

# Dani Chu

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## EDUCATION

### SIMON FRASER UNIVERSITY, BURNABY, BC

09/2018 (Starting)

M.Sc. Statistics

Supervisor: Dr. Tim Swartz

Honours & Awards:

NSCERC Alexander Graham Bell Canada Graduate Scholarship (\$17,500 CDN)

09/2018 to 08/2019

### SIMON FRASER UNIVERSITY, BURNABY, BC

09/2013 – 04/2018

B.Sc. Double Major in Mathematics and Computing Science (Joint) & Statistics

CGPA: 3.69/4.33

Semester Abroad – San Diego State University

CGPA: 3.93/4.00

Honours & Awards:

Department of Statistics and Actuarial Science Endowment Award (\$1,200 CDN)

Spring 2018

Department of Mathematics Award (\$1,000 CDN)

Spring 2018

President's Honour Roll

Spring 2018, Fall 2016

Dean's Honour Roll

Spring 2018, Fall 2017, Spring 2017, Fall 2016, Spring 2015

Statistics Undergraduate Chair Travel Grant (\$1,000 CDN)

Fall 2017

NSERC Undergraduate Student Research Award (\$6,356 CDN)

Summer 2017

International Mobility Award (\$1,000 CDN)

Spring 2016

SDSU Dean's List

Spring 2016

SDSU On Campus Housing Scholarship (\$5,000 USD)

Spring 2016

## REFEREED PUBLICATIONS

**Chu, D.**, Wu, Y. and Swartz, T.B. (2018, March). Modified Kelly Criteria. *The Journal of Quantitative Analysis in Sports*, 14(1), pp. 1-11.

Tingling, P., Masri, K. and **Chu, D.** (Under Review). Catch and Release? Endowment Effects in the NHL Expansion Draft. *Sport, Business, Management: an International Journal*

## CONTRIBUTED PRESENTATIONS

**Chu, D.**, Wu, Y., Reyers, M., and Doyle, C. *Time to Foul Out, Improving Foul Management in the NBA* (2018, August). Poster presentation selected for the Cascadia Symposium on Statistics in Sports. Vancouver, British Columbia.

Sheehan, R., **Chu, D.**, Tsai, M.-C., and Davis, M.J. *Racing Profiles in World Championship 2000m Rowing Explored Through K-Means Clustering* (2018, August). Poster presentation selected for the Cascadia Symposium on Statistics in Sports. Vancouver, British Columbia.

**Chu, D.**, Wu, Y. and Swartz, T.B. *Modified Kelly Criteria* (2018, July). Presentation selected for the Statistics in Sport Undergraduate Research Competition at the Joint Statistical Meetings. Vancouver, British Columbia.

Tingling, P., Masri, K. and **Chu, D.** (2018, May). *Catch and Release? Endowment Effects in the NHL Expansion Draft*. Presentation selected for the Administrative Sciences Association of Canada, Sport & Tourism Management Division. Toronto, Ontario.

**Chu, D.**, Reyers, M., Wu, Y., Bailey, S. and Bystrom, K. (2018, March). *Structure vs Speed: Evaluating the Power Play Neutral Zone Regroup Decision in the AHL*. Presented at the Vancouver Hockey Analytics Conference. Vancouver, British Columbia.

Wu, Y., **Chu, D.**, He, S. and Paton, F. (2017, July). *Applications of Modern Computational Methods and Statistical Learning Theory for Data Driven Decisions*. Presented at Fraser Health Population and Public Health Lunch & Learn. Surrey, British Columbia.

## TECHNICAL SKILLS

**Proficient:** R, Python, SQL, LaTeX, C, C++, MATLAB, R Shiny

**Familiar:** Spark, Git, SAS, Tableau, Sage, MS Office, Maple, HTML, XML, Adobe Analytics, Google AdWords

## TECHNICAL EXPERIENCE

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**BEST BUY CANADIAN CORPORATE HEADQUARTERS** 05/2018 – PRESENT

Digital Analyst Intern – Ecommerce Department

**Job Description:** Worked in an agile development environment. Modelled product conversion rates under a Bayesian Framework. Developed Price Optimization tools for different departments. Taught members of other departments how to perform their own basic analyses using Adobe Analytics.

**CANADIAN SPORT INSTITUTE PACIFIC** 06/2017 – PRESENT

Research Assistant – Canada Soccer Women's National Team

**Project Description:** Built Critical Power Models using millions of rows of Catapult Biometric data over the course of training sessions and games with Eli Mizelman and Dr. Dave Clarke. The models will be used to better evaluate substitution patterns and training loads to prevent injury and promote more efficient performances.

Research Assistant – Rowing Canada

**Project Description:** Investigated GPS race data to determine optimal pacing strategies across various rowing events. Project was a part of a directed studies course supervised by Dr. Jack Davis of SFU and Dr. Ming-Chang Tsai of CSIP.

Research Assistant – Canada Women's Rugby Sevens

**Project Description:** Analyzed both tagged data and Catapult Biometric data to explain score differential supervised by Eli Mizelman, a Sports Analytics PHD student, Dr. Dave Clarke, and Dr. Tim Swartz.

**CANADA BASKETBALL** 06/2017 – PRESENT

Lead Researcher

**Project Description:** Led a confidential research project for Canada Basketball, involving Bayesian Methods and Linear Models to predict player success in international play.

Lead Developer

**Project Description:** Wrote R code to scrape, clean and format data from specific FIBA tournament games. This tool was used by Team Canada at the FIBA U19 World Championships where they won gold.

**UNIVERSITY OF BRITISH COLUMBIA MEN'S BASKETBALL** 04/2018 – PRESENT

Project Leader

**Project Description:** Preliminary stages of working with the coaching staff to answer their questions about team performance and strategy.

**TERRY FOX SECONDARY JUNIOR BOYS BASKETBALL ANALYTICS** 09/2017 – 03/2018

Project Leader

**Project Description:** Developing an innovative platform for collecting and analyzing data in high school basketball. Working intimately with the coaching staff to educate them about the value of analytics in their decision making.

**STRIDES STUDY** 02/2018 – PRESENT

Statistical Consultant

**Project Description:** Advised MSc student Stephanie Maganja and her supervisor Dr. Dawn Mackey on the statistical tests of their validity study of commercial-grade activity monitors. Helped write code to clean and model their data.

**NATURAL SCIENCE AND ENGINEERING RESEARCH COUNCIL OF CANADA** SUMMER 2017

Undergraduate Student Research Award Recipient

**Job Description:** Research focused on sports analytics and mathematical systems for gambling under Professor Dr. Tim Swartz at SFU's Department of Statistics. Derived a more conservative Kelly Criterion using a Bayesian approach, created an R Shiny app and co-authored a research paper that is currently under review for publishing.

**FRASER HEALTH – POPULATION AND PUBLIC HEALTH OBSERVATORY** 05/2017 – 12/2017

Statistical Research Intern – Overdose Analytics

**Job Description:** Performed ad-hoc analysis on areas of the overdose crisis in Fraser Health. Collaborated on a larger analysis using machine learning techniques to identify at risk groups and optimal intervention points. Investigated the higher rate of ambulance rejection after an overdose with a focus on the location of the patient.

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## PROFESSIONAL & UNIVERSITY SERVICE

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**SFU SPORTS ANALYTICS CLUB** 08/2015 – PRESENT  
President, Accountant

**Volunteer Responsibilities:** Organized projects and events for club members. Projects include work with Canada Basketball, Canadian Sport Institute Pacific, Vancouver Canucks and Vancouver Whitecaps.

**VANCOUVER SPORTS ANALYTICS SYMPOSIUM & HACKATHON** 01/2017 – PRESENT  
VanSASH 2018 Lead Event Organizer

**Volunteer Responsibilities:** Planning the expansion of the event in September of 2018 to include 200 participants.

**VanSASH 2017 Lead Event Organizer**

**Volunteer Responsibilities:** Organized sponsors, speakers, venue, catering, grant requests and volunteers for the 100-person event in 2017. Additionally, was the host and a mentor at the event. See [www.vansash.com](http://www.vansash.com) for more details.

**VANCOUVER WHITECAPS FC – SOCCER OPERATIONS** 03/2017 – PRESENT  
Game Day Analytics Intern & Volunteer Coordinator

**Volunteer Responsibilities:** Filmed games and provided game day support for the analytics and scouting team. Organized, scheduled and trained new volunteers for the department.

**ADMINISTRATIVE SCIENCES ASSOCIATION OF CANADA** SPRING 2018  
Peer Reviewer

**Volunteer Responsibilities:** Reviewed a paper for the Administrative Sciences Association of Canada Conference.

**STATISTICS & ACTUARIAL SCIENCES STUDENT SOCIETY** FALL 2017  
Vice President

**Volunteer Responsibilities:** Provided insight and direction on the renovations of the Mathematics and Statistics & Actuarial Sciences Student Common Rooms.

**SFU EXCHANGE** SPRING 2016 – PRESENT  
Exchange Ambassador

**Volunteer Responsibilities:** Attended pre-departure meetings, recruitment events and diversity events at Simon Fraser University and San Diego State University.

## TEACHING EXPERIENCE

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**INTRODUCTION TO STATISTICS FOR THE SOCIAL SCIENCES** 05/2018 – PRESENT  
Tutor Marker

**PRIVATE MATH & STATISTICS TUTOR** 03/2012 – PRESENT  
Grade 10 - 2<sup>nd</sup> Year University Level Math Courses

## COMPETITIONS

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**1<sup>ST</sup> PLACE (PRIZE PACK) - SACRAMENTO KINGS CASE COMPETITION** 03/2018 – 04/2018

**Project Description:** Used survival analysis, approximations to exponential distributions and bootstrapping methods to give predictions of the time an NBA player had before fouling out of a game given he had a given number of fouls. Build a Shiny App for coaches to use on the sidelines as well as 6 page report to communicate our results.

**TOP 75 QUALIFIER – NSERC'S SCIENCE, ACTION! VIDEO CONTEST** 01/2018

**Project Description:** Produced, wrote and promoted a 1-minute summary video of PhD candidate Trevor Thompson's research into spot fire simulators and their applications to forest fires.

**1<sup>ST</sup> PLACE (\$350 CDN) - SFU BUSINESS ANALYTICS HACKATHON, VANCOUVER** 11/2017

**Project Description:** Modeled customer retention for Grocery Consolidated with an ensemble model and made business recommendations based on our results.

**1<sup>ST</sup> PLACE (\$125 CDN) - HOCKEY ANALYTICS DATA SPRINT, VANCOUVER** 11/2017

**Project Description:** Analyzed the ability of AHL team to breakout of their zone on the power play.

**COMPETITOR - NBA HACKATHON, NEW YORK CITY** 09/2016, 09/2017

**Project Description:** 2017 Points Gained Shooting - Calculates a player's shooting performance relative to a league average player. 2016 Corner 3s, the Following Possession – Computed the rate of fast breaks created by shots from a given location using Sport VU data.

## 4<sup>TH</sup> PLACE (\$150 CDN) - MOJIO CASE COMPETITION, VANCOUVER

SPRING 2017

Project Description: Classified engine use based on how a car was driven using k-means clustering.

## BASKETBALL COACHING EXPERIENCE

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### HEAD COACH

TC North Basketball Academy Junior Varsity Fall Travelling Team  
Dr. Charles Best Secondary School Junior/Senior Boys Basketball  
Grade 4 & 5 Private Skill Sessions

10/2016 – PRESENT  
04/2013 – PRESENT  
SUMMER 2017

### ASSISTANT COACH

TC North Basketball Academy 3 on 3 Spring Camps  
Tri-City Youth Basketball Association Seasonal Camps  
Canada Basketball – Centre for Performance Camp  
Special Olympics BC - Coquitlam Basketball  
Basketball BC U15 Fraser Valley North Regional Team

SPRING 2017. SPRING 2018  
SUMMER 2016, WINTER 2016  
FALL 2015, FALL 2016  
WINTER 2015  
SPRING 2015

**Description:** I have coached basketball for an average of 6 days a week while in season since 2013. I have travelled to the United States to coach in the North Cascades AAU Basketball League and other AAU tournaments. I have developed practice plans, game schedules and offseason training regiments for players of all ages. As the head coach, I have dealt with administrative duties and parental communications. Most importantly I strive to pass down my love for the game to my players and encourage them to develop a strong work ethic and mental toughness. I have experience pushing elite players to improve their skills, cultivating a love for the game with beginners, and teaching the game to those with unique physical and mental challenges.

## MEDIA RECOGNITION

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*How the SFU Sports Analytics Club has become a big player within the sports analytics industry* (2017, November). [www.The-Peak.ca](http://www.The-Peak.ca)

*Vancouver Sports Analytics Symposium and Hackathon* (2016, June). [www.The-Peak.ca](http://www.The-Peak.ca)

## REPORTS & BLOGS

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**Chu, D.** and Reyers, M. *The Peak Stat of the Week: Strokes Gained* (2018, March). [www.The-Peak.ca](http://www.The-Peak.ca)

Reyers, M. and **Chu, D.** *The Peak Stat of the Week: SPARQ Scores* (2018, February). [www.The-Peak.ca](http://www.The-Peak.ca)

**Chu, D.** and Reyers, M. *The Peak Stat of the Week: Corsi* (2018, January). [www.The-Peak.ca](http://www.The-Peak.ca)

Lee, V., Bharmal A., Kinniburgh, B., ... **Chu, D.** ... *2017 Chief Medical Health Officer's Report on The Hidden Epidemic: The Opioid Overdoes Emergency in Fraser Health* (2018, January). Fraser Health Authority, Health Reports.