

Project Initialization and Planning Phase

Date	15 March 2024
Team ID	SWTID1749653449
Project Title	Economic Growth: A Machine Learning Approach to GDP per Capita Prediction
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

The proposal report aims to enhance the prediction of GDP per capita through machine learning, improving the reliability of economic forecasting. It addresses the limitations of traditional econometric models by incorporating modern algorithms capable of handling complex, high-dimensional data. This solution promises better forecasting accuracy, improved policymaking, and a data-driven understanding of economic indicators. Key features include feature importance analysis, model explainability, and real-time GDP trend monitoring.

Project Overview	
Objective	The primary objective is to predict GDP per capita using machine learning, improving accuracy in economic forecasting and supporting effective policymaking.
Scope	The project explores multiple ML models for GDP prediction using global socioeconomic data. It includes data collection, preprocessing, model training, evaluation, and interpretation.
Problem Statement	
Description	Traditional methods for GDP forecasting often fail to capture nonlinear relationships between diverse economic indicators, leading to inaccurate predictions and weak policy foundations.
Impact	<ul style="list-style-type: none"> An accurate, ML-based GDP prediction model will enable governments and institutions to make informed decisions, thereby improving economic planning, resource allocation, and growth tracking.
Proposed Solution	

Approach	Utilize supervised learning algorithms (e.g., Random Forest, Gradient Boosting, XGBoost) to build predictive models that determine GDP per capita based on multivariate features like population, investment, education, and trade.
Key Features	<ul style="list-style-type: none"> ○ Use of a machine learning-based regression model for GDP per capita prediction ○ Real-time visualization dashboard for trend analysis ○ Explainable AI techniques to understand feature impact ○ Continuous learning for adapting to new economic data

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	e.g., 2 x NVIDIA V100 GPUs
Memory	RAM specifications	e.g., 8 GB
Storage	Disk space for data, models, and logs	e.g., 1 TB SSD
Software		
Frameworks	Python frameworks	e.g., Flask
Libraries	Additional libraries	e.g., scikit-learn, pandas, numpy
Development Environment	IDE, version control	e.g., Jupyter Notebook, Git
Data		
Data	Source, size, format	e.g., Kaggle dataset, 10,000 images