# Data Collection and Preprocessing Phase

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| Date | 23 June 2025 |
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| Project Title | Health Classification System |
| Maximum Marks | 6 Marks |

**Data Preprocessing**

The data will be preprocessed by scaling, handling class imbalance, detecting outliers, and adjusting target labels. These steps will enhance data quality, pro mote model generalization, and improve convergence during XGBoost training, ensuring robust performance for fetal health classification.

| **Section** | **Description** |
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| Data Overview | The dataset (fetal_health.csv) contains 2126 records with 21 CTG features (e.g., baseline value, accelerations, histogram |
| Scaling | All 21 CTG features are scaled using StandardScaler to standardize values (mean=0, variance=1), saved as scaler.pkl. |
| Handling Class Imbalance | Stratified sampling is used during train-test split (80%-20%) to preserve class distribution. Class weights are applied in XGBoost to address imbalance. |
| Outlier Detection | Outliers in features (e.g., baseline value) are identified using the IQR method and capped or removed after validation.. |
| Target Adjust ment | The target variable (fetal_health) is adjusted from 1,2,3 to 0,1,2 for compatibility with XGBoost |
| Edge Detection | Not applicable for text data. |
| Color Space Conversion | Not applicable for text data. |

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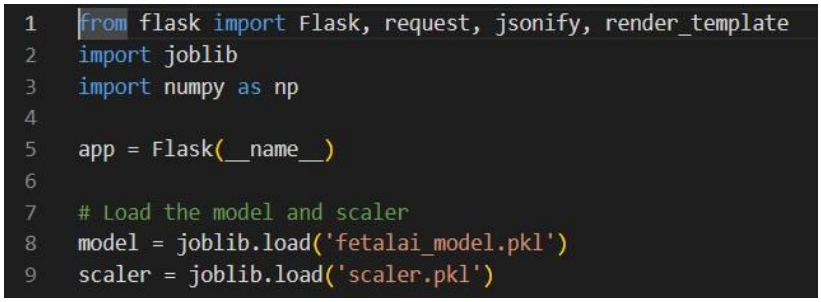
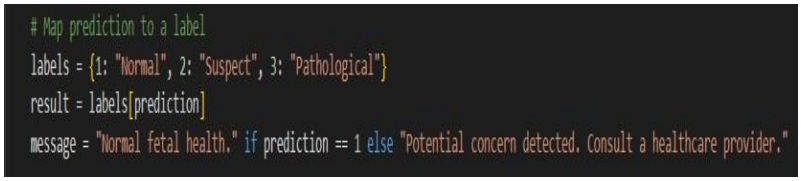
| Image Cropping | Not applicable for text data. |
| Batch Normalization | Not applicable for text data. |
| **Data Preprocessing Code Screenshots** | |
| Loading Data |  |
| Resizing | *Not applicable* |
| Data Mapping |  |
| Data Augmentation | *Not applicable* |
| Denoising | *Not applicable* |
| Edge Detection | *Not applicable* |
| Color Space Conversion | *Not applicable* |

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| Image Cropping | *Not applicable* |
| Batch Normalization | *Not applicable* |