Lucas José Velôso de Souza

✉ lucasjose.velosodesouza@student-cs.fr
in lucasjosevelosodesouza
📞 +33 7 89 69 24 95

Education

École CentraleSupélec – (Université Paris-Saclay) Double degree in Generalist Engineering	Gif-sur-Yvette, France Set. 2022 – Jul. 2024
Aeronautics Institute of Technology Bachelor's degree in Computer Engineering	São José dos Campos, Brazil Jan. 2019 – Dec. 2024

Experience

ITAÚ Asset
Data Science/Quantitative Finance Summer Internship

São Paulo, Brazil
Mar 2022 – May 2022

Data Collection and Content Discovery*: ITAÚ is the largest bank in Latin America. There, I worked on getting data from social media and financial forums, using different strategies of web scraping, along with natural language processing, to understand the current popularity of companies. During the process of understanding popularity time series, I had the opportunity to work with different models of time series, such as ETS models, SARIMAX (and its subcases, such as AR, MA, SARIMA, etc.), ARCH, GARCH, as well as with recurrent neural networks (RNNs). From this, quantitative investment strategies were created.*

Bahia Asset
Data Science Summer Internship

Rio de Janeiro, Brazil
Dec 2021 – Mar 2022

Processing Sell-Side's Reports: *I created a natural language processing pipeline that understood the structure and sentiment of sell-side reports, selecting the most important part for managers. In an attempt to always build reliable or interpretable models, I tried whenever possible to calculate shap values and other machine learning interpretability metrics, in order to allow the manager to understand what and, more importantly, why the model is doing something. or suggesting an action.*

Extra-Curricular

1º Prize – ANFR FrHack! 2022
Data Science/Telecommunication Competition

Paris, France
Nov 2022

Anomalies in Magnetic Field: *As a group of three undergraduate students, we participated in a national competition organized by ANFR, the French government agency that manages all radio frequencies in the country. Our task was to detect patterns and anomalies in magnetic exposure measurements by ANFR sensors. Using Fast Fourier Transform, physical equations and machine learning, we created a model that achieved an R-squared value of 0.85 on the test set and successfully identified expected atypical days. After development with mentorship, we presented a final pitch and delivered a web app that could perform most of the analysis.*

1º Jury Prize – École 42 Hackathon AI
Data Science/Artificial Intelligent Competition

Paris, France
Out 2022

AI Alignment in Computer Vision: *We developed a novel technique to handle neural network vision models trained on underspecified data and with limited access to labels. In order to locate samples that reduced the novelty score, we first built a model that employed an autoencoder to build a latent space representation. With this, we could verify and request the exact label of these different samples. A final model was then trained and optimized utilizing the whole set of data after the newly acquired data had been enhanced via data augmentation.*

1º Prize – BCG Gamma Challenge Brazil
Data Science/Consulting Competition

São Paulo, Brazil
Jun 2022 – Aug 2022

Case - Sustainable Development in the Amazon Forest: *We present a solution to improve existing agricultural aid programs, encouraging the cultivation of products that do not degrade the native forest. Based on soil and climate data, we implemented an AI, using AutoML to test different algorithms, choosing the best one, and then calibrating its hyperparameters with Bayesian Optimization, to predict the productivity of each selected product in each city and its variance. With this model in hand, we used a Genetic Algorithm to select the optimal distribution of products that minimized the general Sharpe index (expected productivity/standard deviation).*

Skills

Code/Software: *Python, Javascript, C++, C, SQL, R, Julia, Matlab, Office Package, Google Services*

Language: *Portuguese (Native), English(C1), French (B1)*

Awards

Silver – Latin American Robotics Competition (LARC) – 2019: Robotics Competition
Gold – Brazilian Physics Olympiad – 2016: Physics Competition
Gold – Brazilian Astronomy Olympiad – 2016: Astronomy Competition
Silver – Brazilian Chemistry Olympiad – 2016: Chemistry Competition