

Lucas Durand

Quantitative Analyst

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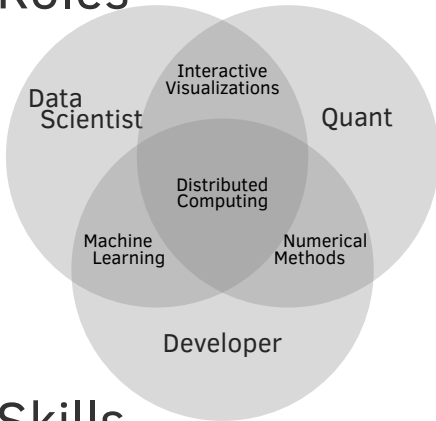


lucasdurand.xyz



lucas@lucasdurand.xyz

Roles



Skills

Statistical Analysis Business Acumen
Spark MLLib Hadoop API Teaching Agile
Monte Carlo ReactJS Pandas
Multinomial Tree PoC Stochastic Calculus
ChatBots Capital Markets Predictive Models

Interests

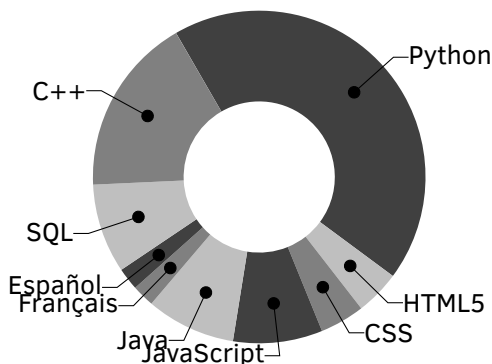
Big Data

Visualisation

Quantitative Modelling

Machine Learning

Languages



Experience

Feb 2018 - Present

Data Science Engineer

TD Securities

Derivatives, Valuation and Trading Risk

Python
Pandas
C++
Scala

- Own implementation of JupyterHub for enterprise
- Design python notebooks to enhance toolkits of power users
- Extend applications for Python wrapping of quant library
- Development of Spark analytics engine
- **Machine Learning Group:**
 - Led development of convolutional neural network to identify camera models from photos
- **Courses Completed:**
 - Fitch Learning - Equities 102
 - Fitch Learning - Derivatives 102
 - Fitch Learning - Fixed Income 102

Keras
Tensorflow

Aug 2017 - Feb 2018

Quant Developer

TD Securities

Quantitative Modelling & Analytics Group

C++
Java

- Responsible for development and implementation of sophisticated derivatives pricing and risk models, exposing functionality to Excel and Java interfaces
- Deliver Testing Harness PoC to perform continuous integration testing between local, server, and downstream valuation platforms
- Implement infrastructure to expose library to Python, integrate with build
- Led Machine Learning group learning course. Cover key Data Science techniques with ongoing projects
- Winner of TD Bank's Hackathon with development of novel model to predict customer life moments
- Develop network of Chatbots, providing easy access to a variety of useful data and algorithms

React.js
Node.js
Boost
Jenkins
MLlib
Keras

Feb 2017 - Aug 2017

Quant Developer

TD Securities

Treasury Analytics Group

seaborn
plotly
pandas

- Leverage data visualization tools to deliver interactive mortgage-backed security (MBS) valuation module to business leaders
- Benchmark and stability testing of quasi-Monte Carlo method allows for Key Rate Vega and Convexity hedging
- Presented *Lunch n' Learn* featuring real-time code execution and animations
- Courses Completed:
 - Udemy - Data Science and Machine Learning with Python

Jupyter RISE
scikit-learn

Jul 2016 - Feb 2017

Business Systems Analyst

TD Bank Financial Group

Enterprise Fraud Analytics Program

pandas
Excel
Selenium

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

Hadoop
Binomial
Trees

Leadership

2017 - Present

Second Chair Solutions inc.
Director of the Board

Education

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|-------------|---|---|
| 2014 - 2016 | MSc., Theoretical Physics Toronto/Waterloo, Ontario, Canada TA: Engineering/Physics Lab; Science, Technology & the Environment | York University, Perimeter Institute (PI) |
| 2009 - 2014 | HBSc., Physics & Philosophy Toronto, Ontario, Canada Senior Thesis – Graphene: Hartree-Fock Analytics and Numerics | Trinity College, University of Toronto |

Experience cont'd

| | | |
|--|---|---------------------------------------|
| Sep 2014 - Apr 2016 | Teaching & Research Assistant <ul style="list-style-type: none">• Maintained a broad knowledge of general science to lead tutorials in <i>Science, Technology & the Environment</i> as well as weekly topics relevant to <i>Engineering/Physics Labs</i>.• 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. | York University, Tulin Research Group |
| Apr 2014 - Sep 2015 Tableau AngularJS | Application Analyst Equities Trade Support <ul style="list-style-type: none">• Created ETL framework and dashboards to provide meaningful business insights from global equities trade data, leading to the adoption of Tableau Server across the LoB• Worked on NBFM trading floor, directly interfacing with institutional equities, direct market access, and discount brokerage traders | National Bank Financial Markets |
| SQL Bokeh D3.js | <ul style="list-style-type: none">• Designed and implemented 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 visualisation libraries by analysing real-time market data | |

Research

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|----------------------|---|----------------------|
| 2014 - 2016 | Major Research Project <i>inSIDious Matter</i> | Tulin Research Group |
| Mathematica Scipy | <ul style="list-style-type: none">• Phenomenological exploration of a particle physics model for an inelastic self-interacting dark matter• 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 <i>Perimeter Institute for Theoretical Physics</i> | |

Volunteering

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| 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, <i>Lunch n' Learn</i> Presenter, Group Learning Coordinator, Associate Fireside Chat Creator TD Co-op Mentorship Committee Executive, Mentor | |