



Predicting Video Games Success with Genres

With Decision Trees and Random Forest

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Overview



Stakeholders: Games Developer and Game Investors



Goal: Suggest genres to new video games to maximize sales.

Model Performance: 77.08%

Best Genres: Adventure, RPG, Indie Puzzle and Strategy

Business Understanding

High Demand: **26%** increase in demand **2019 - 2021**

- Projected to **increase**



Reliance: **145 B** Gaming vs **42 B** Box Office

- Most Lucrative Industry



Low Success Rate: **20%** of Video **Success Rate**

- **34** Games produced daily (Steam)

Data Understanding



1. Source

Kaggle

16,598 different titles

2. Source

Backloggd

60,000 different title

Target Feature:
Global_Sales

Target Feature:
Rating, Genres

Method

1. Clean both datasets (Duplicates, Missing Values)
2. Combine both dataset into one
3. Mark Games as profitable
4. Convert to Genres list to binary markers
5. Resolve Class Imbalance
6. Train - Test model



Source 1: Kaggle

16,598 titles

Feature: Global_Sales



Combined

7593 Overlapped Titles
Dups, Multiple Platforms

1st Dataset

Second Dataset

Third Dataset

Final Dataset



Source 2: Backloggd

60,000 titles

Features: Genres



Cleaned

4488 Unique Titles

24 Genre Features

Metrics

Model Performance



Accuracy: Number of correct prediction

F1-Score: Used to compare models

- Take Precision and Recall into score

Global Sale (Most) :

> 1,000,000 ⇒ Profit

Indie Games:

> 100,000 ⇒ Profit



Results

Rank	Experienced Developers	Indie Developers
1	<u>Adventure</u>	<u>RPG</u>
2	<u>RPG</u>	<u>Platformers</u>
3	Simulators	<u>Adventure</u>
4	Puzzle	Strategy
5	<u>Platformers</u>	Arcade



Recommendation - All Developers

All Developers
Safe Genres - **Adventure, RPG**

Games should add Adventure and/or RPG in games while adding other key genres.

Rank	Top Average Rating	Most Common
1	Turn Based Strategy	Adventure
2	Visual Novel	RPG
3	Tactical	Indie
4	RPG	Shooter
5	Adventure	Platform

Recommendations - Indie



F1-Score: .88

Accuracy: 78.51%

Suggestion: Strategy and Arcade

Rank	Genres
1	<u>RPG</u>
2	<u>Platformers</u>
3	<u>Adventure</u>
4	Strategy
5	Arcade

Recommendations Others



F1-Score: .43

Accuracy: 59.18%

Suggestion: Puzzle and Simulator

Rank	Genres
1	<u>RPG</u>
2	<u>Brawler</u>
3	<u>Adventure</u>
4	Puzzle
5	Simulator

Recommendations



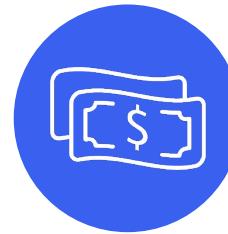
Experienced Developer

Continue with popular genres:
Experiment with Simulator and
Puzzle genres



Indie Developers

*Safe Genres: Adventure, RPG
and Platform*
*Experiment with Strategy and
Arcade Genres*



Investors

*Invest in Indie
Developers and games*

Next Step

More Games

- **Limited** by matches

More features

- **Developer**, budget, platform

Identify Trends:

- Audience genres trends - **MOBA, Arcade**, etc.



Questions?

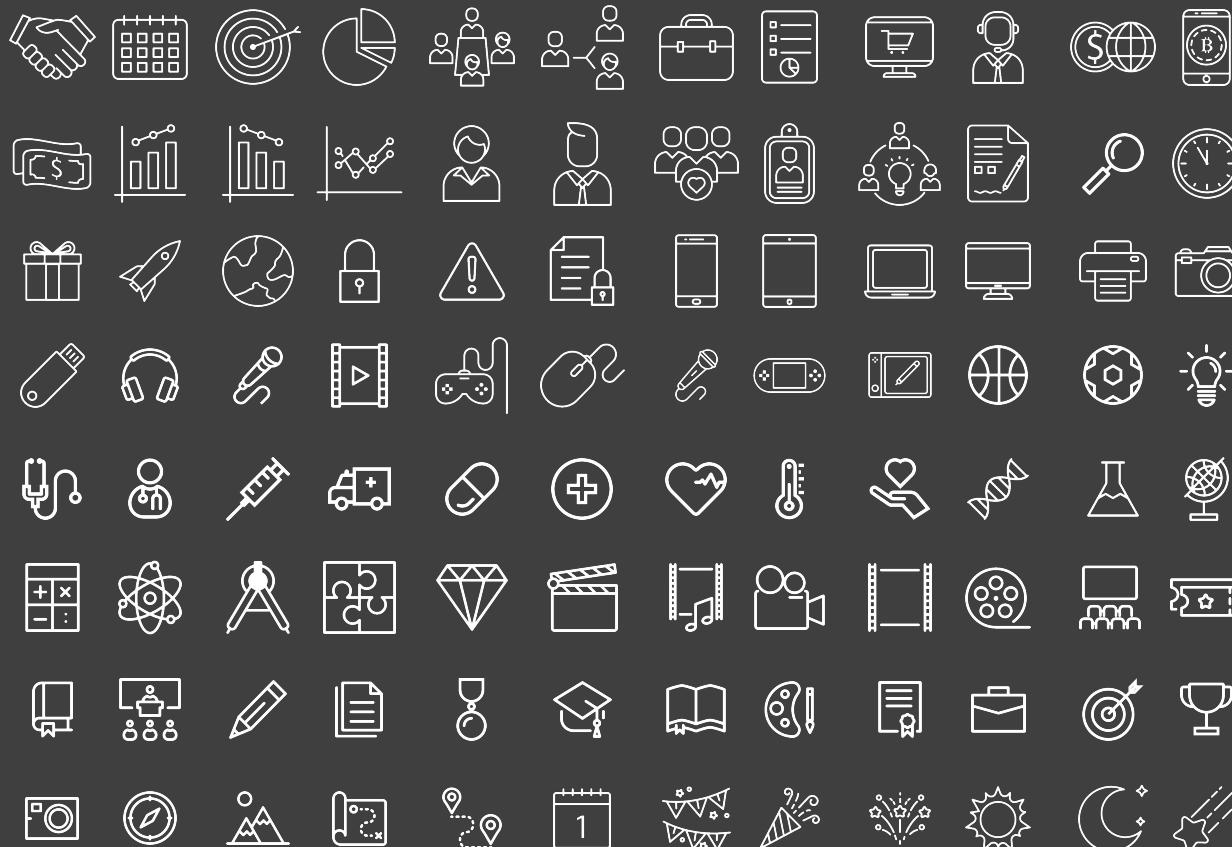
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Notebook: <https://github.com/Tommyphung1/Project>

Thanks !





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