An Analysis of Prediction Methods: Song Popularity on Spotify

STAR

S — **Situation**

The music industry has shifted towards streaming platforms, with Spotify being a major player. Understanding factors that contribute to a song's popularity on Spotify can offer valuable insights for music industry professionals.

T — **Task**

The project aimed to analyze song features and their impact on popularity using machine learning techniques. The goal was to identify which features correlate with and can predict a song's success on Spotify.

A — **Action**

We conducted a comprehensive analysis using a dataset from Spotify, involving preprocessing, visualization, and modeling techniques. Various regression and classification models were evaluated to determine their predictive power concerning song popularity.

R — **Results**

The analysis revealed that models like random forest classifiers showed some ability to classify songs as popular or not based on their features, though overall prediction accuracy was moderate. The study highlighted the challenges in predicting song popularity solely based on Spotify's audio features.

Leveraged Knowledge

- Data Preprocessing and Visualization
- Machine Learning and Modeling
- Linear Regression, Decision Trees, Ridge and Lasso Regression, Random Forest
- Statistical Analysis (PCA, Correlation Matrix)
- Programming in R

Project Analysis

	POSITIVE	NEGATIVE
INTERNAL	STRENGTH › Comprehensive dataset from Spotify, application of a wide range of machine learning techniques, innovative approach to understanding song popularity.	WEAKNESS › Moderate predictive power of models, indicating the complexity of factors influencing song popularity beyond measurable features.
EXTERNAL	OPPORTUNITY › Future research could incorporate additional variables (e.g., marketing efforts, artist popularity) to improve model accuracy.	THREAT › Rapid changes in music consumption habits and the influence of external factors not captured by Spotify's audio features may limit the applicability of findings.

Thank You