

# Lucas Durand

Technology Solutions  
Associate

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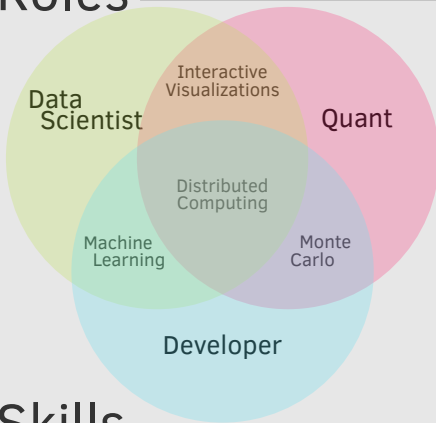


github.com/lucasdurand



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## Roles



## Skills

Statistical Analysis Business Acumen  
Spark MLLib Hadoop Quantitative  
Research Teaching Monte Carlo Angu-  
lar.js **Pandas** Lattice Tree QuantLib POCs  
Stochastic Calculus Capital Markets Predic-  
tive Models

## Interests

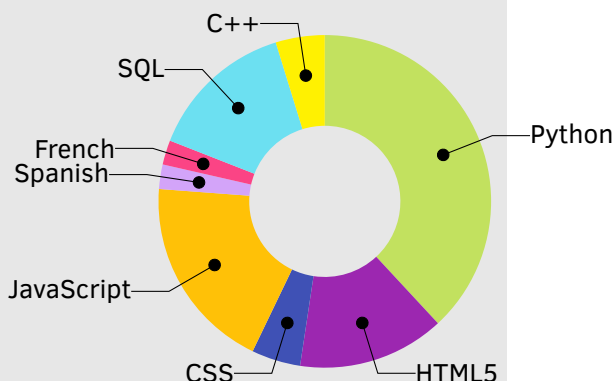
Big Data

Data Visualisation

Quantitative Modelling

Machine Learning

## Languages



## Education

2014 - 2016 **MSc., Theoretical Physics**  
Toronto/Waterloo, Ontario, Canada

York University, Perimeter Institute (PI)

2009 - 2014 **BSc., Physics & Philosophy**  
Toronto, Ontario, Canada  
Senior Thesis – Graphene: Hartree-Fock Analytics and Numerics

Trinity College, University of Toronto

## Research

2014 - 2016 **Major Research Project**  
*inSIDious Matter*

Tulin Research Group

- Phenomenological exploration of a model for an inelastic self-interacting dark matter particle with **Mathematica** and **Scipy**
- Theoretical formulation of scattering quantities by tensor calculus and numerical partial-wave analysis to determine valid parameter-space for theory.
- New efficient techniques for numerically determining scattering cross-sections in the classical regime are implemented.

## Experience

Feb 2017 -  
Present

**Quantitative Analyst - Associate**  
Treasury Analytics Group

TD Bank Financial Group

- Thorough benchmark and stability testing of quasi-Monte Carlo methods shows marked increase in convergence speed for mortgage-backed security valuation model, allowing for Key Rate Vega and Convexity hedging (**Pandas, Matplotlib, Seaborn, C++**)
- Strengthened understanding of Financial Engineering and numerical analysis, transferring knowledge in a very successful *Lunch n' Learn*, utilising **Jupyter RISE** to deliver interactive code and live animations

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.
- Global Knowledge training with IBM BigInsights **Hadoop** stack

Apr 2014 -  
Sep 2015

**Application Analyst**  
Equities Support

National Bank Financial Markets

- Worked on trading floor, directly interfacing with 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 local SQLite database to increase search speeds by 1000%
- Explored use cases for **Bokeh, d3.js** for visualising real-time market data