

## Model Development Phase Template

Date	10 JULY 2024
Team ID	FACULTY
Project Title	Fetal AI: Using Machine Learning To Predict And Monitor Fetal Health.
Maximum Marks	6 Marks

### Model Selection Report

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyper parameters, and performance metrics, including Accuracy or F1Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

Model	Description	Hyper parameters	Performance Metric (e.g., Accuracy, F1 Score)
Random Forest	It combines multiple decision trees to predict fetal health outcomes, such as age(weeks) or birth weight, from high-dimensional data like ultrasound features or maternal characteristics. It improves prediction accuracy and identifies complex relationships between variables, enabling early detection of potential complications and personalized prenatal care.	n_estimators:100 max_depth:5 min_samples_split:2, min_samples_leaf:5 criterion: gini	Accuracy score= 94%
Decision Tree	It uses a tree-like structure to classify fetal health status or predict outcomes like low birth weight or preterm birth, based on inputs like maternal age, gestational age, and ultrasound	max_depth:3, min_samples_split:2 min_samples_leaf:5, criterion: gini, splitter: best	Accuracy score= 90%

	features. It provides clear, interpretable results and identifies most important predictors, helping healthcare professionals make informed decisions and improve prenatal care.		
Logistic Regression	It predicts the fetal health outcomes, such as high-risk pregnancy or fetal growth restriction, based on inputs like maternal characteristics, medical history, and ultrasound features. It provides a simple, interpretable, and widely used approach to identify at-risk pregnancies and inform early interventions, improving fetal health and well-being.	penalty:l2, elastic net: none C:0.1, Solver : sag, max_iter:100	Accuracy score= 78%
K-Nearest Neighbors (KNN)	It predicts fetal health outcomes by finding similarities between a new patient's characteristics and those of nearby patients in a dataset, such as gestational age and fetal heart rate. KNN identifies high-risk pregnancies and detects abnormalities, enabling healthcare professionals to take proactive measures and improve fetal health outcomes..	n_neighbors:3, weights:uniform, p:1	Accuracy score= 82%