

Project Proposal: Global Geopolitical Leaderboard

The aim of this project is to develop an interactive, machine-learning-driven "Geopolitical Leaderboard" to visualize and analyze the relative global power of countries in the present day. The leaderboard will clearly present how countries leverage demographics, economics, governance, military capabilities, and global influence, providing actionable insights and engaging visualizations.

Project Layout and Subjects

1. Population Demographics

This section analyzes fundamental demographic data to understand each nation's societal health and stability.

- Total Population, Population Density, Median Age, Urbanization Rate, Population Growth Rate, Literacy Rate, Life Expectancy.

Potential Analytical Goals:

- Data cleaning and exploratory data analysis (EDA) using Pandas, clustering analysis (K-Means) for identifying demographic groups, and correlation analysis using Matplotlib and interactive visualizations.

2. Economic Status

This section evaluates each country's economic capabilities as a measure of potential geopolitical influence.

- GDP (Total, Per Capita, PPP), GDP Growth Rate, Debt-to-GDP Ratio, Unemployment Rate, Inflation Rate, Economic Freedom Index, Trade Balance.

Potential Analytical Goals:

- Data normalization and preprocessing with Pandas, regression analysis for predictive modeling, unsupervised clustering (K-Means) to categorize economic status, visualization of findings using Matplotlib and interactive visualizations.

3. Governance, Military, and Global Influence

A consolidated assessment capturing how effectively nations translate internal resources into global geopolitical power.

A. Governance Quality & Stability *(How well a nation is internally managed)*

- **Form of Governance (Democratic, Authoritarian, Hybrid)** *(Polity V, Freedom House)*
- **Governance Stability Index** *(World Bank Governance Indicators)*
- **Corruption Perception Index** *(Transparency International)*

B. Military Power *(How a nation projects strength externally)*

- **Military Expenditure (absolute and % of GDP)** *(SIPRI)*
- **Active Military Personnel Size** *(Global Firepower Index)*
- **Military Capability Score** *(Global Firepower Index)*

C. International Alliances and Rivalries *(How a nation leverages international relationships)*

- **Number & Strength of Alliances** (NATO, bilateral treaties, major global organizations membership)
- **International Rivalries & Disputes** *(Correlates of War)*

D. Global Soft Power & Technological Influence *(How effectively a nation influences through non-military means)*

- **Global Reputation/Opinion Index** *(Pew Global Attitudes Survey)*
- **Technological Infrastructure Index** *(internet penetration, R&D spending, infrastructure quality)*
- **Cultural Impact (UNESCO World Heritage Sites)** (optional, easy-to-source proxy measure)

Potential Analytical Goals:

- Classification models (Random Forest, Decision Trees) for predicting governance stability and geopolitical categorization, composite scoring using weighted averages, unsupervised clustering (K-Means), and interactive mapping of geopolitical clusters using Plotly or Leaflet.

Deliverables

- **Jupyter Notebook:** Including data cleaning, exploratory analysis, and machine learning modeling.
- **Interactive Visualization Dashboard:** Web-based leaderboard allowing dynamic exploration of geopolitical power.
- **Presentation Report:** Concise overview detailing the analytical results and implications of the analysis through a slideshow.