Andre M. Rodrigues

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Profile Summary

I'm a skilled **Math Ph.D.** candidate with 5 years experience in creating accurate mathematical models to describe and predict deformations in physical materials, capable of adapting quickly to new challenges and working on self-directed projects.

I am committed to expanding my skill set, evidenced by my participation in multiple internships that improved my data analytics skills and blockchain knowledge. My ability to thrive in team settings is demonstrated through active involvement in college and graduate school hockey teams, various leadership roles within clubs, and experience as CFO for a €1,000,000 sports council budget.

I am seeking a [JOB TITLE] position to apply my robust quantitative and computational skills, and to develop data-driven solutions for complex challenges in the [INDUSTRY TYPE] industry.

Data & Analysis Skills

- **Programing Languages:** Proficient **-** Python, Matlab, Typescript**.** Working Knowledge - SQL, C, RStudio, Mathematica
- **Theoretical Foundation:** Machine Learning, Stochastic Calculus, Financial Math, and Statistics.
- **Os and Platforms:** GitHub, AWS LightSail, MongodB, Flask web, Visual Studio Code
- **Language:** Portuguese- Native, English and Spanish- Fluent

Work Experience

Blockchain Researcher Intern

Nethermind, London, England July 2022-Present

- Meticulously reviewed the entire GitHub repository written in GO of one of the biggest 2nd layer blockchain, analyzed and handpicked data to identify and resolve operational issues with a third-party validator, resulting in a **twofold profit** increase.
- Uncovered a previously unnoticed bug in the protocol consensus mechanism. Through simulations in **Python**, illustrated that exploiting this bug could hike validator profits by over 17x, endangering more than $1 billion locked in the network.
- Presented the discovered vulnerability and proposed a solution to leading validators and high-profile CEOs in the industry.

Research and Development Engineering Intern

Uneven Labs, Santa Barbara, California June 2022-September 2022

- Hosted an **NFT trading bot** on **AWS Lightsail** to improve market liquidity, leveraging TypeScript for blockchain interaction, **SQL** for handling big datasets, and Flask web app to create an API to interact with the ML model's algorithm.
- Gained expertise in crypto and economic concepts, including **liquidity pools**, **tokenomics**, and **arbitrage** models through independent research and presented findings in company meetings, fostering knowledge sharing and collaboration.
- Identified multiple API bugs, vulnerabilities in mathematical models, and proposed new strategies for providing liquidity to the **NFT marke**t, demonstrating resourcefulness and commitment beyond the scope of the initial role in the **start-up**.

Graduate Researcher

University of California, Santa Barbara September 2017-**October 2023 (Expected)**

- Developed innovative mathematical models to elucidate and predict deformation changes and fracture in physical materials under different loads, resulting in one published paper, and a second in preparation.
- Presented findings at a conference and multiple seminars, showcasing effective communication and subject matter expertise.
- Completed numerous coding and data science projects utilizing pandas and tidyverse, focusing on data visualization and implementing algorithms such as including logistic regression, **GLM, LDA, k-NN, PCA, Random Forest,** and used s**ymbolic programing** to automate computational part of the research.

Teacher Assistant

University of California, Santa Barbara September 2017-September 2023

- Review and refine thousands of lines of Python code during 9 quarters of teaching **Numerical Analysis** classes.
- Design and **lead** a custom class for over **90** students across 2 summers, enhancing leadership and organizational skills while communicating complex mathematical concepts through accessible visual, written, and oral formats for a diverse audience.
- Mentored 4 undergraduate students on year-long research projects, focusing on the complexities of **blockchain mining** and **game theory**, helping them with their academic growth.

Education

University of California, Santa Barbara (UCSB), Santa Barbara, CA Expected September 2023

Ph.D. Mathematics

- Dissertation Topic: **PDE's, Measure Theory and Material Science**

University of Coimbra (UC), Coimbra, Portugal July 2016

Master's in Science, Mathematics (19/20), Bachelor's in Sience, Mathematics with Minor in Physics (18/20)

- Placed in top 3% of Best Students of University 4 years and was Awarded **"Young Talents in Mathematics"** fellowship
- Dissertation: "Regularity properties for the porous medium equation".