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Feature Forge

Enhancing & Evaluating ML Models ratings

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PROJECT DESCRIPTION

Implement feature engineering techniques and evaluate a machine learning model using the "Loan Prediction" dataset from Analytics Vidhya. Students will extract and select features, apply evaluation metrics, and refine their models to improve performance.

PROJECT DELIVERABLES

- Feature engineering techniques applied
- Model evaluation metric
- Jupyter notebook with documentation

FURTHER INSTRUCTIONS

1. **Load the dataset:** Import necessary libraries and load the "Loan Prediction" dataset from Analytics Vidhya.
2. **Explore the data:** Perform exploratory data analysis (EDA) to understand data structure, missing values, and basic patterns.
3. **Handle missing values:** Use imputation techniques to fill in missing values, such as mean, median, or mode.
4. **Encode categorical variables:** Convert categorical variables to numerical values using methods like one-hot encoding or label encoding.
5. **Feature engineering:** Create new features or transform existing ones to enhance model performance (e.g., income-to-loan ratio, family size).
6. **Feature selection:** Identify and select the most relevant features to improve the model's performance using techniques like correlation analysis, chi-square test, or

feature importance from models.

7. **Split data:** Divide the dataset into training and testing sets.
8. **Build a baseline model:** Choose a simple model (like logistic regression) to serve as a baseline for performance comparison.
9. **Model evaluation:** Use appropriate metrics (e.g., accuracy, precision, recall, F1 score) to evaluate model performance on the test data.
10. **Model tuning:** Refine the model by tuning hyperparameters or trying other algorithms (e.g., Random Forest, XGBoost) to improve accuracy.
11. **Analyze results:** Compare the models, analyze the results, and determine which feature engineering steps led to the best improvements.
12. **Document findings:** Summarize the steps taken, feature engineering techniques applied, and key insights in a report.

_____ BEST OF LUCK ... :)

THANK YOU!

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