Roger de Mello Koch

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Education

Brown University / Master's in Computer Science
(September 2023 - Present) Providence, Rhode Island, United States

University of the Witwatersrand / Bachelor of Science in Electrical (Information) Engineering
(January 2019 - December 2022) Johannesburg, Gauteng, South Africa

Experience

ABSA Group Limited / Summer Intern
(December 2020 - January 2021)

 I completed vacation work at ABSA Group Limited for 6 weeks in the Cyber Security division. Designed and built a prototype website for communication between penetration testers and the Security Automation Team. The website was built using the Django framework and a MySQL database.

Skills

Programming languages
Experience with C++ , Python, JavaScript as well as NodeJS, bash, assembly, and MatLab. In addition I have experience setting up and operating Unix based systems on computer systems and computer clusters, specifically Centos and Ubuntu. Experience using Tensorflow to build and train deep learning models.

Electrical engineering centric skills: strong understanding of linear algebra, calculus, probability, circuit design, Fourier transforms, control system design, signal reconstruction and microprocessors.

Projects

Wildfire prediction map
I used a dataset derived from the MODIS Satellite to generate a wildfire prediction map using machine learning techniques. Each map shows the probability of a fire occurring the next day for the Southern African region.

The tool developed uses a support vector machine to predict a thermal anomaly based on the land surface temperature and normalized difference vegetation index measured by the satellite. The final tool obtained an F1-score of 84% and could be used to generate a confidence map to better visualize the predicted outcome.