**Model Development Phase Template**

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| Date | 15 July 2024 |
| Team ID | xxxxxx |
| Project Title | Early Prediction of chronic Kidney disease(CKD) |
| Maximum Marks | 6 Marks |

**Model Selection Report**

In the forthcoming Model Selection Report, various models will be outlined, detailing their descriptions, hyperparameters, and performance metrics, including Accuracy or F1 Score. This comprehensive report will provide insights into the chosen models and their effectiveness.

**Model Selection Report:**

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| **Model** | **Description** | **Hyperparameters** | **Performance Metric (e.g.,**  **Accuracy, F1 Score)** |
| Decision Tree | A Decision Tree Classifier helps make decisions by splitting data into smaller parts based on simple yes/no questions. |  | Accuracy: 95%  Precision: 0.923  Recall: 0.923  F1-Score: 0.923 |
| Random Forest | An ensemble of decision trees that improves accuracy and reduces overfitting. |  | Accuracy: 97.5%  Precision: 0.9615  Recall: 0.9615  F1-Score: 0.9615 |
| K-Nearest Neighbors (KNN) | Classifies instances based on the majority vote of the nearest neighbors. |  | Accuracy: 88.75%  Precision: 0.75  Recall: 0.96  F1-Score: 0.84 |
| XGBoost | An advanced boosting algorithm that improves performance by correcting errors. |  | Accuracy: 95%  Precision: 0.923  Recall: 0.923  F1-Score: 0.923 |
| Logistic Regression | A statistical model that predicts binary outcomes using a logistic function. |  | Accuracy: 93.75%  Precision: 0.838  Recall: 1  F1-Score: 0.912 |
| Gradient Boosting Classifier | A Gradient Boosting Classifier improves predictions by combining multiple weak models (usually decision trees) into a strong model, correcting errors along the way. |  | Accuracy: 96.25%  Precision: 0.96  Recall: 0.923  F1-Score: 0.9411 |
| ADA Boost | An AdaBoost Classifier enhances accuracy by combining many weak models (often decision trees) and focusing more on the errors of previous models to improve future predictions. |  | Accuracy: 98.75%  Precision: 0.987  Recall:0.987  F1-Score:0.987 |
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