**Predictive Analytics for Merchandise Sales - Entertainment Sector**

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# Overview :

# This report outlines the development of a predictive model for merchandise sales in the entertainment sector, based on engagement metrics such as sentiment, popularity, and audience interaction data.

# Objective:

# To create a predictive model capable of identifying factors that influence merchandise sales and generate insights to inform sales strategy.

# Assigned Task(s) :

· Clean and preprocess data, removing unnecessary columns.

· Develop a predictive model to estimate audience interest in merchandise based on engagement metrics.

· Evaluate model performance and analyze feature importance for insights.

# Task Details :

**Task 1**: Data Preprocessing

* **Status**: Completed
* **Details**: Loaded data from cleaned\_trending\_data.csv, removed unused columns, and converted sentiment\_scores to numeric format.

**Task 2**: Model Training

* **Status**: Completed
* **Details**: Trained a Random Forest Regressor on selected features to predict attendance\_count as a proxy for merchandise demand.

**Task 3**: Model Evaluation

* **Status**: Completed
* **Details**: Evaluated the model’s performance using Root Mean Square Error (RMSE) and determined feature importance for each predictor.

# Task 4 : ****Visualization****:

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**Progress :**

· **Accomplishments**:

* Data preparation and preprocessing completed successfully.
* Model achieved reasonable accuracy for predicting audience attendance.
* Feature importance analysis identified key drivers of merchandise interest.

· **Metrics**:

* RMSE of the model: [Insert RMSE Value]
* Feature importances (Top 3): [List Top 3 Important Features with Percentages]

# Challenges and Solutions :

* **Challenges Faced**: Encountered issues with converting sentiment\_scores as it contained nested data.
* **Solutions Implemented**: Used ast.literal\_eval() to parse and convert scores, enabling numerical analysis.

# Next Steps :

· **Upcoming Tasks**:

* Refine model with hyperparameter tuning to improve accuracy.
* Explore additional metrics (e.g., engagement rate) as potential features for merchandise demand.

· **Goals**: Finalize the predictive model and present insights on merchandise sales drivers to stakeholders.

# Conclusion :

# Summary: Completed data preprocessing, model training, and feature importance analysis, providing a foundation for further model refinement.

# **Acknowledgments**: Thank the audience for their time and attention.