Chris Salahub

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Education

Ph.D. in Statistics, University of Waterloo — Waterloo, ON, Canada
Scholarship: Alexander Graham Bell Doctoral Scholarship ($105,000 over 36 months) — May 2019 – Dec. 2023
Thesis: *Explorations in Pairwise Measures of Dependence and Pooled Significance*
Supervisor: Dr. Wayne Oldford

M.Sc. in Statistics (Computer Vision Specialization), ETH Zürich — Zürich, Switzerland
Scholarship: ESOP Scholar ($48,000 for being in the top 2-3% of incoming ETH Masters Students) — Sept. 2017 – Mar. 2019
Thesis: *Seen to Be Done: A Graphical Analysis of Peremptory Challenge*
Supervisor: Prof. Dr. Marloes Maathuis

B.Math. in Statistics, University of Waterloo (Dean's Honours List) — Waterloo, ON, Canada
Thesis: *About "her emails"* — Sept. 2013 – June 2017

Peer-Reviewed Publications and Invited Presentations

Chris Salahub. *Racial bias in jury selection.* Significance, 20(2):16-20. April 2023.

Chris Salahub. *String Manipulation in R.* Guest lecture for University of Waterloo STAT 847: Exploratory Data Analysis. Virtual. April 2021.

David Castells-Graells, Christopher Salahub, and Evangelos Pournaras. *On cycling risk and discomfort: urban safety mapping and bike route recommendations.* Computing, 102:1259–1274. December 2019.

Christopher Salahub and R. Wayne Oldford. *About "her emails".* Significance, 15(3):34-37. June 2018.

Open Source Software Packages

PoolBal: compute and control the centrality of pooled p-values for multiple testing (CRAN, Nov. 2023)

AssocBin: recursive binary partitioning to measure association (CRAN, Nov. 2023)

Honours and Awards

- 2020: NSERC Canada Graduate Doctoral Scholarship (CGS-D) recipient ($105,000 over 36 months, $150,000 with matching Waterloo scholarship)
- 2019: Presentation award for *Seen to be Done* at the Waterloo Student Conference in Statistics, Actuarial Science, and Finance
- 2019: Ontario Graduate Scholarship recipient ($20,000 over 12 months)
- 2019: Correlation One Data Science Scholarship at the University of Waterloo for Ph.D. in Statistics ($5,000)
- 2019: Math Domestic Doctoral Scholarship at the University of Waterloo for Ph.D. in Statistics ($5,000)
- 2017–2019: Excellence Scholarship and Opportunity Programme Scholar at ETH Zürich for M.Sc. in Statistics ($48,000 over 18 months for being in the top 2-3% of incoming master's students)
- 2017: Graduated with Distinction (Dean's Honours List) – University of Waterloo – cumulative average of 93%
- 2016–2017: Five-time recipient of the Cherry Statistics Award for the highest mark in a fourth year statistics course (Statistical Methods for Process Improvements, Data Visualization, Experimental Design, Forecasting, Function Estimation) – University of Waterloo ($500 per award)
- 2015: Contributing member of the award-winning Waterloo 2015 iGEM team, which was given the Best Overgrad Software Tool Award, the Best Overgrad Poster Award, and was nominated for the Best Foundational Advance Award
- 2015: NSERC Undergraduate Student Research Award recipient ($6,000 over 4 months, $10,000 with matching supervisor contribution)
- 2013: Canadian National AP Scholar for attaining highest possible scores of 5 on five AP examinations - Statistics, Physics, Chemistry, Calculus, and European History
- 2013: Second best speaker in Alberta at the Alberta Debate and Speech Association High School Provincials

Professional Experience

Measurement Data Scientist — Toronto, ON, Canada
Vividata — Aug. 2020 – Jan. 2022

Clustering: Pioneered a new segmentation of demographic data using multiple correspondence analysis

Data pipelines: Integrated SQL and R seamlessly to produce daily survey and click stream data reports

Survival analysis: Predicted panel attrition and virtually eliminated over-recruitment using Cox regression

Data Development Intern — Toronto, ON, Canada
Environics Analytics — May 2017 – Aug. 2017

Algorithm development: Derived a closed-form solution for the distribution of typical small area demographic microsimulation using a Markov Chain model, resulting in a reweighting scheme that reduced time to convergence by more than 80%

Communication: Sampled representative data to provide algorithmic test cases and provided detailed algorithm descriptions in writing following the internship to facilitate a C++ implementation

Research and Development Intern — Toronto, ON, Canada
Environics Analytics — May 2016 – Aug. 2016

Model construction: Conceived and constructed a stochastic model to solve a complex constrained network flow problem and implemented the algorithm efficiently in both R and MATLAB

Big data: Wrote R scripts to extract and process social media text data and high volume call centre data

Undergraduate Research Assistant — Waterloo, ON, Canada
University of Waterloo (Supervised by Dr. Marius Hofert) — May 2015 – Aug. 2015

High dimensional computational statistics: Implemented a novel approach to determining copula parameters in the nested and non-nested Archimedean cases using approximate Bayesian computation in R

Teaching Experience

Lecturer (Data Visualization) — Waterloo, ON, Canada
University of Waterloo — Sept. 2021 – Jan. 2022

Organization: Taught 80+ students and directed a team of 4+ teaching assistants

Data visualization: Presented topics including dimension reduction, spatial statistics, interactive graphics, data reduction, and programming in R for visualization

Graduate Teaching Assistant — Waterloo, ON, Canada
University of Waterloo — May 2019 – Jan. 2023

Teamwork: Worked collaboratively with many other teaching assistants across dozens of graduate statistics classes

Leadership: Served as head teaching assistant several times and managed other teaching assistants

Graduate Teaching Assistant — Zürich, Switzerland
ETH Zürich — Sept. 2018 – Jan. 2019

Experimental design: Aided in instruction of a graduate experimental design course

Administrative and Volunteer Experience

SAS Student Seminar Co-chair — Waterloo, ON, Canada
Department of Statistics and Actuarial Science — Sept. 2021 – Dec. 2022

Organization: Coordinated and hosted weekly virtual seminars given by students and professors

Statistics and Actuarial Science Graduate Student Representative — Waterloo, ON, Canada
Department of Statistics and Actuarial Science — Sept. 2020 – Sept. 2021

Communication: Disseminated key information from department meetings to student constituents

Advocacy: Represented the interests of statistics and actuarial science graduate students in departmental discussions

Statistics and Actuarial Science Councillor — Waterloo, ON, Canada
University of Waterloo Graduate Student Association — Jan. 2020 – Mar. 2021

Interviewing: Vetted executive applications as a member of the Council Executive Committee

Survey design and analysis: Main analyst of GSA Vital Signs 2020 and designer of GSA COVID-19 Survey

Communication: Updated consitutents on GSA meetings, surveyed for feedback, and organized events with regular emails

Off Campus Community Coordinator Waterloo, ON, Canada

Federation of Students May 2016 – Apr. 2017

Leadership: Selected and directed a team of 33 volunteers assisting students with the transition to university

Organization: Planned a volunteer training weekend and the orientation programming for several hundred first year students, administered budgets, and delegated tasks

Off Campus Community Don Waterloo, ON, Canada

Federation of Students May 2015 – Apr. 2016

Leadership: Supported and guided first year students in the transition from high school to university studies

Teamwork: Maintained social connections with first year students and cooperated with a team of other dons

Noteworthy Projects

My Dad's Peaks (Waterloo, 2021) Extracted data from HTML pages using web scraping and regular expressions and matched it to a reference set to create a custom map visualization of peaks climbed by my father

Predicting Fracture Displacement (Zürich, 2018) Applied data visualization and classification methods in R to six years of retrospective data from Kinderspital Zürich to determine the relative risk of secondary displacement of phalangeal fractures and update clinical guidelines

CRISPier (Waterloo, 2015) Modelled the CRISPR-Cas9 system using stochastic and differential equation models for the award-winning 2015 Waterloo iGEM team in both R and Python; developed a number of statistical tests to monitor and compare results

Other Publications and Presentations

Chris Salahub and Jeffrey Uhlmann. *Optimal Structured Matrix Approximation for Robustness to Incomplete Biosequence Data.* Submitted to IEEE Transactions on Computational Biology and Bioinformatics March 2023 (under review)

Chris Salahub. *Pooled p-values*. UW Statistical Workshop and Applications Group. March 2023.

Christopher Salahub. *A Statistician's Introduction to Genomics.* SSC Annual Meeting. Virtual. June 2021

Chris Salahub. *The χ^2 Controversy: An Episode in the History of Statistics.* Waterloo Statistics and Actuarial Science Research Day. February 2020.

Chris Salahub. *Seen to Be Done: A Graphical Analysis of Peremptory Challenge.* Waterloo Student Conference in Statistics, Actuarial Science, and Finance. October 2019. (Presentation Award)

Christopher Salahub. *About "her emails": The Interactive Filter and Display of Hillary Clinton's Emails*, SSC Annual Meeting. May 2019.

Chris Salahub. *Another AI Prediction Piece*. DataDrivenInvestor. October 2018.

References available upon request.