Barinder Thind

b.thindd@gmail.com
https://www.linkedin.com/in/b-thind/
https://github.com/b-thi
778-898-3014

Research & Work Experience

Jan. 2018 – Present

Teaching Assistant, **Simon Fraser University, Department of Statistics**. *Burnaby, British Columbia, Canada.*

- Helped students from various backgrounds understand key statistical concepts in a patient and empathetic manner
- Marked and invigilated exams multiple times which involved monitoring dozens of students
- Learned to work in various programming languages (jupyter, SPSS, etc.) in order to help students that were required to use the software

May 2018 – Aug. 2018

Research Assistant, **Simon Fraser University, Department of Statistics**. *Burnaby, British Columbia, Canada.*

Supervisor(s): Dr. Jiguo Cao

- Working on the development of a new dimension transformation analysis in the context of functional data analysis
- Working through multiple textbooks including: Functional Data Analysis, FDA in R and MATLAB, Data Analysis in R

May 2017 – Aug. 2017

Research Assistant, **Simon Fraser University, Department of Statistics**. *Burnaby, British Columbia, Canada.*

Supervisor(s): Dr. Jiguo Cao

- Worked on a number of data sets to expand my grasp of various modern statistical analysis techniques including random forests, principal component analysis, functional data analysis (scalar and categorical predictions), and data scraping.
- Created a data scraper to help extract information from the Gene Expression Omnibus - a hub for data on genetics
- Using the scraper in conjunction with other tools, a database was produced for Dr. Cao.

Jan. 2017 – Apr. 2017

Methodologist, **Statistics Canada**. *Ottawa, Ontario, Canada*

Supervisor(s): Shuai Zhang & Javier Oyarzun

- Worked as a survey methodologist in the Business Surveys & Methodology Division (BSMD).
- Developed a scoring system that would help identify duplicate observations (brought upon by faulty submissions) within the Business Register (BR).

Research & Work Experience (continued)

Aug. 2016 – Dec. 2016 **DATA PROCESSOR**, **HockeyData**. *Vancouver, British Columbia, Canada.*

- Worked primarily to gather hockey data using Excel and an analytics program called benchmetrics.
- Entered data quickly and accurately under time constraints
- Required extreme attention to detail and some knowledge of modern analytics in hockey (Corsi, Fenwick, etc.) was helpful.

Projects

Jan. 2019 – PRESENT **FUNCTIONAL LEAST ANGLE REGRESSION**, **Simon Fraser University, Department of Statistics**. *Burnaby, British Columbia, Canada.*

Supervisor(s): Dr. Jiguo Cao

- This project is currently ongoing and upon completion, will result in a novel contribution to the realm of Functional Data Analysis.
- As a precursor, I reproduced (including all of its mathematics, although for simplicity, correlations were kept positive) the original paper by Tibshirani, Hasti, and Efron. A report done to illustrate this is presented below:

  https://tinyurl.com/y9b3rfxw

Jan. 2018 – Apr. 2018 **A METHOD FOR IDENTIFYING TRENDING AMATEUR PLAYERS IN THE CONTEXT OF THE CANADIAN WOMEN'S NATIONAL SOCCER TEAM**, **Simon Fraser University, Department of Statistics**. *Burnaby, British Columbia, Canada.*

Supervisor(s): Dr. Jack Davis & Dr. Ming Tsai

- The task was to identify a system which could be used to isolate out trending soccer players from the others.
- A scoring system was developed that uses the best performances of each athlete across all of their fitness tests. An athlete's score is then determined to be a weighted combination of their best performances, in which weights are derived through the use of gradient descent.

  https://tinyurl.com/y9x8o99o

Nov. 2017 – Nov. 2017 **US POLICE DATA CHALLENGE: PREDICTING PROPORTION FUNCTIONS**, **Simon Fraser University, Department of Statistics**. *Burnaby, British Columbia, Canada.*

Supervisor(s): Dr. Jack Davis

- Goal of this competition was to provide useful information to a particular police department so that they can better protect the community.
- Developed an original method that combined functional data analysis and time series models to predict weekly proportions of crime priority levels.
- Awarded an Honorable Mention.

  https://goo.gl/qRTk44

Projects (continued)

Oct. 2017 – Oct. 2017

Predicting Crohn's Disease & Ulcerative Colitis Using Gene Expression Data, Simon Fraser University: STAT 440, Learning from BIG DATA. *Burnaby, British Columbia, Canada.*

- Used models on gene expression data in order to predict whether a particular individual has Crohn's disease, ulcerative colitis, or neither.
- Fitted various models including multinomial, neural nets, and gradient boosting while also filtering the data through dimension reduction techniques.

https://goo.gl/Fa4eum

Sep. 2017 – Sep. 2017

Optimizing Travel Routes in Order to Maximize the Number of Walkers and Minimize the Amount of Walking Done Through a "Walking School Bus" Program, EduHacks Hackathon. *Vancouver, British Columbia, Canada.*

- Implemented a combination of a K-Nearest Neighbors algorithm that incorporated in an optimization strategy that used the Google's API to find optimal travel distances.
- Currently developing the front-end so that the idea could be presented to the appropriate authorities.

https://goo.gl/Pn5D2t

Jan. 2017 – Apr. 2017

Identifying Duplicates within the Business Register, Statistics Canada. *Ottawa, Ontario, Canada*

Supervisor(s): Shuai Zhang & Javier Oyarzun

- Developed a non-parametric model that helped identify duplicates through frequency of use of "key words" in the data set.
- The model took advantage of Zipf's Law to weight words and make reasonable linkages.
- Successfully identified over 100,000 duplicates.[1]

https://goo.gl/N9sQHg

Nov. 2016 – Dec. 2016

The Effect of Income on Religiousness [Paper Replication], Simon Fraser University: ECON 435, ECONOMETRICS. *Burnaby, British Columbia, Canada.*

- Replicated the paper "The Effect of Income on Religiousness" authored by Thomas Buser.
- Successfully reproduced every table and image and made interesting new inferences about the results including the potential misuse of the regression discontinuity design.

https://goo.gl/nYqHAp

Education

2018 – 20XX **M.Sc. Statistics, Simon Fraser University, Canada.**

2012 – 2018 **B.Sc. Honours Statistics, Simon Fraser University, Canada.** *Economics Minor.*

[1] The BR has over 21 million observations.

Ancillary Information

Honors and Awards

2018 — **KEY BIG DATA UNDEGRADUATE STUDENT RESEARCH AWARD**, ***Simon Fraser University, Department of Statistics***. *Burnaby, British Columbia, Canada.*

2017 — **HONORABLE MENTION**, ***American Statistical Association: Police Data Challenge*** *International Competition from the ASA.*

BRONZE STANDING, ***Kaggle Competition*** *Statoil Iceberg Classifier Challenge - This result is accurate as of the date of submission of this CV.*

https://goo.gl/DuRDRW

NSERC UNDERGRADUATE STUDENT RESEARCH AWARD, ***Simon Fraser University, Department of Statistics***. *Burnaby, British Columbia, Canada.*

2016 - 2019 — **DEAN'S (OR PRESIDENT'S) HONOUR LIST**, ***Simon Fraser University*** [2]. *Burnaby, British Columbia, Canada.*

Volunteer Experience

May 2017 – PRESENT — **DEPARTMENT REPRESENTATIVE, Graduate Student Society** Statistics department representative for the SFU Graduate Student Society.

AT-LARGE VOTING MEMBER, Simon Fraser Student Society Voting member for the Surrey Campus Committee. Involved in organizing various events for students.

Interests/Other

Sports — Curious about the way random events affect games and how such events can be modeled using statistical tools. Particular sports I enjoy include hockey, basketball, and soccer.

Data Visualization — Recently, I have taken interest in creating data visualizations that provide useful insights. Here is a function that, when given a data set as a parameter, outputs a heatmap of the quantitative variables[3]:

- Code: https://goo.gl/Gfdydx
- Example: https://i.imgur.com/SD9uFrq.png
- Example 2: https://imgur.com/a/oyJMvtx

Programming

- **Statistical Programming:** R || SAS || EXCEL || SQL || TABLEAU
- **Other Programming:** PYTHON || MATLAB || LaTeX || C++

[2] Awarded in all applicable academic sessions.
[3] Modifications are sometimes made to these outputs as seen in Example 2

References

Name	Position	Email
Jiguo Cao	SFU Professor of Statistics	jiguo_cao@sfu.ca
Chris Muris	Professor of Economics & Reader at Bristol University	chris.muris@bristol.ac.uk
Javier Oyarzun	Senior Methodologist (Statistics Canada)	javier.oyarzun@canada.ca
Richard Lockhart	University Professor	lockhart@sfu.ca