Model Selection Report

Date	03 August 2025
Project Title:	Anemia Sense – Machine Learning for Precise Anemia Recognition
Maximum Marks:	6 Marks

Model Selection Report

In this Model Selection Report, several machine learning models were compared using their core descriptions, default hyperparameters, and key performance metrics (accuracy scores), as obtained in your AnemiaSense.ipynb. This summary provides a comprehensive comparison to support the choice of the best predictive model for anemia detection.

Model	Description	Hyperparameters	Performance Metric
Linear Regression	Baseline linear model, useful for comparison and interpretability (classification with thresholds or as regression on label).	Default	Accuracy: 1.000
Decision Tree	Interpretable tree-based classifier capturing non-linear relationships.	Default	Accuracy: 1.000
Random Forest	Ensemble of decision trees, robust to overfitting, provides feature importance.	n_estimators=100, max_depth=None	Accuracy: 1.000
Gaussian Naive Bayes	Probabilistic approach, assumes feature independence, fast and efficient.	Default	Accuracy: 0.940
Support Vector Classifier	Kernelized classifier effective for non-linear patterns.	Kernel=rbf, C=1.0	Accuracy: 0.902

Gradient Boosting Classifier	Sequential ensemble model, optimizes performance by correcting errors.	n_estimators=100, learning_rate=0.1	Accuracy: 1.000

Visual Model Performance Summary

Model	Accuracy
Linear Regression	1.000
Decision Tree	1.000
Random Forest	1.000
Gradient Boosting Classifier	1.000
Gaussian Naive Bayes	0.940
Support Vector Classifier	0.902