Model Development Phase Template

Date	2024
Team ID	739780
Project Title	Predictive Pulse: Harnessing Machine Learning For Blood Pressure Analysis
Maximum Marks	5 Marks

Model Selection Report

In the model selection report for future deep learning and computer vision projects, various architectures, such as CNNs or RNNs, will be evaluated. Factors such as performance, complexity, and computational requirements will be considered to determine the most suitable model for the task at hand.

A model selection report outlines the process of evaluating and choosing the most suitable machine learning model for a specific task, detailing criteria such as performance metrics, computational efficiency, interpretability, and suitability for the dataset's characteristics to justify the final model choice.

Model Selection Report:

Model	Description
Logistic Regression	Linear Regression is a suitable choice for projecting share prices of leading GPU companies in the "Crystal Ball Analysis: Projecting Share Prices Of The Leading GPU Titans" project. It offers simplicity and interpretability, modeling the linear relationship between share prices (dependent variable) and factors such as market trends, financial indicators, and company performance metrics (independent variables). Linear Regression can effectively handle both numerical and categorical features relevant to GPU market analysis. It provides insights into the quantitative impact of each predictor on share prices, helping to identify influential factors such as market demand, technological advancements, and competitive positioning of GPU companies.
Decision Tree Classifier	Decision Tree is a supervised learning algorithm used for both classification and regression tasks. It creates a model that predicts the value of a target variable by learning simple decision rules inferred from the data features. Decision Tree splits the dataset into subsets based on the most significant attribute at each node, optimizing for purity (e.g., Gini impurity or entropy). Each internal node represents a "decision" based on a feature, and each leaf node represents the outcome (class label) after following the decision path from the root.

Random Forest Regressor	The Random Forest Regressor is an ensemble learning method used for regression tasks. It operates by constructing a multitude of decision trees during training and outputting the mean prediction of the individual trees. Key features include:
	• **Robustness**: Reduces overfitting by averaging multiple decision trees. • **Feature Importance**: Provides insights into the importance of different features in the prediction process. • **Versatility**: Can handle both linear and non-linear relationships.
Gaussian Navies Bayes	Gaussian Naive Bayes is a probabilistic classifier based on Bayes' theorem. It assumes that the features follow a normal (Gaussian) distribution. Key characteristics include: • **Simplicity**: Easy to implement and interpret. • **Efficiency**: Performs well with small datasets and high-dimensional data. • **Assumption**: Assumes feature independence, which may not always hold true.

Multinomial Navies Bayes	Multinomial Naive Bayes is another variant of the Naive Bayes classifier, commonly used for discrete data such as word counts in text classification. Its features include: • **Text Classification**: Highly effective for natural language processing tasks like spam detection and document classification. • **Assumption**: Assumes feature independence and that features follow a multinomial distribution. • **Performance**: Works well with large datasets and high-dimensional feature spaces.