Dani Chu

1012 Gilroy Crescent, Coquitlam, BC, Canada, V3J 3T1 | 778-873-8582 | dani_chu@sfu.ca | danichusfu.github.io

WEBSITE

This document works more as a CV than a resume. If you'd like to see a more digestible and visually appealing version of my work history please check out my website at **danichusfu.github.io**. Feel free to reach out to me at the contact information provided above if you have any questions.

EDUCATION

SIMON FRASER UNIVERSITY, BURNABY, BC   09/2018 – 04/2020 (Expected)
Masters of Science in Statistics   CGPA: 3.93/4.33
Supervisor: Dr. Tim Swartz
Honours & Awards:

NSCERC Alexander Graham Bell Canada Graduate Scholarship ($17,500 CDN)	09/2018 – 08/2019

SIMON FRASER UNIVERSITY, BURNABY, BC   09/2013 – 04/2018
Bachelor of Science (with Distinction)   CGPA: 3.69/4.33
Joint Major in Mathematics and Computing Science, Major in Statistics
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	Fall 2016, Spring 2018
Dean's Honour Roll	Spring: 2015, 2017, 2018, Fall: 2016, 2017
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. Reyers, M. and Thomson, J. (Under Review). Route Identification in the National Football League. *The Journal of Quantitative Analysis in Sports.*

Tingling, P., Masri, K. and **Chu, D**. (2019, July). Catch and Release? Endowment Effects in the NHL Expansion Draft. *Sport, Business, Management,* 9(3), pp. 301-312.

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.

CONTRIBUTED PRESENTATIONS

Chu, D. (2019, May). *Route Identification in the NFL.* Presentation selected for the New England Statistics Symposium. Hartford, Connecticut.

Chu, D., Reyers, M., Wu, Y., and Thomson, J. (2019, Feb). *The Routes to Success.* Presentation selected for the NFL Big Data Bowl. Indianapolis, Indiana.

Chu, D. . (2018, December). *VanSASH: The First Soccer Analytics Hackathon in North America.* Presentation selected for the CANSSI National Headquarters Launch. Vancouver, British Columbia.

Chu, D., Sheehan, R., Tsai, M.-C., and Davis, J. (2018, October). *Pacing Profiles in World Championship 2000m Rowing Explored Through k-Shape Clustering.* Poster presented at the Carnegie Mellon Sports Analytics Conference. Pittsburgh, Pennsylvania.

Chu, D., Wu, Y., Reyers, M., and Doyle, C. (2018, August). *Personalize Foul Trouble, Improving Foul Management in the NBA.* Poster presented at the Cascadia Symposium on Statistics in Sports. Vancouver, British Columbia.

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

Chu, D., Wu, Y. and Swartz, T.B. (2018, July). *Modified Kelly Criteria* Speed presentation and poster presented at the 2018 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.* Presentation selected for 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, tidyverse, Python, scikit-learn, SQL, LaTex, C, C++, MATLAB, R Shiny, Git
Familiar: Google Compute Engine, Spark, SAS, Tableau, Sage, MS Office, Maple, HTML, XML, Slack, Confluence, Adobe Analytics, Google Ads Google Search Ads 360, Qlikview

TECHNICAL EXPERIENCE

NATIONAL FOOTBALL LEAGUE
06/2019 – PRESENT
Consultant
Job Description: Developing a confidential research project to with NFL tracking data to help assist with injury prevention and the NFL combine. Deliverables include, a report, plots, gifs and entire code base.

NATIONAL BASKETBALL ASSOCIATION
06/2019 – PRESENT
Graduate Intern – Basketball Strategy & Analytics
Job Description: Working on a confidential project within the game integrity section of the department. Helped build a shiny app for the Undergraduate Advisory Council initiative. Built a year long sponsorable asst to pitch as part of the Business of Basketball program.

BEST BUY CANADIAN CORPORATE HEADQUARTERS
05/2018 – 08/2018
Digital Analyst Intern – Ecommerce Department
Job Description: Worked in an agile development environment on a performance marketing engine for expanded assortment products. Developed a new method to model product conversion rates under a Bayesian Framework, developed an automated price optimization tool and developed a more efficient shipping cost attribution system. Managed and updated the Google Ads campaigns for the marketing engine. Finally, lead an overhaul of current processes to incorporate version control and more automation.

CANADA SOCCER WOMEN'S NATIONAL TEAM
03/2018 – PRESENT
SEATTLE UNIVERSITY
GEORGIA SOUTHERN UNIVERSITY
Research Assistant
Job Description: Fit 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. Each proposed theoretical model also needs to be evaluated, so we will evaluate the fit of each model and its effectiveness. Used spark interfacing with KEY | SFU Big Data compute cluster resources to manage the amount of data available.

CANADIAN SPORT INSTITUTE PACIFIC
06/2017 – PRESENT
Research Assistant – Rowing Canada
Project Description: Lead a reproducible research project using GPS race data to determine optimal pacing strategies across various rowing events using k-Shape Clustering. Modelled the use of pacing profiles through a multinomial logistic regression on boat and race characteristics to find out which ones affected the speed curve of a boat. 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 using a linear regression. Supervised by Eli Mizelman, a Sports Analytics PHD student, Dr. Dave Clarke, and Dr. Tim Swartz in collaboration with Dr. Ming-Chang Tsai of CSIP.

SIMON FRASER UNIVERSITY MEN'S BASKETBALL 09/2018 – PRESENT
Research Assistant
Project Description: Working with Denis Beausoleil, an assistant coach, and Aaron Danielson to set realistic team goals for the 2018-2019 season. Developing a system to scout and identify talent in NWAC, CEGEP, CCCAA, and ACCAC Junior College Conferences. Finally, working on a project for the coaching staff to help set rotations and evaluate lineup efficiencies.

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 across league play and international play.
Lead Developer
Project Description: Wrote R code to scrape, clean and format data from specific FIBA tournament games to the specification of Performance Analyst/Database Manager, Phil Jevtovic. This tool was used by Team Canada at the FIBA U19 World Championships where they won gold.

TERRY FOX SECONDARY JUNOIR BOYS BASKETBALL ANALYTICS 09/2017 – 03/2018
Project Leader
Project Description: Developed 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 using an analysis of variance.

NATURAL SCIENCE AND ENGINEERING RESEARCH COUNCIL OF CANADA SUMMER 2017
Undergraduate Student Research Award Recipient
Job Description: Performed research in 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 now published in JQAS.

FRASER HEALTH – POPULATION AND PUBLIC HEALTH OBSERVATORY 05/2017 – 12/2017
Statistical Research Intern – Fentanyl Overdoses
Job Description: Performed ad-hoc analysis on areas of the overdose crisis in Fraser Health. Collaborated on a larger analysis using mixture model clustering 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.

PROFESSIONAL & UNIVERSITY SERVICE

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, Seattle University, Georgia Southern University, SFU Basketball, Vancouver Whitecaps, UBC Basketball, Vancouver Canucks.

VANCOUVER SPORTS ANALYTICS SYMPOSIUM & HACKATHON 01/2017 – PRESENT
VanSASH 2018 Lead Event Organizer
Volunteer Responsibilities: Planned the expansion of the event in September of 2018 to include 120 participates. This iteration included 2 divisions, soccer and business, each divided into 2 streams, data beginners and data experienced. Organized judges from the Executive Team and Coaches of the Vancouver Whitecaps, Vice President of Data and Analytics at Major League Soccer, and managers and data analysts from companies such as Best Buy, EA Sports, Boeing, Cardinal Path among others.
VanSASH 2017 Lead Event Organizer
Volunteer Responsibilities: Organized sponsors, speakers, venue, catering, grant requests and volunteers for the 100-person event in 2017. The event was sponsored by the Vancouver Whitecaps Football Club, Vancouver Canucks, Canadian Statistical Science Institute, Key Big Data Hub, Simon Fraser Student Society and many more. Additionally, was the host and a mentor at the event. See www.vansash.com for more details.

VANCOUVER WHITECAPS FC – SOCCER OPERATIONS
Game Day Analytics Intern & Volunteer Coordinator   03/2017 – PRESENT
Volunteer Responsibilities: Filmed games and provided game day support for the analytics and scouting team. Organized, scheduled and trained new volunteers for the department.

CASCADIA SYMPOSIUM ON STATISTICS IN SPORTS
Volunteer Coordinator   08/2018
Volunteer Responsibilities: Organized and scheduled volunteers, ran the registration booth and helped run the prize raffle for the event.

JOURNAL OF BIG DATA
Peer Reviewer   SUMMER 2018
Volunteer Responsibilities: Reviewed a paper for the Journal of Big Data.

ADMINISTRATIVE SCIENCES ASSOCIATION OF CANADA
Peer Reviewer   SPRING 2018
Volunteer Responsibilities: Reviewed a paper for the Administrative Sciences Association of Canada Conference.

STATISTICS & ACTUARIAL SCIENCES STUDENT SOCIETY
Vice President   FALL 2017
Volunteer Responsibilities: Worked to improve the experiences of Statistics students at Simon Fraser University by vouching for their needs during society meetings and through organizing events. Provided insight and direction on the renovations of the Mathematics and Statistics & Actuarial Sciences Student Common Rooms.

SFU EXCHANGE
Exchange Ambassador   SPRING 2016 – SPRING 2018
Volunteer Responsibilities: Attended pre-departure meetings, recruitment events and diversity events at Simon Fraser University and San Diego State University.

TEACHING EXPERIENCE

INTRODUCTION TO STATISTICS FOR THE SOCIAL SCIENCES
Simon Fraser University: STAT 203 - Tutor Marker   SUMMER 2018, FALL 2018

PRIVATE MATH & STATISTICS TUTOR
Grade 10 - 2nd Year University Level Math Courses   03/2012 – 04/2018

COMPETITIONS

NFL BIG DATA BOWL, INDIANAPOLIS
1st Place College Grand Finalists ($1000 USD & 4 NFL Game Tickets)   01/2018
Event Description: Used Multivariate Model Based Clustering for Functional Data to find latent patterns in the spatial temporal NFL Next Gen Stats Data. This allowed us to identify routes run by RBs, WRs and TEs. We then used a ridge regression model to regress nflscrapr's Expected Points Added on the routes run on a play. This let us fit coefficients to see which route types are better than average like in an adjusted plus minus model in hockey or basketball. We also used a bivariate normal distribution to model field ownership on NFL passing plays. Finally, we built use the identified routes to build route profiles and a play database to link with film. Our team is being flown out to the NFL combine in Indianapolis at the end of February.

SFU BUSINESS ANALYTICS HACKATHON 2018, VANCOUVER
1ST PLACE OVERALL WINNER ($500 CDN)   11/2018
1ST PLACE SYMPOSIUM PRESENTATION ($100 CDN)
2ND PLACE BEST MODEL ($300 CDN)
Project Description: Used two different gradient boosting machine models to address a business question about offering promotions to upsell customers for a meal delivery business. The first model was used to decide who was likely to subscribe to a promotion where we would take a loss to promote the premium service and the second model was used to calculate the expected weeks that the customer would pay for the premium service. In this way we can address emails to those who are likely to sign up for a promotion and not annoy those who don't and we can send the promotions to those with a low risk profile. Finally, we examined the characteristics of the sampling process to suggest the design of new experiments.

CMSAC 18 POSTER COMPETITION, PITTSBURGH   10/2018
1ST PLACE ($350 USD)
Event Description: At the 2018 Carnegie Mellon Sports Analytics Conference Poster Competition I presented research on pacing profiles in 2000m rowing.

2018 SFU SURJ RESEARCH POSTER COMPETITION   09/2018
1ST PLACE ($300 CDN)
Event Description: The Simon Fraser University Science Undergraduate Research Journal hosted a research poster competition where I presented research on pacing profiles in 2000m rowing.

2018 JSM STATISTICS IN SPORT UNDERGRADUATE RESEARCH COMPETITION   07/2018
1ST PLACE ($250 USD)
Event Description: The Statistics in Sports section of the American Statistical Association sponsored the 2018 Undergraduate Research Speed Session/Poster contest at the Joint Statistical Meeting in Vancouver, BC. I presented the development of the Modified Kelly Criterion.

SACRAMENTO KINGS CASE COMPETITION   03/2018 – 04/2018
1ST PLACE (Prize Pack)
Project Description: Used survival analysis, approximations to exponential distributions and bootstrapping methods to give personalized predictions of playing time an NBA player had before fouling out of a game given a number of fouls. Built a Shiny App for coaches to use on the sidelines as well as 6 page report to communicate our results.

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

SFU BUSINESS ANALYTICS HACKATHON, VANCOUVER   11/2017
1ST PLACE ($350 CDN)
Project Description: Modeled customer retention for Grocery Consolidated with an ensemble model and made business recommendations based on our results.

HOCKEY ANALYTICS DATA SPRINT, VANCOUVER   11/2017
1ST PLACE ($125 CDN)
Project Description: Analyzed the ability of AHL team to breakout of their zone on the power play. Provided rankings of the best and worst teams and gave areas to improve power play performance.

NBA HACKATHON, NEW YORK CITY   09/2016, 09/2017
COMPETITOR
2017 Project Description: Points Gained Shooting – Created a new metric to measure shooting skill for basketball players across games, seasons and careers by calculating a player's shooting performance relative to a league average player.
2016 Project Description: Corner 3s, the Following Possession – Computed the rate of fast breaks created by shots from a given location using Sport VU data to determine offensive rebounding and transition defense strategies and rotations.

MOJIO CASE COMPETITION, VANCOUVER   SPRING 2017
4th PLACE ($150 CDN)
Project Description: Classified engine use based on how a car was driven using k-means clustering.

BASKETBALL COACHING EXPERIENCE

HEAD COACH
TC North Basketball Academy Junior Varsity Fall Travelling Team	10/2016 – PRESENT
Dr. Charles Best Secondary School Junior/Senior Boys Basketball	04/2013 – PRESENT
Grade 4 & 5 Private Skill Sessions	SUMMER 2017

ASSISTANT COACH
TC North Basketball Academy 3 on 3 Spring Camps	SPRING 2017. SPRING 2018
Tri-City Youth Basketball Association Seasonal Camps	SUMMER 2016, WINTER 2016
Canada Basketball – Centre for Performance Camp	FALL 2015, FALL 2016
Special Olympics BC - Coquitlam Basketball	WINTER 2015
Basketball BC U15 Fraser Valley North Regional Team	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

Inside the NFL analytics dark web (2019, May). www.theathletic.com

Chilling with Charlie Podcast Episode 18 (2019, May).

Statistics students impress the NFL with their moves (2019, April). www.sfu.ca

NFL Big Data Bowl (2019, February). stat.sfu.ca

2019 Big Data Bowl Winners Announced (2019 March). operations.nfl.com

Canadian Statistical Sciences Institute launches new national headquarters in SFU's Big Data Hub (2018, December). www.sfu.ca

SFU Sports Analytics Club runs successful VanSash event for second consecutive year (2018, October). www.The-Peak.ca

SFU Sports Analytics Club runs VanSash, a hackathon for students and by students (2018, September). www.The-Peak.ca

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

Vancouver Sports Analytics Symposium and Hackathon (2016, June). www.The-Peak.ca

REPORTS & BLOGS

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

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

Chu, D. and Reyers, M. *The Peak Stat of the Week: Corsi* (2018, January). 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 Overdoses Emergency in Fraser Health* (2018, January). Fraser Health Authority, Health Reports.