

# Aaron Mishkin

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## Education

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| Current<br>–<br>2020 | <b>PhD in Computer Science</b> , Stanford University<br><i>Machine Learning</i>   |
| 2020<br>–<br>2018    | <b>MSc in Computer Science</b> , University of British Columbia<br>Thesis: <i>Interpolation, Growth Conditions, and Stochastic Gradient Descent</i><br>Advisor: Dr. Mark Schmidt      |
| 2018<br>–<br>2013    | <b>BSc in Computer Science (Honors)</b> , University of British Columbia<br>Honors Thesis: <i>Limited Memory Methods for Variational Inference</i><br>Honors Advisor: Dr. David Poole |

## Publications

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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

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| May - Aug<br>2019 | <b>Applied Science Intern</b> , Amazon Development Center Germany GmbH<br>Advisors: Dr. Cédric Archambeau and Dr. Matthias Seeger<br>Investigated meta-learning approaches to cold-start active learning. Implemented foMAML, prototypical networks, and conditional neural adaptive processes (CNAPS).<br>Designed and executed numerical experiments on large computer clusters. |
| Jan - Jun<br>2018 | <b>Intern</b> , RIKEN Center for Advanced Intelligence Project (AIP)<br>Advisor: Dr. Emtiyaz Khan<br>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.                              |

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| May - Aug<br>2016/17 | <b>Undergraduate Research Assistant, UBC</b><br>Advisors: Dr. David Poole and Dr. Giuseppe Carenini<br>Received two undergraduate research awards from NSERC to investigate information visualizations for preference elicitation. Architected and developed <a href="#">Web ValueCharts</a> , a web application for multi-stakeholder, multi-objective decision analysis. |
| May - Dec<br>2015    | <b>Software Engineering Co-op Student, MacDonald, Dettwiler and Associates</b><br>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

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| Jun 2018          | <b>Teaching Assistant, Data Science Summer School (DS3) 2018</b><br>Prepared and delivered exercises on stochastic variational inference for graduate students attending a two day tutorial on approximate Bayesian inference.                           |
| Sep - Dec<br>2017 | <b>Teaching Assistant, CPSC 340: Machine Learning</b><br>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<br>2015 | <b>Teaching Assistant, CPSC 210: Software Construction</b><br>Supervised laboratories for a software engineering course on object-oriented programming and design in the Java programming language.  |
| Sep - Dec<br>2014 | <b>Teaching Assistant, CPSC 110: Computation, Programs and Programming</b><br>Taught the fundamental concepts of functional programming in a Lisp-family language during weekly labs.  |

## Awards

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### PhD

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| 2020 | <b>Graduate Research Fellowship (GRF)</b><br>National Sciences Foundation (NSF)<br>Five-year fellowship for PhD students in STEM disciplines.  |            |
| 2020 | <b>NSERC Postgraduate Scholarships-Doctoral Program (PGS D)</b><br>Natural Sciences and Engineering Research Council of Canada<br>Three-year fellowship for PhD students studying in Canada or abroad. |            |
| 2020 | <b>Canada Graduate Scholarships-Doctoral Program (CGS D)</b><br>Natural Sciences and Engineering Research Council of Canada<br>Three-year fellowship for PhD students studying in Canada.              | (Declined) |

## MSc

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| 2019 | <b>Huawei Graduate Scholarship</b><br>Huawei and Department of Computer Science, UBC<br>Competitive scholarship for MSc students entering their second year.                                |
| 2018 | <b>Computer Science Merit Scholarship</b><br>Department of Computer Science, UBC<br>Merit-based scholarship for incoming international and domestic students.                               |
| 2018 | <b>Canada Graduate Scholarships-Master's Program (CGSM)</b><br>Natural Sciences and Engineering Research Council of Canada<br>National fellowship awarded to up to 2,500 students annually. |

## BSc

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| 2018       | <b>Academic Award of Excellence (Honors)</b><br>Department of Computer Science, UBC<br>Awarded to the graduating student with the highest standing in the BSc (Honors) in Computer Science.  |
| 2018       | <b>Markus Meister Memorial Prize</b><br>Department of Computer Science, UBC<br>Awarded to the graduating student with the highest standing in the final year of the BSc in Computer Science. |
| 2017       | <b>D. F. MacKenzie Scholarship</b><br>UBC  |
| 2016, 2017 | <b>Undergraduate Student Research Award (USRA)</b><br>Natural Sciences and Engineering Research Council of Canada  |
| 2016, 2017 | <b>Computer Science Scholarship</b><br>Department of Computer Science, UBC   |
| 2016, 2017 | <b>Trek Excellence Scholarship for Continuing Students</b><br>UBC<br>Awarded yearly to students in the top 5% of their undergraduate year, faculty, and school.                              |
| 2016       | <b>J Fred Muir Memorial Scholarship</b><br>UBC   |

## General

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| 2018 | <b>Travel Award for NeurIPS 2018</b><br>Neural Information Processing Systems (NeurIPS) Foundation |
| 2017 | <b>Best Demo</b><br>UBC HCI Designing for People Year-end Event<br><b>For:</b> Web ValueCharts     |