Project Design Phase-I
Solution Architecture

Date	7 November 2023
Team ID	Team-591602
Project Name	FetalAI: USING MACHINE LEARNING TO PREDICT AND MONITOR FETAL HEALTH
Maximum Marks	4 Marks

Solution Architecture:

Best Tech Solution:
- FetalAI utilizes advanced machine learning algorithms, including Random Forest, to address existing challenges in fetal health monitoring. This ensures accurate predictions, enhancing prenatal care and mitigating potential risks.

Software Structure and Characteristics:
- FetalAI's software is structured with modular components for data preprocessing, model training, and result interpretation. It exhibits robust characteristics, incorporating Random Forest's ensemble learning for improved accuracy.

Behavior and Aspects:
- The software behavior is dynamic, adapting to changing data patterns. Aspects include data preprocessing, oversampling using SMOTE, and ensemble learning. FetalAI responds to varying fetal health scenarios, ensuring adaptability.

Development Phases:
- FetalAI undergoes iterative development phases:
  - Data Preprocessing: Cleaning and preparing data for analysis.
  - Model Training: Utilizing Random Forest for learning patterns.
  - Evaluation: Assessing model accuracy and fine-tuning.
  - Integration: Seamlessly integrating into existing healthcare systems.

Solution Requirements:
- Key requirements include:
  - Data Quality: High-quality fetal health data.
  - Computational Resources: Adequate resources for model training.
  - Integration: Compatibility with existing healthcare infrastructure.

Specifications for Definition, Management, and Delivery:
- Specifications encompass:
    - Model Definition: Clearly defining the Random Forest model architecture.
    - Delivery Mechanism: Providing FetalAI as a subscription-based service with regular updates and support.
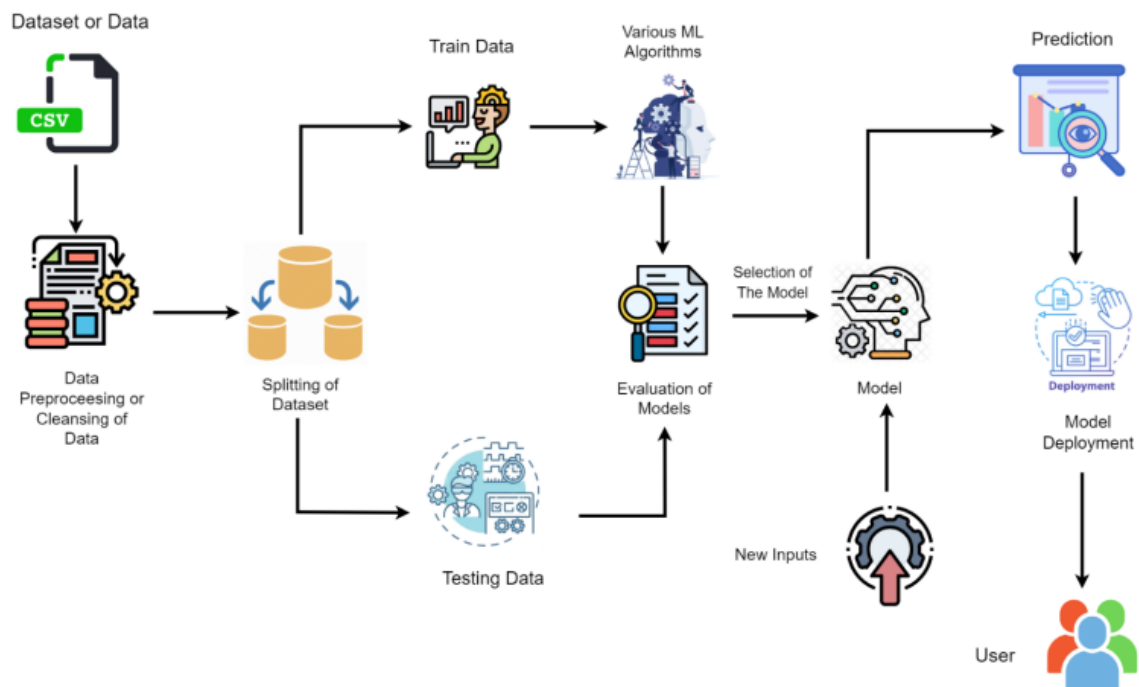
Solution Architecture Diagram:

Figure 1: Architecture and data flow of the fetal ai model.