**Machine Learning Project Documentation**

**NB (After applying a good relevant feature engineering, I got a good accuracy so no much model refinement wasn’t necessary to complete my task. I will give more details on capstone powerpoint presentation. I’m just showing here the necessary outputs)**

**Model Refinement**

1. **Overview**

The model refinement phase is crucial for enhancing the machine learning model's performance in predicting and understanding the academic performance of university students based on social media influence factors. This phase aims to fine-tune the model to provide more accurate insights into the correlation between social media engagement and academic achievements.

**2. Model Evaluation**

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**3. Refinement Techniques**

In order to refin the model, we have conducted feature engineering on a dataset focusing on social media influence metrics. New features are created, including 'Total\_Social\_Media\_Time,' reflecting the product of time spent and the sum of friends and groups, 'Evening\_Engagement\_Rate,' indicating engagement during evening hours, 'Late\_Night\_Activity' identifying engagement during late hours, and 'Cumulative\_Social\_Media\_Influence,' capturing an aggregated influence metric.

The selected features, along with the existing 'GPA,' form the 'df\_model' DataFrame for subsequent analysis. This feature engineering process aims to enrich the dataset, providing more meaningful insights into the relationship between social media behavior and academic performance.

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**Test Submission**

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