SCO400: Project

Concept Paper

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Proposed Project Title:

COVID-19 Analysis Tracker and Prediction Engine with Machine Learning.

Problem Description and Justification:

Coronavirus disease (COVID-19) is a respiratory infection caused by a virus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which has spread globally and consequently become a pandemic.
Since the start of the pandemic in early 2020, data on the caseload has been collected globally and unified together by various governments, institutions and organizations.

Challenges with tracking have arisen because of lack of;

a) Open-source resources with effective and easy to use analysis tools for tracking the cases globally,
b) Tools for statistically projecting the caseload per country/region,
c) Comparison data for vaccination rates versus caseloads.

Proposed Solution:

Proposed is an open-source application consisting of the following modules;

a) An interactive dashboard app tracking the number of cases, deaths, and recoveries by country and region,
b) A machine learning model, built in Python, that predicts the cases for the next 21 days in a country /region selected by the user,
c) A daily report generation engine to give the state of vaccinations worldwide.

The data will be sourced from a daily – updated **COVID-19 Data Repository by the Centre for Systems Science and Engineering (CSSE) at Johns Hopkins University** via GitHub under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence.

Proposed Tools for Solution:

- **Python (Pandas, Scikit-learn, Prophet, Plotly Express, Dash, FPDF)**
- **Jupyter Lab**
- **Ms Azure**
- **Visual Studio Code**
- **GIT**