

Model Development Phase Template

Date	12 July 2024
Team ID	SWTID1720108739
Project Title	Predicting The Energy Output Of Wind Turbine Based On Weather Condition
Maximum Marks	6 Marks

Model Selection Report

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

Model Selection Report:

Model	Description	Hyperparameters	Performance Metric (e.g., Accuracy, F1 Score)
Random Forests	Random Forests excel in predicting wind turbine energy output by leveraging ensemble learning from multiple decision trees. They handle non-linear relationships and interactions among weather variables effectively, providing reliable forecasts crucial for energy production planning, maintenance scheduling, and grid integration optimization.	-	Accuracy score = 97.379044

Decision Tree	Decision Trees partition data based on weather conditions to predict wind turbine energy output. They are adept at capturing non-linear relationships, making them valuable for forecasting energy production, scheduling maintenance to minimize downtime during low wind periods, and optimizing grid integration by adjusting energy sources accordingly.	-	Accuracy score = 95.034559
Gradient Boosting	Gradient Boosting is a powerful machine learning technique used for predicting wind turbine energy output based on weather conditions. It builds an ensemble of weak prediction models sequentially, where each model corrects errors made by its predecessor. This method is highly effective for capturing complex relationships in data, providing accurate forecasts crucial for energy production planning, maintenance scheduling, and optimizing grid integration by balancing energy sources efficiently.	-	Accuracy score = 94.679787
Linear Regression	Linear Regression models predict wind turbine energy output by fitting a linear equation to weather data, offering simple interpretations of weather impacts on energy production for efficient	-	Accuracy score = 90.605069

	forecasting, maintenance planning, and grid integration.		
--	---	--	--