NATHAN ESAU

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EDUCATION

Simon Fraser University, Burnbaby, BC — 2012 – Present
Bachelor of Science in Actuarial Science — Expected Graduation: Apr 2017

ACTUARIAL EXAMS

Exam MLC	Models for Life Contingencies	May 2016
Exam MFE	Models for Financial Economics	Jul 2015
Exam FM	Financial Mathematics	Jun 2014
Exam P	Probability	May 2014

EXPERIENCE

Actuarial Programmer, *GGY Axis (ON)* — Jan 2016 – Present

- Helped maintain AXIS, a software widely used by life insurers in Canada; collaborated with over 100 programmers by fixing bugs, re-structuring code, testing features and implementing new functionality in C++
- Worked alongside actuaries and actuarial students on the asset liability management team, a group which develops the AXIS `Asset` and `Reinvestment` modules
- Regularly presented jobs at code review meetings; examples include (1) creating a numerical integration class designed to speedup equity option pricing, and (2) cleaning up code used to solve for the yield spread of an asset

Research Assistant, *Simon Fraser University (BC)* — May 2015 – Aug 2015

- Performed literature review about fairness between generations in pension plans
- Programmed an economic scenario generator in R; Real world scenarios were created using a vector autoregressive time series model based on Canadian market data; For risk-neutral scenarios, a one-factor Hull-White model was used
- Valued embedded options in a target benefit plan using the Monte-Carlo method; Analyzed the impact of policy decisions on different age cohorts
- Took initiative; informed supervisor about new ideas or modeling approaches in pensions field; Organized and shared documents with team through Dropbox

Methodologist, *Statistics Canada (ON)* — Jan 2015 – Apr 2015

- Tested different statistical sampling methods in the context of household surveys, comparing how well these methods minimized the overlap between samples
- Performed simulations in SAS to analyze the efficiency of different sampling scenarios; built stratifications for data sets based on existing surveys
- Prepared internal report for the household surveys division, providing recommendations on which sampling method to use going forward
- Attended weekly seminars to learn about topics such as data imputation, record linkage, variance estimation and questionnaire design

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SKILLS

Skill	Application
Statistical software	**[R]** Generated economic scenarios and valued embedded options in target benefit plans for research project (2015); **[R]** Used random forest model to predict mobile app revenue for SFU statistical case competition (2015); **[SAS]** Used `BASE`, `STAT` and `SQL` procedures to stratify large data sets and select samples at Statistics Canada (2015)
Programming	**[C++]** Worked as a developer on AXIS, a life insurance software; debugged and tested C++ code in Visual Studio; applied techniques such as object oriented programming and generic programming; used version control to merge code changes
Excel	Performed pension valuation a for retirement benefits project, including a gain and loss analysis (2014); Calculated premiums for life insurance project; Applied functions such as `VLOOKUP`, `INDEX` and `MATCH` as well as VBA (2014)

PROJECT EXPERIENCE

Munich Re Case Competition, *Munich Reinsurance (ON)* Mar 2016

- Provided solutions on how to manage the risk of specialty drugs coverage (i.e. high cost prescription drugs which are often covered in group insurance plans)
- Recommendations included mandatory generic substitution, use of a preferred pharmacy network and hedging risk with life or long term disability business lines; simulations were performed to analyze the financial impact of deductibles or excess loss reinsurance

ASNA Case Competition, *Niagara Falls (ON)* Jan 2016

- Researched automobile safety features, including computerized collision avoidance, passenger side airbags and parking assistant technology; estimated loss costs and calculated return on investment for different combinations of features
- Gave presentation to hundreds of actuarial students and industry professionals at Actuarial Students National Association conference in Niagara Falls

Statistical Case Competition, *Simon Fraser University (BC)* Sept 2015

- Predicted revenue for a mobile game using a random forest model in R; A gradient boosted model predicted whether players would continue playing the game; Won first place overall as well as best use of graphics and best predictions
- Presented poster at university departmental gala; highlighted key features of the data set and important factors affecting the target variables