Breno Freitas

Personal Data

Date of Birth: August 12^{th}, 1993
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Work Experience

Current – Jun 2021 | Shopify
Staff Data Scientist
Remote
On-boarded senior team members and peers and led a squad in Shopify Capital. Responsible for overseeing many of the predictive models for Shopify Capital as well as making sure good practices are applied by the whole team. Responsible for developing a causal model for predicting the impact of Shopify Capital to shops validated by many peers across the company; also spearheaded the development and alignment of key KPIs tracking with senior leadership and a 1+ year long partnership project with an external party involving alignment with over five different teams in their end.

Jun 2021 – Jan 2020 | Shopify
Senior Data Scientist
Ottawa, Canada
Development of Machine Learning models and analysis reports for Shopify Capital. Wrote ETL jobs using Python and Apache Spark, built BI reports and analyzing trends in data to answer business questions. Also maintained and wrote predictive models using Scikit-learn and TensorFlow. Onboarded and mentored new members on the team.

Jan 2020 – Nov 2017 | Shopify
Data Scientist
Ottawa, Canada
Development of models and reports on Shopify Capital using Python and Apache Spark.

Oct 2017 – Apr 2017 | Shopify
Front End Developer
Ottawa, Canada
Responsible for the implementation of many features related to the Admin part of the merchant solution.

Feb 2017 – Aug 2016 | Contartec Smart Solutions
Software Engineer
Campinas, Brazil
Development of the backend for a counting system with high-availability and stress requirements with NodeJS and a data visualization system with AngularJS based on Google Maps using real-time features with SocketIO. Created an endpoint using CherryPy for a variation of a classical clustering algorithm using Graph Theory concepts.

Aug 2016 – Aug 2015 | World Tech Makers
Software Engineer
Remote
Responsible for the overall management of the company's projects. Development of backend in Ruby on Rails and NodeJS and also on frontend using AngularJS. Created an endpoint using CherryPy for machine learning algorithms and browser games using PhaserJS. Also helped on the project management and hiring processes.

Research Experience

Current
Sep 2020

Federal University of São Carlos
Independent Researcher
Remote

Working on a research project group focused on leveraging novel Machine Learning and Data Science techniques to solve medical issues. I co-advise and mentor master and undergraduate students in different projects pertaining the main umbrella project. Our main focus is designing predictive NLP and statistical models/architectures applied on medical datasets and external data to extract useful information aiming to help ill patients to get the right treatment and connect previously unknown treatment relationships to aid health professionals in their research efforts.

Dec 2017
Feb 2016

Federal University of São Carlos
Master of Science Candidate
Sorocaba, Brazil

In this study, a classification method was introduced based on the minimum description length principle, which offered a very good trade-off between model complexity and predictive power. The proposed method is lightweight, multiclass, and online. Experiments conducted on real-world datasets with different characteristics demonstrated that the proposed method outperforms established online classification methods.

Aug 2014
May 2014

University of Waterloo
Undergraduate Research Assistant
Waterloo, Canada

Tutte conjectured that every graph free of 1-cuts and Petersen minors admits a 4-flow. A snark is a cubic graph which does not have a 4-flow. In this project, we searched for non-cubic graphs that do not admit a 4-flow and extended the properties known for snarks to non-cubic graphs. We also developed a computer program to test whether or not a graph admits a 4-flow.

Dec 2013
Jan 2013

Federal University of São Carlos
Undergraduate Research Assistant
Sorocaba, Brazil

It is well known that a snark does not admit a 3-edge colouring, neither a 4-flow, nor a Hamiltonian cycle. A graph is said hypohamiltonian if the removal of any of its vertices yields a Hamiltonian graph. Cavicchioli et al. in 2003 conjectured that every hypohamiltonian snark would satisfy Tutte's 5-flow conjecture. In this project we were able to give a positive answer to Cavicchioli's conjecture.

Publications

Sep 2019 **Gaussian Mixture Descriptors Learner**
Knowledge-Based Systems

Oct 2017 **A Minimum Description Classification Method Prototype**
Anais do XIV Encontro Nacional de Inteligência Artificial e Computacional (ENIAC'17)

Dec 2015 **Hypohamiltonian Snarks Have a 5-flow**
Electronic Notes in Discrete Mathematics

Education

Dec 2017 — Master of Science in Computer Science
Feb 2016 — **Federal University of São Carlos**, Sorocaba, Brazil
Major: Machine Learning
Thesis: "Gaussian Mixture Descriptors Learner"
Advisor: Prof. Tiago Agostinho de Almeida
Gpa: 4/4

Jul 2015 — Bachelor of Science in Computer Science
Jan 2011 — **Federal University of São Carlos**, Sorocaba, Brazil
Major: Computer Science
Gpa: 3.5/4

Dec 2014 — Exchange Programme
Jan 2014 — **University of Toronto**, Toronto, Canada
Gpa: 3.3/4

Honours and Awards

Jul 2015 — **First place on the XXXIV SBC's undergraduate thesis contest**
First place with the paper "A Study of Critical Snarks"

Oct 2013 — **Honourable mention on the International Collegiate Programming Contest**
Second place on the regional phase

Dec 2015 — **Honourable mention on contribution to innovation**
Participation and development of the project entitled "Visual Coordination System"

Dec 2015 — **Honourable mention on academic research**
Recognition for the first prize on Brazilian Computing Society (SBC) contest

Languages

Portuguese: Native
English: Fluent
Spanish: Limited working proficiency

Skills

Basic proficiency: Scala, R, Haskell, Ruby, Java, PyTorch
Intermediate proficiency: C/C++, MySQL, Graph Theory, Keras/TensorFlow, PostgreSQL
Advanced proficiency: Data Warehousing, TrinoSQL, JavaScript, Python, Numpy, Pandas, Scikit-learn