Individual Contributions

Aadya:

Aadya was instrumental in our Credit Card Defaulters Prediction project. She masterfully handled the analysis of Principal Component Analysis (PCA) and hyperparameter tuning, simplifying complex concepts for the team.

She focused on developing a simplified analysis of the modeling techniques used and describing the dataset's size and complexity. Her explanations streamlined our decision-making. Additionally, Aadya's effort in compiling and writing the report ensured that our analysis was clear and well-presented. Her contributions were vital for the project's success.

Suhaib:

Suhaib played a key role in our credit card defaulters project. He expertly compiled and organized our data, ensuring it was ready for analysis. For the final presentation, Suhaib distilled complex insights into clear visuals and narratives, making it accessible to a wide audience.

His efforts in both data management and presentation were vital for the project's success and ensured clear communication amongst the team members.

Brock:

Brock played a pivotal role in our credit card defaulters project. He took charge of the model's testing and training, guaranteeing its precision. Alongside running PCA, Brock identified important data features and was instrumental in hyperparameter tuning, optimizing the model to its peak.

Additionally, he also analyzed the data and crafted insightful visualizations, making complex data comprehensible to the team. Brock's combined skills in analysis and visualization were crucial for the project's success.

Jacob:

Jacob was instrumental in our credit card defaulters project. Alongside assisting in hyperparameter tuning, he keenly analyzed the model's performance and developed insightful visualizations.

His talent in translating complex insights into clear graphics was particularly valuable. Jacob also excelled in crafting the presentation, ensuring the audience understood our findings. His analytical and visualization expertise greatly contributed to the project's clarity and overall success.

Conclusion

The hyperparameter tuning exercise on principal components versus raw features yielded varied results. Notably, the AdaBoostClassifier stood out with a recall of 0.7479, outshining other models. However, the PCA's effectiveness was model-specific, proving beneficial for some, like AdaBoost, but detrimental for others, notably the SVM.

For class 1 recall, the SVM and logistic regression models were optimal, and interestingly, PCA did not enhance their performance. On the other hand, the Easy Ensemble model excelled in class 0 precision, with minimal difference in results with or without PCA. However, its higher overall accuracy without PCA guides our decision.

In summary, while PCA showcased promise with certain models, it isn't a universal solution.

Next Steps

1. Deploy SVM and logistic regression models without PCA using the best-found hyperparameters.
2. Utilize the Easy Ensemble model without PCA to leverage its superior accuracy.
3. Monitor these models on fresh datasets and consider other dimensionality reduction methods or feature strategies that might enhance performance.