML, prototypical networks, and conditional neural adaptive processes (CNAPS). Designed and executed numerical experiments on large computer clusters.

Jan - Jun 2018 | **Intern**, RIKEN Center for Advanced Intelligence Project (AIP)
Advisor: Dr. Emtiyaz Khan
Worked with a diverse team on approximate natural gradient methods for Gaussian variational inference in neural networks. Developed SLANG, a method based on low-rank covariance matrices. Internship resulted in a publication at NeurIPS 2018.

May - Aug 2016/17 | **Undergraduate Research Assistant**, UBC
Advisors: Dr. David Poole and Dr. Giuseppe Carenini
Received two undergraduate research awards from NSERC to investigate information visualizations for preference elicitation. Architected and developed Web ValueCharts, a web application for multi-stakeholder, multi-objective decision analysis.

May - Dec 2015 | **Software Engineering Co-op Student**, MacDonald, Dettwiler and Associates
Acted as a full member of a three person team to develop a web client for ordering satellite imagery of the earth. Implemented the map interface used by customers to indicate regions to image as part of the RADARSAT Constellation Mission.

Teaching

Jun 2018 | **Teaching Assistant**, Data Science Summer School (DS3) 2018
Prepared and delivered exercises on stochastic variational inference for graduate students attending a two day tutorial on approximate Bayesian inference.

Sep - Dec 2017 | **Teaching Assistant**, CPSC 340: Machine Learning
Gave tutorials on diverse topics in machine learning, including regularization, convexity, and MAP estimation. Held weekly office hours for students, marked assignments and invigilated exams.

Jan - May 2015 | **Teaching Assistant**, CPSC 210: Software Construction
Supervised laboratories for a software engineering course on object-oriented programming and design in the Java programming language.

Sep - Dec 2014 | **Teaching Assistant**, CPSC 110: Computation, Programs and Programming
Taught the fundamental concepts of functional programming in a Lisp-family language during weekly labs.

Awards

PhD

2020 | **Graduate Research Fellowship (GRF)**
National Sciences Foundation (NSF)
Five-year fellowship for PhD students in STEM disciplines.

2020 | **NSERC Postgraduate Scholarships-Doctoral Program (PGS D)**
Natural Sciences and Engineering Research Council of Canada
Three-year fellowship for PhD students studying in Canada or abroad.

2020 | **Canada Graduate Scholarships-Doctoral Program (CGS D)** (Declined)
Natural Sciences and Engineering Research Council of Canada
Three-year fellowship for PhD students studying in Canada.

MSc

2019 | **Huawei Graduate Scholarship**
Huawei and Department of Computer Science, UBC
Competitive scholarship for MSc students entering their second year.

2018 | **Computer Science Merit Scholarship**
Department of Computer Science, UBC
Merit-based scholarship for incoming international and domestic students.

2018 | **Canada Graduate Scholarships-Master's Program (CGSM)**
Natural Sciences and Engineering Research Council of Canada
National fellowship awarded to up to 2,500 students annually.

BSc

2018 | **Academic Award of Excellence (Honors)**
Department of Computer Science, UBC
Awarded to the graduating student with the highest standing in the BSc (Honors) in Computer Science.

2018 | **Markus Meister Memorial Prize**
Department of Computer Science, UBC
Awarded to the graduating student with the highest standing in the final year of the BSc in Computer Science.

2017 | **D. F. MacKenzie Scholarship**
UBC

2016, 2017 | **Undergraduate Student Research Award (USRA)**
Natural Sciences and Engineering Research Council of Canada

2016, 2017 | **Computer Science Scholarship**
Department of Computer Science, UBC

2016, 2017 | **Trek Excellence Scholarship for Continuing Students**
UBC
Awarded yearly to students in the top 5% of their undergraduate year, faculty, and school.

2016 | **J Fred Muir Memorial Scholarship**
UBC

General

2018 | **Travel Award for NeurIPS 2018**
Neural Information Processing Systems (NeurIPS) Foundation

2017 | **Best Demo**
UBC HCI Designing for People Year-end Event
For: Web ValueCharts