

## Model Development Phase

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

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