Michael Antunes

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Education

University of Witwatersrand — Johannesburg, South Africa
Bachelor of Engineering - Electrical Engineering (Honors) (3.6 GPA) — *Jan. 2020 – Dec 2023*

Experience

Lead Software Engineer — Dec 2023 – Present
MPI Holdings — *Sandton, South Africa*

- Developed fault-tolerant **REST APIs** using **Python** and **FastAPI**; enhancing fleet data processing and operational visibility, resulting in improved mine profitability.
- Designed and implemented scalable, Azure-native **ETL** pipelines using **Azure Functions** and **Azure SQL Database**, ingesting real-time data from **1300+** mining vehicles.
- Implemented **Spinnaker CI/CD** pipelines, accelerating system updates and deployment.
- Programmed Python-based CANbus analyzer using **pandas** to decode proprietary OEM protocols, quantifying CAN message impact on vehicle performance and braking curves.
- Led and architected an Azure-based **Power BI** dashboard project for fleet monitoring, collaborating closely with stakeholders, ensuring alignment with business objectives throughout the development lifecycle.

Software Research Engineer — Aug 2023 – Dec 2023
Sydney Brenner Institute for Molecular Bioscience — *Johannesburg, South Africa*

- Engineered high-performance **Rust** code to process large genomic datasets, implementing **AVX2** and **multithreading** techniques, resulting in a **14x** speed increase in genotyping normalization.
- Optimized algorithms for clustering Single Nucleotide Polymorphisms (SNPs) across extensive datasets, leveraging **bash** scripts and **MPI** framework for effective code parallelization on computing clusters.
- Rearchitected and refactored legacy bioinformatic code to allow for high-throughput execution on large-scale computing clusters, significantly improving processing capabilities for complex genomic analyses.

Full-Stack Software Engineer — Jan 2022 – March 2022
Hatch App — *Cape Town, South Africa*

- Accomplished an **85%** increase in productivity across 3 cross-functional teams by designing and implementing an efficient **React**-based admin system to streamline user account reviewals.
- Designed and implemented verification functionality on the developer platform using **React** and **Firebase** API, leading to a reduction in toil and significantly improving deployment velocity.
- Developed a tag-management system using **Express**, **CSS**, **SQL** and Firebase API requests, resulting in a 25% reduction in tag-related support requests through intuitive tag modifications.

Projects

Skills Cluster | *Python, PySpark, pandas* — June 2023

- Implemented **TF-IDF** feature engineering using PySpark and **scikit-learn** to extract insights from job requirements text, improving **clustering** accuracy by 75%.
- Programmed **K-means text clustering** analysis on a large-scale dataset using **PySpark**, achieving a **110%** reduction in processing time.

Coin Finance — May 2022

- Developed portfolio valuation functions for real-time asset values across exchanges.
- Implemented async requests from **REST APIs**, reducing data retrieval latency for faster arbitrage.
- Developed **portfolio valuation** functions for real-time asset values across exchanges.

Technical Skills

Languages: Java, Python, C/C++, PostgreSQL, MySQL, JavaScript, HTML, BASH, MATLAB
Other: React, Node.js, AWS, Azure, Linux, MySQL, PostgreSQL, pandas, NumPy, FastAPI, Power BI
Relevant Coursework: Software Development (A+), Data Structures and Algorithms(A+), Data Intensive Computing in Data Science (A), Secure Computing (A), Computational Mathematics (A+), Mathematics II (A+), Electric Circuits (A), Physics II (A), Signals and Systems (A)