Project Initialization and Planning Phase

Date	15 July 2024
Team ID	xxxxxx
Project Title	Predicting The Energy Output Of Wind Turbine Based On Weather Condition
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

This project proposal outlines a solution to address a specific problem. With a clear objective, defined scope, and a concise problem statement, the proposed solution details the approach, key features, and resource requirements, including hardware, software, and personnel.

Project Overview	
Objective	Develop a predictive model to accurately forecast wind turbine energy output based on real-time weather data, enhancing the efficiency and reliability of wind energy production.
Scope	Collect and preprocess historical SCADA and weather data, implement and evaluate various machine learning models, and deploy a user-friendly tool for real-time energy output predictions.
Problem Statement	
Description	Build a machine learning model using historical SCADA and weather data to predict the energy output of wind turbines, ensuring accurate and real-time forecasting for optimized energy production.
Impact	Enhancing prediction accuracy leads to improved operational efficiency, reduced costs, and increased reliability of wind energy, fostering greater integration of renewable energy into the power grid.
Proposed Solution	
Approach	Analyze and preprocess historical SCADA and weather data, develop and compare various machine learning models, and select the best-performing model for accurate energy output forecasting.
Key Features	Incorporates real-time weather data and historical performance metrics to provide precise predictions, improving the management

	and efficiency of wind energy production.

Resource Requirements

Resource Type	Description	Specification/Allocation
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	NVIDIA Geforce GTX 1650
Memory	RAM specifications	8 GB
Storage	Disk space for data, models, and logs	512 MB SSD
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	scikit-learn, pandas, numpy, matplotlib
Development Environment	IDE, version control	Jupyter Notebook, Git, VS code
Data		
Data	Source, size, format	Kaggle dataset