Caio Jordão de Lima Carvalho

MACHINE LEARNING ENGINEER / ARTIFICIAL INTELLIGENCE RESEARCHER

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Summary

Current Machine Learning Engineer at Jusbrasil. 4+ years experience specializing in the back-end/data engines development, information retrieval, and machine learning. Super nerd, easy learner, Linux lover and KDE contributor. Problem solver, interested in new challenges, and developing new tools.

Work Experience

Jusbrasil
Salvador, Bahia, Brazil

MACHINE LEARNING ENGINEER — *Feb. 2021 - Present*

- Working mainly in the lawsuit document classification team.
- Built machine learning models and heuristics to classify legal documents, improving significantly the performance of the classification of court and litigants documents.
- Execution of feature engineering routines for textual data and development of analysis pipelines for natural language processing tasks.
- Development of Spark routines to build robust datasets for training and evaluation of artificial intelligence models.

KDE Community
Remote

SOFTWARE DEVELOPER & CONTRIBUTOR — *Dec. 2017 - Present*

- Creator and maintainer of marK, a dataset annotation tool.
- Improved SMART support and KAuth operation flow in KDE Partition Manager during Season of KDE 2018.
- Implemented LVM Volume Group support in Calamares and MDRAID support in KDE Partition Manager during Google Summer of Code 2018.
- Mentored students during Google Summer of Code [2019, 2020], Google Code-in 2018 and Season of KDE [2020, 2021].
- Mentor representing KDE during Google Code-in 2018 Summit in Google HQ (San Francisco, CA).

Supercomputing Center for Industrial Innovation - SENAI CIMATEC
Salvador, Bahia, Brazil

ARTIFICIAL INTELLIGENCE RESEARCHER — *Dec. 2019 - Feb. 2021*

- Developed a machine learning solution for prediction of remaining useful life (RUL) and automatic system fault alerts of supercomputers.
- Implemented deep learning methods (LSTM, GRU, MLP, CNN) for time-series prediction.
- Implemented and evaluated clustering approaches (KNN, RRCF, Bootstrap, Luminol) for anomaly detection.
- Built pipelines focused on exploratory data analysis, including data cleaning, filtering, normalization and statistical evaluation.
- Deployed machine learning models in high processing computing environments.

Escavador
Salvador, Bahia, Brazil

SOFTWARE ENGINEER — *Oct. 2018 - Nov. 2019*

- Designed web crawler architectures for systems focused on information retrieval of Brazilian legal cases and laws, which extracts millions of documents from different courts from Brazil.
- Integrated search engines and implemented several API microservices using Python, asynchronous libraries and MySQL.
- Implemented artificial intelligence models focused on information filtering and natural language processing.
- Built fully automated CI pipelines on Gitlab CI for containerized applications using Docker.

Labrasoft - IFBA
Salvador, Bahia, Brazil

RESEARCH ASSISTANT — *Aug. 2017 - Aug. 2019*

- Developed and analyzed stock market bots based on Multilayer Perceptrons and Recurrent Neural Networks (LSTM, GRU) using MQL5, MetaTrader and Python (Keras, Tensorflow).
- Deployed object tracking algoriths based on Deep Learning approaches in embedded systems using Intel Movidius, Raspberry Pi and Python.
- Implemented a generative-adversarial model for image enhancement during Minimally Invasive Surgeries.

TecnoTRENDS
Salvador, Bahia, Brazil

SOFTWARE DEVELOPMENT INTERN — *Oct. 2016 - Oct. 2017*

- Developer of a module for an educational ERP system focused on elementary schools using C#, ASP.NET and SQL Server.
- Released versions from this module for all the elementary schools from the city of Feira de Santana, Bahia.
- Development of new features, graphical interfaces and SQL routines.

Education

Federal University of Minas Gerais (UFMG)
Belo Horizonte, Minas Gerais, Brazil

MASTER'S DEGREE IN COMPUTER SCIENCE — *Oct. 2021 - Oct. 2023*

- GPA: 8.0 / 10.0
- Master's Degree in Computer Science with focus on Computer Vision (CAPES 7).
- Advisor: Douglas Macharet.

UNIFACS (Salvador University)
Salvador, Bahia, Brazil

Specialization Degree in Software Project Management
May. 2022 - May. 2023

- Relevant Coursework: Project Management Methodologies, Agile Software Development, Team Management.

UNIFACS (Salvador University)
Salvador, Bahia, Brazil

Specialization Degree in Business Intelligence and Data Analytics
Nov. 2020 - Mar. 2022

- GPA: 9.1 / 10.0
- Relevant Coursework: Data Mining, Structured Data Architecture, Data Visualization, Business Analytics, Data Management, Project and Process Management.

College of the Rockies
Cranbrook, Canada

Exchange Student in Applied Sciences
Jan. 2019 - May. 2019

- GPA: A- (9.5 / 10.0)
- Relevant Coursework: Statistics, Probability, Mathematics.
- Selected for a scholarship to the College of the Rockies by the Emerging Leaders in the Americas Program.

IFBA (Federal Institute of Science, Education and Technology of Bahia)
Salvador, Bahia, Brazil

B.Tech. in Systems Analysis and Development
Jun. 2016 - Oct. 2019

- GPA: 8.6 / 10.0
- Graduation Thesis Title: "Deep Autoencoder Approach to Enhance Low-Light Images during Minimally Invasive Procedures".
- Relevant Coursework: Data Structures, Algorithms, Software Architecture, Design Patterns, Distributed Systems, Software Engineering, Object-Oriented Design, Software Project Management.
- Technical Skills: C++ (3yrs), C, Python, Java, Git, Django, Qt, SQL.
- Student representative and member of the Competitive Programming team.

Publications

Smart predictive maintenance for high-performance computing systems: a literature review
Journal of Supercomputing

Co-author
Apr. 2021

Link: https://link.springer.com/article/10.1007/s11227-021-03811-7

Correlation between hospitalized patients' demographics, symptoms, comorbidities, and COVID-19 pandemic in Bahia, Brazil
PLoS One

Co-author
Dec. 2020

Link: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0243966

AlphaB3 - Expert Advisor using Neural Networks and Genetic Algorithms to Predict Stock Market Trends
ERBASE 2018

Co-author
Aug. 2018

Link: https://sol.sbc.org.br/index.php/erbase/article/view/8548

Extracurricular Activity

ProgIFBA - Competitive Programming Group at IFBA
Salvador, Brazil

Member
Dec. 2016 - Jan. 2019

- Created a group focused on competitive programming studies at my university.
- Proposed some training sessions and participated in some contests that have happened in my city.

Sonata Project
Salvador, Brazil

Member
Feb. 2018 - Apr. 2019

- Development of a mobile platform to help people on learning how to read music scores.
- Studied about music information retrieval.
- Worked with a team to submit this project to a innovative challenge at IFBA. Our project was the winner in this competition.

Honors & Awards

2018	**Grand Prize Winner**, Season of KDE 2018	Remote
2018	**Winner**, Innovative Challenge - IFBA Projects' Hotel	Salvador, Brazil
2017	**Gold Medalist**, ProgBASE 2017 - Competitive Programming Contest	C. das Almas, Brazil
2018	**Bronze Medalist**, 2nd Programming Contest of Bahia	Salvador, Brazil