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| Date | 27 July 2024 |
| Team ID | Team-739867 |
| Project Title | SmartLender – Envisioning Success:  Predicting University Scores With Machine Learning |
| Maximum Marks | 5 Marks |

**Model Development Phase**

**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.

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| Support  Vector  Machine | SVM regression is a type of supervised learning algorithm that uses the concept of support vectors to predict continuous outcomes. | Kernel function based on the dataset’s characteristics to achieve the best result | R-Square =  0.822 |
| Decision Tree | Simple tree structure; interpretable, captures non-linear relationships, suitable for initial insights into loan approval patterns. | Max depth, min samples split, min samples leaf | R-Square = 1.0 |
| Random  Forest | Ensemble of decision trees; robust, handles complex relationships, reduces overfitting, and provides feature importance for loan approval prediction. | max depth | R-Square =  0.999 |

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| **Model** | **Description** | **Hyperparameters** | **Performance**  **Metrics(eg:R-**  **Square)** |
| Linear Regression | A simple and interpretable model that assumes a linear relationship between the input variables and the target. Suitable for datasets with linear correlations. | None (basic model has no hyperparameters) | R-Square =  0.743 |
| Lasso Regression | Is a type of linear regression that adds a penalty term to the cost function to reduce the magnitude of the model's coefficients. | To find the optimal balance between model complexity (no has max depth). | R-Square =  0.744 |