

# Lucas Durand

Technology Solutions  
Associate

**Linked in** /in/lucasdurand



+1 416 884 1123

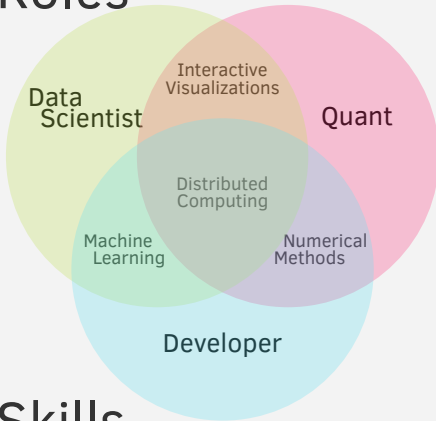


github.com/lucasdurand



lucas.durand@gmail.com

## Roles



## Skills

Statistical Analysis Business Acumen  
Spark MLLib Hadoop Quantitative Re-  
search Teaching Agile Monte Carlo  
Angular.js Pandas Multinomial Tree  
PoC Stochastic Calculus ChatBots Capi-  
tal Markets Predictive Models Quantlib

## Interests

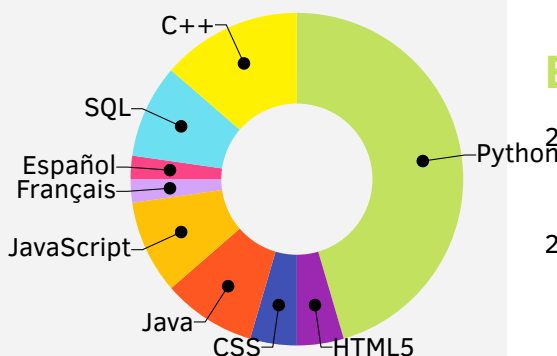
Big Data

Visualisation

Quantitative Modelling

Machine Learning

## Languages



## Experience

Aug 2017 -  
Feb 2018

### Quantitative Developer - Associate

TD Securities

Quantitative Modelling & Analytics Group

- Responsible for development and implementation of sophisticated derivatives pricing and risk models, exposing functionality to Excel and Java (C++, Java)
- Led Machine Learning group learning course available bank-wide. Covering key Data Science techniques and ML models, with cap-stone project
- Winner of TD Bank's Hackathon: The Data Awakens with development of novel model to predict customer life moments
- Implement infrastructure to expose library to Python `Boost.Python`
- Develop network of Chatbots, providing easy access to a variety of useful data and algorithms

Feb 2017 -  
Aug 2017

### Quantitative Developer - Associate

TD Securities

Treasury Analytics Group

- Leverage data visualization tools to deliver interactive mortgage-backed security (MBS) valuation module to business leaders (`Matplotlib`, `Seaborn`, `Plot.ly`)
- Benchmark and stability testing of quasi-Monte Carlo method allows for Key Rate Vega and Convexity hedging (`Pandas`, `C++`)
- Presented *Lunch n' Learn* utilising `Jupyter RISE` to deliver real-time code execution and animations
- Courses Completed:
  - Udemy - Data Science and Machine Learning with Python
  - Udemy - Taming Big Data with Apache Spark and Python

## Research

2014 - 2016 Major Research Project

Tulin Research Group

*inSIDious Matter*

- Phenomenological exploration of a particle physics model for an inelastic self-interacting dark matter (`Mathematica`, `Scipy`)
- Theoretical formulation of scattering quantities by tensor calculus and numerical partial-wave analysis
- Determination of allowed parameter-space for theory in agreement with predictions from N-body simulations and astronomical observations
- New efficient techniques for numerically determining scattering cross-sections in the classical regime are implemented
- Visiting Researcher at the *Perimeter Institute for Theoretical Physics*

## Education

2014 - 2016 MSc., Theoretical Physics

York University, Perimeter Institute (PI)

Toronto/Waterloo, Ontario, Canada

TA: Engineering/Physics Lab; Science, Technology & the Environment

2009 - 2014 HBSc., Physics & Philosophy

Trinity College, University of Toronto

Toronto, Ontario, Canada

Senior Thesis – Graphene: Hartree-Fock Analytics and Numerics

## Experience cont'd

Jul 2016 -  
Feb 2017

### **Business Systems Analyst - Associate** Enterprise Fraud Analytics Program

TD Bank Financial Group

- Subject Matter Expert (SME) for Identity & Access Management. Developed Role-Based Access Management tools to automate RBAC reporting (Pandas, Excel, Selenium)
- Interfaced between business and Testing Centre of Excellence to facilitate continuous testing on vendor platform delivery.
- Completed Courses:
  - Global Knowledge - IBM BigInsights Foundation with Hadoop
  - Coursera (Columbia University) - Financial Engineering and Risk Management Part I

Sep 2014 -  
Apr 2016

### **Teaching & Research Assistant**

York University, Tulin Research Group

- Maintained a broad knowledge of general science to lead tutorials in *Science, Technology & the Environment* as well as weekly topics relevant to *Engineering/Physics Labs*.
- Worked to promote a holistic understanding of difficult concepts through the use of qualitative, quantitative, analytic and synthetic thinking while efficiently assessing a high volume of student problem sets and assignments.

Apr 2014 -  
Sep 2015

### **Application Analyst - Intern** Equities Trade Support

National Bank Financial Markets

- Worked on NBFM trading floor, directly interfacing with institutional equities, direct market access, and discount brokerage traders
- Created ETL framework and Tableau dashboards to provide meaningful business insights from global equities trade data, leading to the adoption of Tableau Server across the LoB
- Designed and implemented `angular.js` Big Data PoC for legal compliance reporting. Consolidated data from legacy Sybase servers into modern data structure to increase search speeds by 1000%
- Explored use cases for `Bokeh`, `d3.js` for visualising real-time market data

## Volunteering

Annual

### **Benefit Concerts**

ABC for SickKids, CANFAR - AIDSbeat, March of Dimes - Rock for Dimes, CIBC Run for the Cure, Big Brothers Big Sisters of York, CIBC Rock for LIFE, AUSUM Charity for Autism, Raising the Roof - Sounds of the 6ix

2014 -  
Present

### **UofT A&S Mentorship Program** Department of Physics Mentor

Jul 2014 -  
Present

**TD Associate Knowledge Academy**  
Executive, *Lunch n' Learn* Presenter, Group Learning Coordinator, Associate Fireside Chat Creator  
**TD Co-op Mentorship Committee**  
Executive, Mentor

## Leadership

2009 -  
2014

**Trinity College Literary Institute**  
Speaker, Archivist, Member

2011 -  
2014

**Trinity College James Bond Society**  
President

2012 -  
2013

**Trinity College Meeting**  
Deputy Chair