# Cognitive Wellbeing Monitoring

## Project Overview

This project analyzes global mental health trends using DALY (Disability-Adjusted Life Years) data for mental disorders. It forecasts future trends, identifies high-risk countries, and provides visual insights for policymakers and researchers.

## Problem Statement

Mental health is a critical and growing global concern. Policymakers and healthcare organizations need robust, data-driven solutions to allocate resources efficiently, plan interventions, and prioritize high-risk populations. This project addresses this need by providing ML-based forecasting and risk assessment for cognitive wellbeing across countries.

## Project Description

* Regression model predicts future DALY percentages for each country (next 5 years).
* Classification model identifies high-risk countries and years based on DALY data.
* Visualizations include line charts, bar charts, interactive world maps, and SHAP plots for model explainability.
* Interactive dashboard (optional) allows users to explore country-level forecasts and risk summaries.

## End Users

* Policymakers and government health departments
* Healthcare organizations and researchers
* NGOs and mental health advocacy groups
* Data scientists exploring predictive health analytics

## Technology Used

* Python, pandas, numpy
* Scikit-learn (Random Forest Regressor & Classifier)
* Matplotlib, Seaborn, Plotly
* SHAP for model explainability

## Results

* Forecasted DALY % for all countries for the next 5 years
* Identified high-risk country-years
* Visual insights for decision-making: line plots, bar charts, world maps, SHAP plots
* Provides explainable ML predictions for informed decision-making

## Demo / Link

* [Insert interactive dashboard or notebook link here]

## How to Run

1. Clone the repository
2. Install dependencies: pip install -r requirements.txt
3. Open notebook.ipynb in Jupyter Notebook or Google Colab

## License

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