

## Education

- **University of Waterloo** Waterloo  
*Ph.D. Statistics focused on measures of association, the  $\chi^2$  test, and genomics* May 2019 – Present
- **ETH Zürich (ESOP Scholar)** Zürich  
*M.Sc. Statistics, Computer Vision Specialization; Grade: 5.5* Sept. 2017 – Mar. 2019  
 Thesis: Seen to Be Done: A Graphical Analysis of Preemptory Challenge (Supervisor: Prof. Dr. Marloes Maathuis)
- **University of Waterloo** Waterloo  
*B.Math Statistics; Average: 93%* Sept. 2013 – June 2017

## Skills

**Computer:** R, Python, MATLAB, Linux/UNIX, Emacs, Git, SQL, Microsoft Office, Bash, Shell Scripting

**Methods and Algorithms:** Regression (Logistic, GAM, Mixed Models), PCA, Factor Analysis, LDA, SVM, Simulated Annealing, MCMC, Boosting, Random Forests, SARIMA, GARCH, Graphical Models, Dimension Reduction, Model Regularization, Visualization, Experimental Design, Sampling Theory, Statistical Process Analysis, KNN, EM Algorithm, Text Processing

**Interpersonal:** Teamwork, Public Speaking, Leadership, Teaching, Writing, Time Management

## Publications and Presentations

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

Christopher Salahub. *The  $\chi^2$  Controversy: An Episode in the History of Statistics*. Waterloo Statistics and Actuarial Science Research Day. February 2020.

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

Christopher Salahub. *Seen to Be Done: A Graphical Analysis of Preemptory 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.

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

## 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 visualization on a world map 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

**Evaluating Cyclist Risk in Zürich** (Zürich, 2018) Extracted bicycle incident data and traffic volumes from public APIs using Python, processed this data using kernel density estimation to estimate risk using R, and implemented an interactive Python application to recommend routes based on this risk

**Interactive Filter and Display of Email Data** (Waterloo, 2016 – 2017) Designed and implemented an interactive web-based application which allows a user to filter and display email data from Hillary Clinton's 32,795 officially released emails using the web-scraping, text mining, and Rshiny functionality of R

**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

## Professional and Teaching Experience

- **University of Waterloo** Waterloo  
*Lecturer (Data Visualization)* *Sept. 2021 – May 2022*  
**Communication** Constructed and delivered lectures to a class of 80 students  
**Organization** Orchestrated assignment releases, exam dates, and course administration  
**Leadership** Directed a team of four teaching assistants

*Graduate Teaching Assistant* *May 2019 – May 2022*
- **Vividata** Toronto  
*Measurement Scientist* *Aug. 2020 – Jan. 2022*  
**Clustering** Identified groups in demographic data using multiple correspondence analysis  
**Data Management** Extracted, manipulated, and presented survey and click stream data on a daily basis  
**Survival Analysis** Used Cox regression and non-parametric models to predict panel attrition for future recruitment
- **ETH Zürich** Zürich  
*Graduate Teaching Assistant* *Sept. 2018 – Dec. 2018*  
**Teaching** Assisted in the administration and active instruction of master and bachelor students in the mathematics and computational details of analysis of variance and experimental design in R
- **Environics Analytics** Toronto  
*Data Development Intern* *May 2017 – Aug. 2017*  
**Data Extraction** Extracted and processed Canadian demographic data using SQL and R  
**Algorithm Development** Demonstrated the inefficiency of typical small area demographic microsimulation methods using a Markov Chain model and implemented an improved simulated annealing algorithm in both R and MATLAB  
**Communication** Sampled data to provide algorithmic test cases and presented test results; after successful testing provided detailed algorithmic descriptions in both person and writing to facilitate a C++ implementation

*Research and Development Intern* *May 2016 – Aug. 2016*

**Data Science** Cleaned, prepared, and analyzed complex Canadian demographic data using time series, high dimensional data visualization, and standard analytic approaches such as linear models

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

**Big Data** Leveraged social media text data, high volume call centre data, and demographic data to provide functional frameworks for further development
- **University of Waterloo** Waterloo  
*Undergraduate Research Assistant* *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

*Undergraduate Tutor* *Jan. 2015 – Apr. 2015*

**Teaching** Assisted small groups and individuals with assignments for calculus courses

**Communication** Utilized patience, a flexible and engaging style of delivery, and extensive knowledge of calculus to enable students to learn and complete their assignments

## Volunteer and Leadership Experience

- **University of Waterloo Graduate Student Association** Waterloo  
*Statistics and Actuarial Science Councillor* *January 2020 - March 2021*  
**Administration** Member of the Council Executive Committee responsible for vetting new executive applications

**Survey Design and Analysis** Main analyst of GSA Vital Signs 2020 and designer of GSA COVID-19 Survey

**Federation of Students**

Waterloo

- *Off Campus Community Coordinator*

*May 2016 – Apr. 2017*

**Leadership** Assembled and directed a team of thirty three volunteers assisting students with the transition to university

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

*Off Campus Community Don*

*May 2015 – Apr. 2016*

**Leadership** Provided support and guidance to 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

**TELUS Spark**

Calgary

- *Exhibit Gallery Volunteer*

*July 2013 – Aug. 2013*

**Customer Service** Explained the scientific concepts behind a variety of exhibits to visitors to TELUS Spark; adapted interactions to suit customers of all ages and knowledge levels to provide a captivating experience

**Accomplishments**

- 2021: NSERC Canada Graduate Doctoral Scholarship (CGS-D) recipient
- 2020: NSERC Postgraduate Doctoral Scholarship (PGS-D) recipient
- 2019: Presentation award for *Seen to be Done* at the Waterloo Student Conference in Statistics, Actuarial Science, and Finance
- 2019: Ontario Graduate Scholarship recipient
- 2019: Correlation One Data Science Scholarship at the University of Waterloo for Ph.D. in Statistics
- 2019: Math Domestic Doctoral Scholarship at the University of Waterloo for Ph.D. in Statistics
- 2017–2019: Excellence Scholarship and Opportunity Programme Scholar at ETH Zürich for M.Sc. in Statistics
- 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 (received in Statistical Methods for Process Improvements, Data Visualization, Experimental Design, Forecasting, Function Estimation) – University of Waterloo
- 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
- 2013: Canadian National AP Scholar for attaining highest possible scores of 5 on five AP examinations - Statistics, Physics, Chemistry, Calculus, and European History
- 2013: University of Waterloo President’s Entrance Scholarship with Distinction
- 2013: Top Score in Alberta in the Canadian Association of Physicists High School Prize Exam
- 2013: Ranked second best speaker in Alberta at the ADSA Debate Provincials
- 2012: Sir Winston Churchill High School Churchill Debate Cup gold medal recipient
- 2013/2011: Competed nationally at the Canadian High School Debate Championships, ranked 27th out of 96 speakers at the 2013 tournament