**0207-789-001**

**Strategic Capstone Projects**

**Evaluation Form**

* Every week, please complete the table below (1 form per team) and submit the entire word file to Moodle along with other deliverables.
* Please insert each member of your group in a separate row in the student name column.
* Provide a detailed description of each student's contribution or work to the deliverables for this week.
* During weeks with more than one assignment, one evaluation form is sufficient.

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| Student name | Contribution to the deliverables for this week |
| Roja Eslavath | * Executed the modeling phase with five ML algorithms: Logistic Regression, Random Forest, XGBoost, Gradient Boosting, and KNN. * Used SMOTE and ADASYN (from data preparation) to balance the dataset and improve minority class performance. * Integrated LASSO and Random Forest feature selection to build interpretable and high-performing models. * XGBoost (ADASYN + RF) achieved the best results with AUC = 0.91 and G-Mean = 0.863, confirmed by ROC curve analysis. * Created a detailed PowerPoint summarizing the modeling workflow, metrics, and key findings with visuals. * Compiled a comprehensive Word report combining all weekly work, final analysis, and business interpretations. |
| Amarnath Dasari | * I conducted the **Evaluation phase**, comparing the performance of five machine learning models using metrics such as AUC, G-Mean, and Precision to identify the most effective model. * I applied **LASSO feature selection** to enhance model interpretability and visualized key predictors using a bar chart of absolute coefficient values. * I performed **detailed feature analysis** by interpreting the statistical behavior and business relevance of the top LASSO-selected features. * I developed **13 actionable recommendations** based on the model's insights to guide real-world lending strategies and reduce financial risk. * My work contributed directly to answering the research questions related to feature importance, model interpretability, and decision-making strategies using data. |
| Suhitha Yalamanchili  Yamika Ratna Kadiyala | * I cleaned the dataset by removing 165 duplicate records and handled missing values using median imputation and categorical placeholders like ‘Unknown’. * I encoded categorical variables using Ordinal and One-Hot Encoding to make them model-compatible while preserving their structure. * I engineered meaningful new features like income\_to\_loan\_ratio, debt\_burden\_score, and log\_income to enhance model performance. * I detected and capped outliers using the IQR method and scaled numeric variables using StandardScaler for consistency. * I grouped continuous variables into risk categories and performed correlation analysis to prepare a structured, informative dataset for modeling. * I defined the business problem and goal, emphasizing the need for automating loan approval decisions to reduce bias and improve efficiency. * I articulated the business use case and impact of predictive analytics in real-world banking environments. * I explored the structure of the dataset, highlighting key variables, target distribution, and potential modeling challenges. * I performed exploratory data analysis (EDA) to uncover trends in applicant demographics, loan characteristics, and approval outcomes. * I handled missing values and outliers, ensuring data quality and preparing a solid foundation for accurate modeling. |
| Hanru Wu | * I assisted in drafting and organizing the **Data Preparation section** of the final Word report, ensuring clarity and completeness. * I helped document key preprocessing steps, including handling missing values, encoding categorical variables, and outlier treatment. * I contributed to summarizing feature engineering techniques like income\_to\_loan\_ratio, log\_income, and risk-based binning. * I worked on formatting and designing the **PowerPoint slides** for our team’s final presentation. * I ensured that our deliverables were polished, consistent, and aligned with CRISP-DM documentation standards. |