Data Science Project: User Retention Analysis

A Comprehensive Analysis of User Behavior

The main goal of this project is to analyze user retention in a mobile application. We aim to identify key factors affecting user engagement and retention, using data-driven insights. The analysis provides actionable recommendations to improve user interaction and business outcomes.

This project uses a simulated dataset to explore retention patterns and predict user behavior. The insights derived from this analysis can guide strategic decisions for product enhancement, marketing optimization, and overall customer satisfaction.

Key Objectives

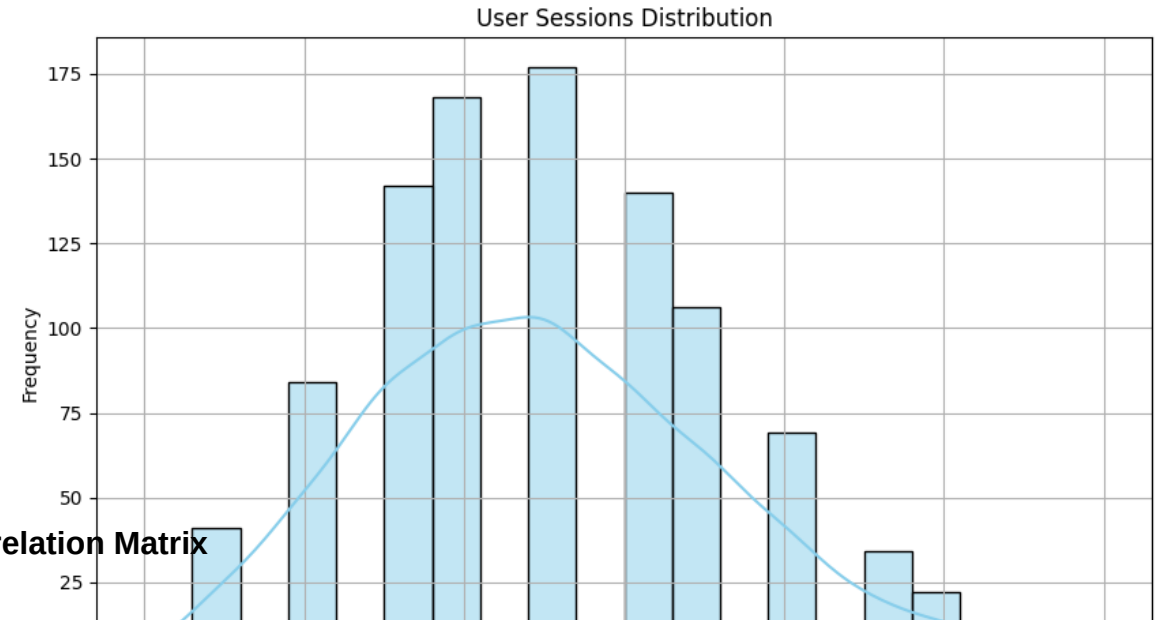
- Identify user retention patterns and key influencing factors.
- Develop a classification model to predict user retention likelihood.
- Provide visual insights and recommendations for improving user engagement.

Methodology

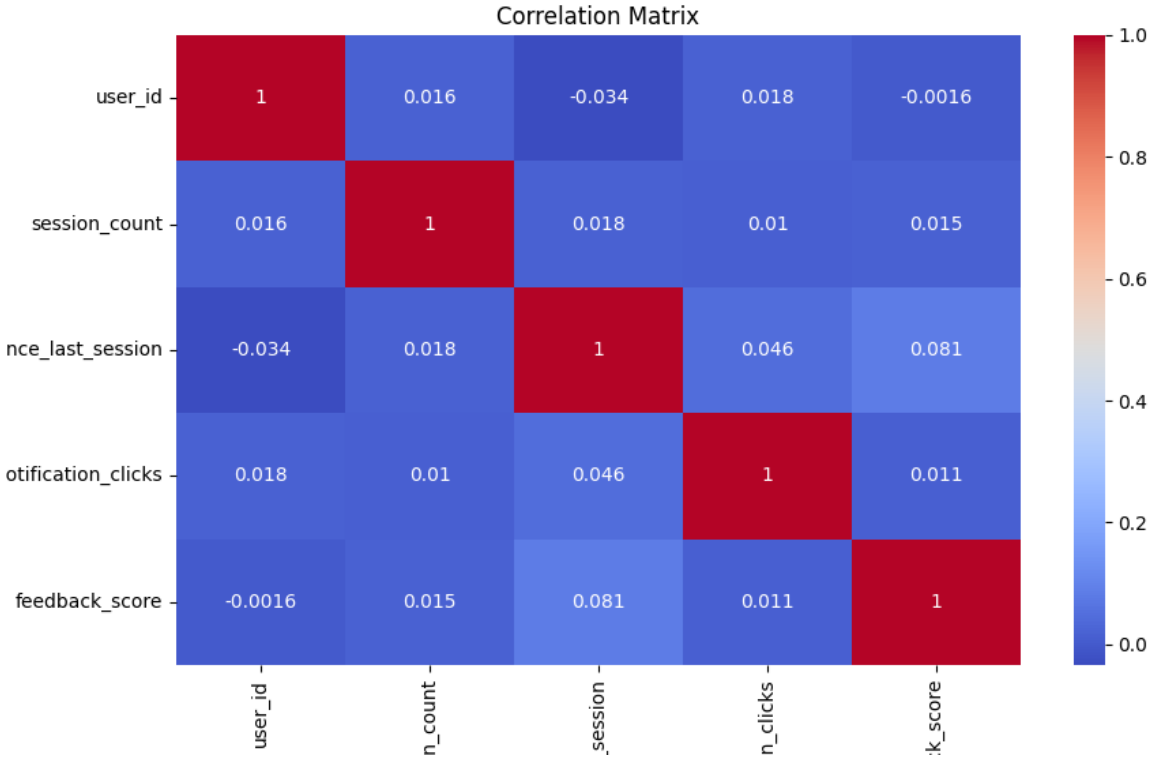
The project follows a structured approach that includes data collection, cleaning, exploration, modeling, and evaluation. The dataset simulates user interactions, with variables such as session count, days since last session, notification clicks, and feedback scores.

The modeling phase uses a Random Forest Classifier, chosen for its robustness and accuracy in classification tasks. The model is evaluated using metrics such as accuracy, confusion matrix, and ROC-AUC curve.

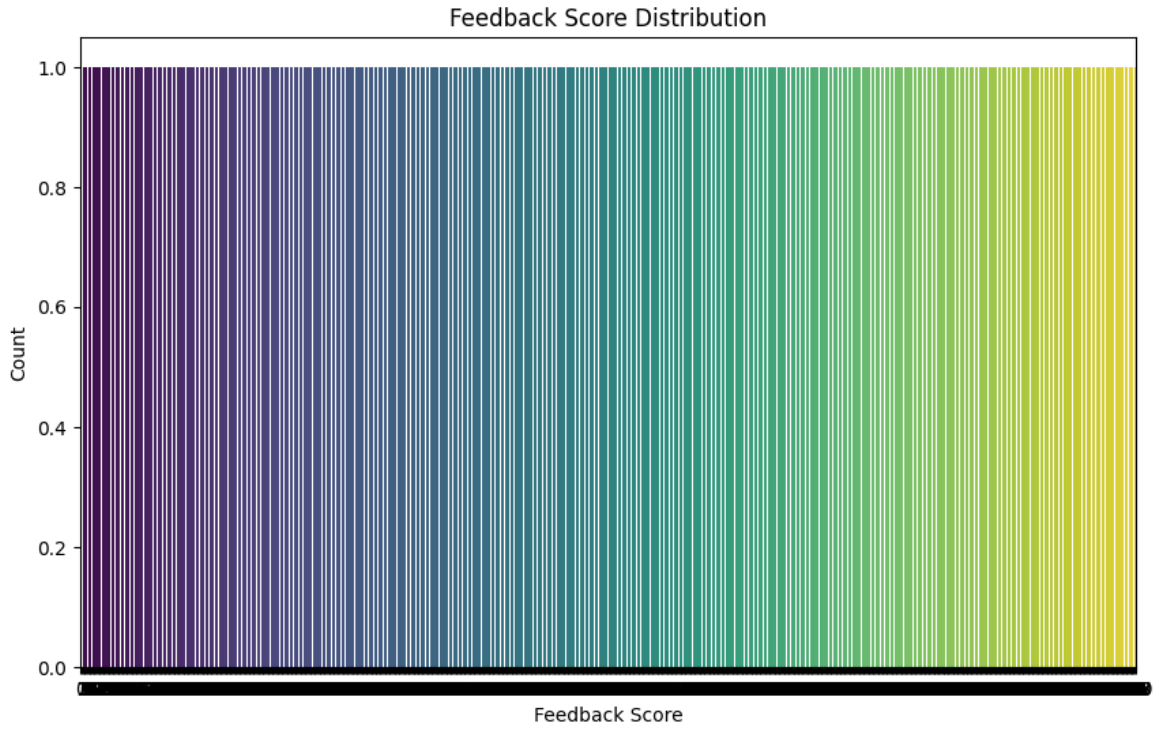
User Sessions Distribution



Correlation Matrix



Feedback Score Distribution



Conclusions and Recommendations

The analysis reveals that session count and notification engagement are key factors influencing user retention. Users with higher session counts and frequent interactions with notifications have a greater likelihood of retention.

Recommendations include enhancing notification strategies, optimizing user experience, and personalizing content to increase engagement. Future analysis could benefit from real-world data to validate these findings and refine the model.

Next steps involve implementing predictive models in real-time within the app and testing new engagement strategies based on insights gained.