Lucas Durand
Quantitative Analyst

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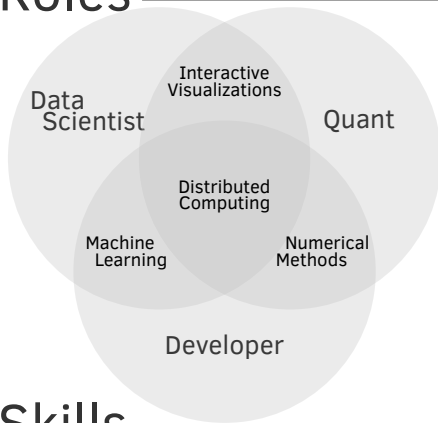☎ +1 416 884 1123

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Roles

Interactive Visualizations · Data Scientist · Quant · Distributed Computing · Machine Learning · Numerical Methods · Developer

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
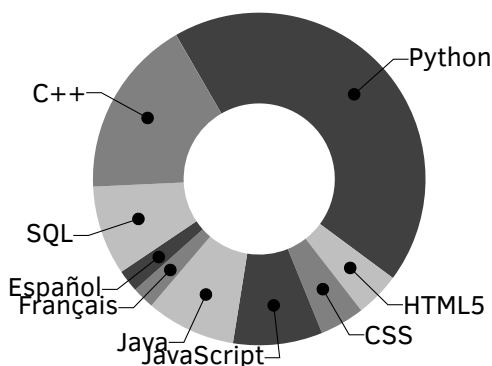
Interests

Big Data

Visualisation

Quantitative Modelling

Machine Learning

Languages

Python · C++ · SQL · Español · Français · Java · JavaScript · CSS · HTML5

Experience

Aug 2017 - Feb 2018

Quantitative Developer TD Securities
Quantitative Modelling & Analytics Group

`C++`
`Java`

`React.js`
`Node.js`
`Boost`
`Jenkins`
`MLLib`
`Keras`

- 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 technniques 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

Feb 2017 - Aug 2017

Quantitative Developer TD Securities
Treasury Analytics Group

`seaborn`
`plotly`
`pandas`

`Jupyter RISE`

`scikit-learn`

- 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

Research

2014 - 2016

Major Research Project Tulin Research Group
inSIDious Matter

`Mathematica`
`Scipy`

- 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 *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 — 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:

`Hadoop`
`Binomial Trees`

  – Global Knowledge - IBM BigInsights Foundation
  – 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 — National Bank Financial Markets
Equities Trade Support

`Tableau`
`AngularJS`

- 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

`SQL`

- 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%

`Bokeh`
`D3.js`

- Explored use cases for visualisation libraries by analysing 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

2017 -
Present

Second Chair Solutions Ltd.
Director of the Board

2009 -
2014

Trinity College Literary Institute
Speaker

2012 -
2013

Trinity College Meeting
Deputy Chair