

# Sergio E. Betancourt

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## EDUCATION

*Master of Science Candidate, Statistics and Machine Learning* — **University of Toronto, Canada** May 2018 – Present

- Recipient of University of Toronto Fellowship (**full funding**)
- **Relevant Projects:**
  - Bayesian temporal modelling of road safety in the City of Toronto in the past decade (R/INLA)
  - Bayesian modelling of tobacco usage and uptake in the American youth (R/INLA)
  - Monte Carlo implementation for multi-class classification in the troublesome case when sample size  $N < \text{parameters } P$
  - Deep Learning tasks of colorization with CNNs+, machine translation with RNNs+, and model-agnostic methods (pyTorch)

*Honors Bachelor of Science, Statistical Sciences and Mathematics* — **University of Toronto, Canada** Class of 2015

- Academic Distinction (Cum Laude), PEY, and Gordon Cressy and ULife Leadership Awards

## RESEARCH AND ACADEMIC EXPERIENCE

*Invitee* – **CIFAR/Vector/Amii Deep Learning Graduate Program, University of Alberta, Canada** Jul – Aug 2019

- Selected as part of funded cohort to one of the world's premier graduate AI symposiums

Data Science Consultant – **SBEP Research Network, Toronto, Canada** Jan 2019 - Present

- Survey assessment and generalized regression analysis regarding multi-million dollar building renovation project
- ML malware classification and prevention model (Spark.ml/mllib/GCP/Hadoop)

*Graduate Teaching Assistant* — **University of Toronto, Canada** Sep 2018 – Present

- Linear (STA302) and Generalized Regression Analysis (STA303), and The Practice of Statistics I (STA220)

*Machine Learning Research Assistant* — **RiskLab at the University of Toronto, Canada** Jan – May 2019

- Project 1: Deep covariance matrix estimation for portfolio creation and assessment, using a convolutional architecture in **PyTorch**
- Project 2: Implementing a recurrent language representation model using **Python/PyTorch** to quantify key language use in social media and press sources, and how this can be harnessed for indexing and portfolio optimization

*Data Science Research Assistant* — **IHPME at the University of Toronto, Canada** May – Aug 2018

- Employed modern machine learning and survival analysis techniques (**R** and **Python**) to analyze the trajectory of dementia phenotypes, hospital readmission rates, and a variety of health policy research topics, in collaboration with NYU

## INDUSTRY EXPERIENCE

*Assistant Vice President, Equities Electronic Execution* — **Citigroup (NYSE: C); Toronto, Canada** Aug 2017 – Apr 2018

- Senior Technical Applications Analyst focused on Trade Capturing and Routing, Reporting Technology, and Process Optimization, working in partnership with Citi's trading desks and Institutional Clients (e.g., UBS, JPM, NYSE, CME)
- SME for efficiency—achieved **60%** of team's saved hours in 2017 with **R, ELK, SQL, Python, bash, Perl, VBA, and q**
- Awarded Citigroup's **Gratitude Award – Delivers Results** in Q1 2018 for elevating the Operational Standards (Level 3) of the Core Market Access platform (GMA+) to ensure stability and real-time insights

*Intermediate Technology Analyst, Global Data Services* — **Citigroup; Toronto, Canada** Sep 2016 – Aug 2017

- Technical Applications Analyst focused on Big Data, Cache Services, Regulatory Reporting, and Trade Surveillance
- Championed efficiency by leading projects yielding **1,028** yearly saved hours (over **50%** of whole team's 2017 goal)
- Delivered a trade surveillance reporting framework for the FX and Risk businesses using **Python, SQL, and VBA**, decreasing delivery time by **80%** and increasing consistency

*Technology Analyst I, Prime Brokerage* — **Citigroup; Toronto, Canada** Jun 2015 – Sep 2016

- Technical Business Analyst focused on Prime Finance, Trade Lifecycle, and Reporting serving global Institutional clients
- Yielded **70%** yearly cost reduction (**-\$12K**) of daily checks through automation projects with **Python** and **SikuliX**
- Awarded Citigroup's **Galaxy of Thanks** Recognition in Q1 2016 for partnership with Client Integration team

## SKILLSET

**Software and Technology:** Python/PyTorch, R/Shiny, C/C++, SQL, noSQL (MongoDB), Hive/Impala, Spark (Scala/pySpark), Hadoop, Unix/bash, SAS, Jupyter, GCP, AWS, ELK, and MS Office

**Subject Matter:** Data Science (Consultation), AI/Machine Learning (Optimization, Deep Learning, Regression), Statistics (Bayesian and Frequentist Inference, Hierarchical Models), Visualization, Finance (Capital Markets), Health Research