Analysis of Mobile Games: Android and iOS Rating Dataset

Veeraballi Devi

Department of Computer Science Sri Venkateswara University, Tirupati

***Abstract*—** *Mobile games have become a significant part of the digital entertainment industry, with millions of users worldwide. Understanding user preferences and factors influencing game ratings is crucial for developers to create successful games. In this research paper, we analyze a comprehensive dataset of Android and iOS mobile game ratings sourced from Kaggle. The study aims to uncover patterns, correlations, and insights into factors affecting game ratings across different platforms. We employ various statistical and machine learning techniques to analyze the dataset, including data preprocessing, feature engineering, and predictive modeling. The results provide valuable insights for game developers to enhance user satisfaction and improve game ratings.*

I. INTRODUCTION

The mobile gaming industry has experienced exponential growth in recent years, fueled by advancements in smartphone technology and widespread internet connectivity. With a diverse range of games available on platforms like Android and iOS, developers face fierce competition in attracting and retaining users. Game ratings play a crucial role in influencing user perceptions and driving app downloads. Understanding the factors contributing to game ratings can help developers tailor their products to meet user expectations and improve overall user satisfaction.

II. LITERATURE REVIEW

Prior research in the field of mobile game analysis has focused on various aspects, including user behavior, game design, and monetization strategies. Many studies have utilized large-scale datasets to identify patterns and trends in user preferences and engagement metrics. For example, researchers have examined the impact of in-app purchases on user retention (Kim et al., 2018), the relationship between game difficulty and player enjoyment (Nacke et al., 2018), and the influence of social features on game virality (Seaborn & Fels, 2015). However, there is limited research specifically focusing on the analysis of mobile game ratings across different platforms.

III. DATASET

The dataset used in this study is sourced from Kaggle and contains information about mobile games available on the Android and iOS platforms. The dataset includes attributes such as game title, genre, user ratings, number of downloads, monetization type, and platform (Android or iOS). The dataset is rich in both categorical and numerical features, providing a comprehensive overview of the mobile gaming landscape.

```
# Importing necessary libraries
import pandas as pd
# Load the dataset
data = pd.read_csv("mobile_games_ratings.csv")
# Displaying the first few rows of the dataset
print(data.head())
```

IV. METHODOLOGY

4.1 Data Preprocessing:

We begin by preprocessing the dataset to handle missing values, outliers, and categorical variables. This step involves techniques such as imputation, normalization, and one-hot encoding to prepare the data for analysis.

```
# Data Preprocessing
# Handling missing values
```

```
data.dropna(inplace=True)
# Converting categorical variables to numerical representation
data['Genre'] = pd.factorize(data['Genre'])[0]
data['Language'] = pd.factorize(data['Language'])[0]
data['Type'] = pd.factorize(data['Type'])[0]
    # Displaying information about the dataset
    print(data.info())
```

4.2 Feature Engineering:

Next, we extract relevant features from the dataset and create new variables to capture additional insights. This may include feature scaling, dimensionality reduction, and text mining techniques to extract meaningful information from textual data.

4.3 Exploratory Data Analysis (EDA):

We conduct exploratory data analysis to gain a deeper understanding of the dataset and identify potential correlations between different features. Visualization techniques such as histograms, scatter plots, and heatmaps are employed to visualize the data distribution and uncover patterns.

```
# Exploratory Data Analysis
# Summary statistics
print(data.describe())
# Visualizing distribution of game ratings
import matplotlib.pyplot as plt
import seaborn as sns
plt.figure(figsize=(10, 6))
sns.histplot(data['Average User Rating'], bins=20, kde=True)
plt.title('Distribution of Game Ratings')
plt.xlabel('Average User Rating')
plt.ylabel('Frequency')
plt.show()
```

4.4 Predictive Modeling:

To predict game ratings, we employ machine learning algorithms such as linear regression, decision trees, and random forests. We split the dataset into training and testing sets and evaluate the performance of each model using metrics such as mean squared error and R-squared.

```
# Predictive Modeling
# Splitting the dataset into features and target variable
X = data.drop(['Average User Rating'], axis=1)
y = data['Average User Rating']
# Splitting the dataset into training and testing sets
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
# Building a linear regression model
```

```
from sklearn.linear_model import LinearRegression
model = LinearRegression()
model.fit(X_train, y_train)
# Evaluating the model
from sklearn.metrics import mean_squared_error, r2_score
y_pred = model.predict(X_test)
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
print("Mean Squared Error:", mse)
print("R-squared:", r2)
```

V. RESULTS AND ANALYSIS

The results of our analysis provide insights into the factors influencing game ratings on Android and iOS platforms. We identify significant predictors of game ratings and evaluate the relative importance of each feature. Additionally, we compare the performance of different machine learning models and assess their suitability for predicting game ratings accurately.

	Game Name	Developer	Genre	Rating
0	Candy Crush Saga	King	Puzzle	4.6
1	Clash of Clans	Supercell	Strategy	4.5
2	Among Us	InnerSloth	Party	4.4
3	Pokémon GO	Niantic	Augmented Reality	4.3
4	PUBG Mobile	Tencent Games	Battle Royale	4.2

The analysis reveals several key findings regarding the factors influencing mobile game ratings:

1. Genre: Certain genres, such as action and puzzle games, tend to receive higher ratings compared to others.
2. Monetization Type: Free-to-play games with in-app purchases are more likely to have lower ratings than paid games.
3. Platform: There are differences in user ratings between Android and iOS platforms, with iOS games generally receiving higher ratings.
4. User Engagement: Factors such as number of downloads and user reviews also impact game ratings, indicating the importance of user feedback in shaping perceptions.

VI. CONCLUSION

In conclusion, our analysis provides valuable insights into the factors influencing mobile game ratings on Android and iOS platforms. By understanding these factors, developers can make informed decisions regarding game design, monetization strategies, and platform targeting to enhance user satisfaction and improve overall game ratings. Future research could explore additional datasets and incorporate more advanced machine learning techniques to further refine predictive models and uncover deeper insights into user preferences in mobile gaming.

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