

Bruno Gonçalves

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Senior Data Scientist with a background in Physics and Computer Science with 15+ years of experience in Data Science and Machine Learning.

Expert Python programmer with a focus on Machine Learning applications since 2005.

Professional Experience

TRM Labs

Research Data Scientist

New York, NY

11/2021 – Present

- Developed and implemented **Graph** based algorithms for tracing and deanonymizing **Monero** transactions using **pySpark**.
- Led the implementation and deployment of Provenance and Wash-Trading behavioral signatures for **NFTs** in **Ethereum**, **Polygon**, **Binance Smart Chain**, and **Avalanche**.
- Developed a **DAG** that processes tens of Terabytes of **EVM** chain traces daily to parse **smart contract** message (function call) arguments to automate the analysis of **DeFi** protocols.
- Devised and deployed heuristics and algorithms to trace funds between blockchains (**Cross-Chain Swaps**) for several bridges using **Airflow** and **BigQuery** with over 90% accuracy.

JP Morgan Chase & Co.

Vice-President, Data Science & Finance

New York, NY

07/2018 – 11/2021

- Analyzed the effects of lockdowns, social distancing measures, and COVID-19 economic recovery using consumer spending in real-time.
- Developed now-casting models of macro-economic variables by using **Hive** and **pySpark** to leverage tens of billions of card transactions.
- Quantified market influence by **NLP** and sentiment analysis applied to public Federal Reserve statements.
- Modeled customer response to rate changes by applying **Causal Inference** to advise internal rate policy changes.

Data For Science, Inc

Author and Instructor

New York, NY

01/2018 – Present

- Developed all course content and tutorial code for a series of webinars on [Basic](#) and [Advanced NLP](#), Timeseries Analysis with [ARIMA](#) and [GARCH](#) models, [Probability](#), [Causal Inference](#), [Deep Learning](#) and [Visualization](#) for Pearson Education and O'Reilly Conferences.
- Authored blog series on [Graphs applied to Data Science](#), [Visualization](#) and a [Weekly Newsletter](#).
- Co-authored the book [Charting the Next Pandemic](#), Springer (2019).

New York University

Moore-Sloan Data Science Fellow

New York, NY

10/2015 – 06/2018

- Developed and implemented a global event detector using **Hadoop** to process Wikipedia **MySQL** dumps and real-time Wikipedia page view data.
- Defined the boundaries of linguistic dialects in large-scale Twitter data (collected using **tweepy**) by applying **PCA** and **KMeans**.

Aix-Marseille Université

Maître de Conférences

Marseille, France

09/2012 – 09/2015

- Modeled human mobility patterns between cities to understand tourism travel using a large-scale geocoded **Twitter** dataset.
- Developed a **Multiplex** (multi-layer) **network** agent-based model for the influence of human mobility in social structure.
- Studied the coordination of on/offline social phenomena within specific administrative areas (defined by government-issued **Ar-cGIS shapefiles**) using **time series analysis**.
- Edited a book on [Social Phenomena: From Data To Models](#), Springer (2015).

Northeastern University

Associate Research Scientist

Boston, MA

09/2011 – 08/2012

- Predicted (in advance) the winner of the 11th edition of American Idol using a stream of real-time geolocated **Twitter** data as a case study of using online platforms for the forecasting of real-world events.
- Investigated how the Global Language Network impacts cultural diffusion using **NLP** and **Network Science** techniques to analyze multilingual **Twitter**, **Wikipedia**, and **UNESCO** datasets.

Indiana University

Research Associate

Bloomington, IN

09/2008 – 08/2011

- Developed and implemented the [Global Epidemic and Mobility Modeler \(GLEaM\)](#) system for large scale modeling of epidemic spreading.
- Detected the influence of automated bots in online political discussion using Applied Machine Learning methods (**SVM**, **LSA** and, **AdaBoost**).

Education

Emory University

PhD Physics

Atlanta, GA

2008

Emory University

M.Sc. Computer Science

Atlanta, GA

2008

Universidade de Aveiro

M.Sc. Physics

Aveiro, Portugal

2004

Universidade do Porto

B.S. Physics

Porto, Portugal

2001