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| Semester | TE Sem VI EXCS |
| Subject | ML Laboratory |
| Laboratory Professor | Prof. Uma Jaishankar |

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| Student Name |  |
| Roll Number |  |

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| **Experiment**  **Number** | 9 Personalized Meal plan |
| **Problem Statement:** | Develop a machine learning model that recommends personalized meals for individuals based on their:  1. Body Mass Index (BMI): To ensure the meal plan is tailored to their specific nutritional needs.  2. Food preferences: To ensure the meal plan includes foods they enjoy and can stick to.  3. Nutritional requirements: To ensure the meal plan provides the necessary macronutrients, micronutrients, and calories for optimal health.  ENGLISH FRAY LUIS |
| **Tasks** | * Prediction of 4 meals per day / One meal per day for a week . * Precision: Percentage of recommended meals that meet the individual's nutritional requirements. * Recall: Percentage of meals that meet the individual's nutritional requirements that are recommended by the model. * The model should be able to recommend personalized meals within a reasonable time frame (Time Complexity) |
| **Approach** | 1. Bagging: Use Random Forest or Bagging Regressor to reduce overfitting and improve model robustness.  2. Boosting: Use Gradient Boosting or AdaBoost to handle class imbalance and improve model accuracy. |
| **Data Sets** | The dataset should consists of:  1. User profiles: BMI, age, sex, food preferences, and dietary restrictions.  2. Food database: Nutritional information of various foods, including macronutrients, micronutrients, and calories.  3. Meal planning data: Sample meal plans with corresponding nutritional information. |
| **Program** |  |
| **Output**  **Screen shots** |  |
| **Applications** |  |