What to play next?

A recommender engine to help you find your next board game.

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[Project github]

Data Pipeline

Data Preparation

70K games
12M ratings

EDA

SQL

Transformation
&
Feature
Engineering

XML Parser

BOARD GAME GEEK

BGG API

Build & Evaluate Recommenders

- Hyperparameter tuning
- Model testing
- Model validation

scikit learn

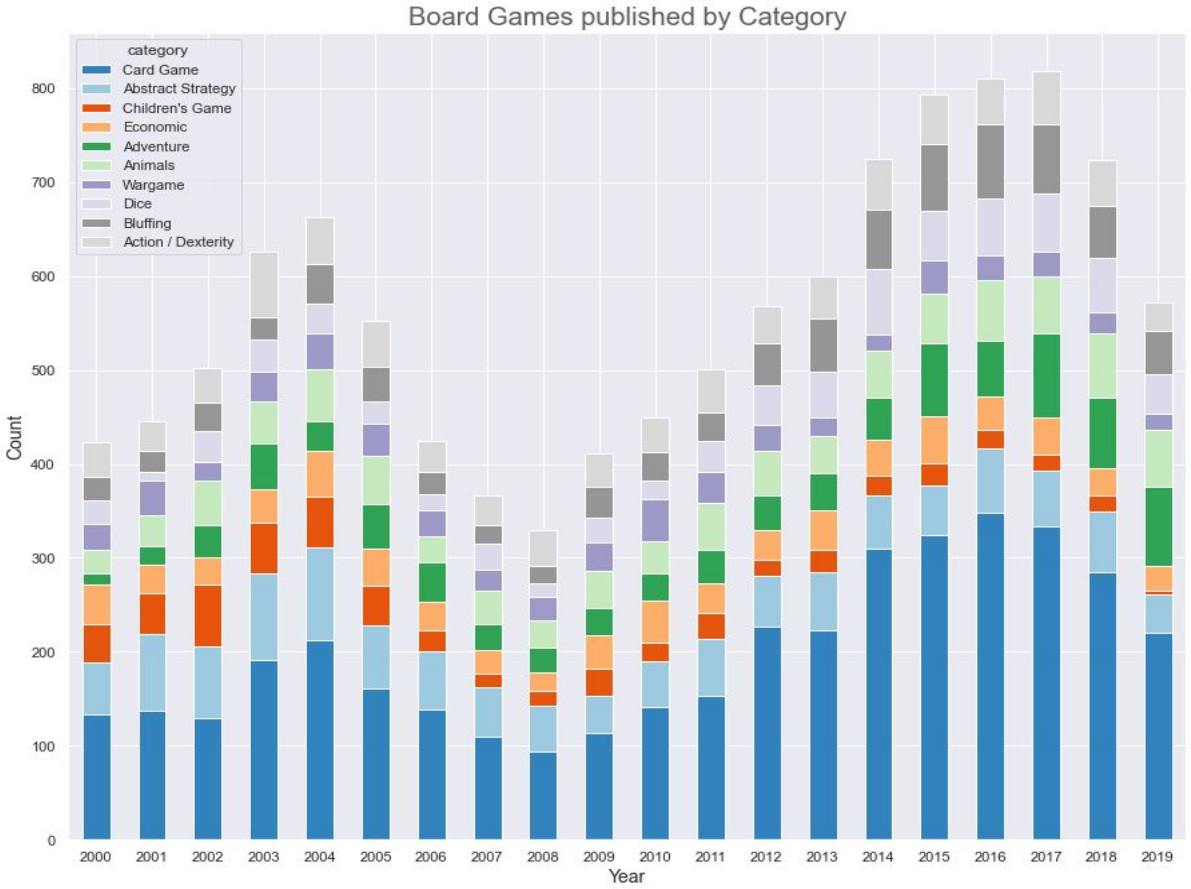
fast.ai + colab

Flask App & Deploy

- Interactive app
- Deploy on EC2

Flask
web development, one drop at a time

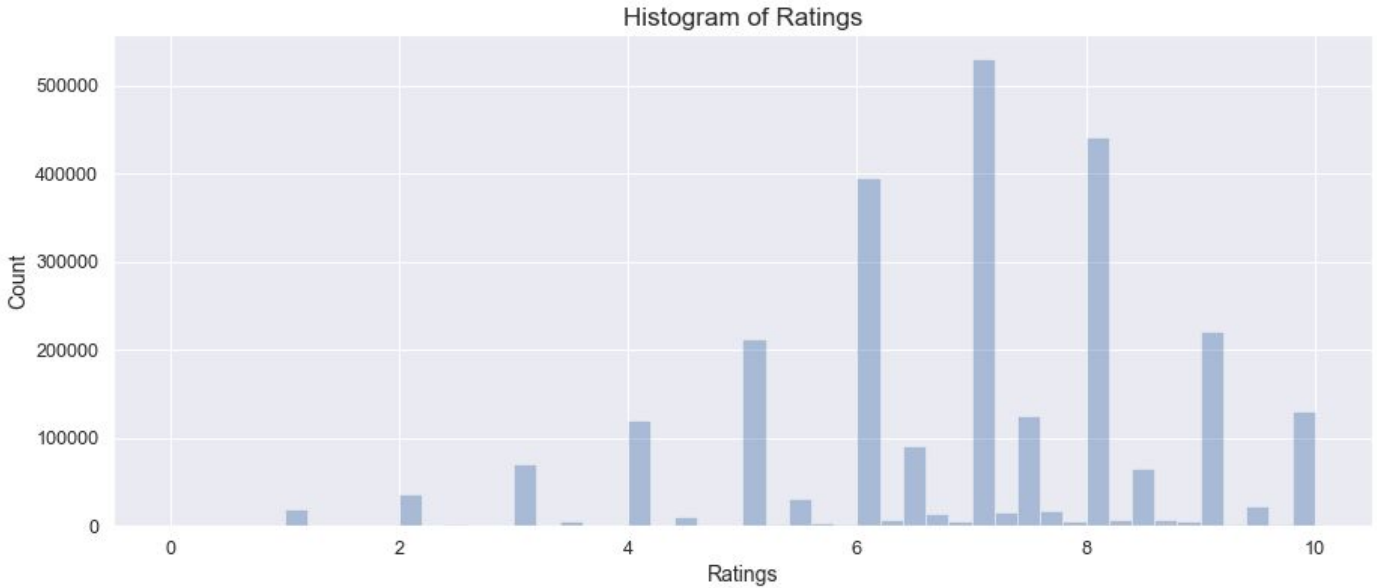
Exploratory Data Analysis



Board games dataset

- 70K games
- 22 associated features
- Games in top 10 categories

Exploratory Data Analysis



User ratings dataset

- 12M ratings
- 5 associated features
- 30K unique games
- 200K unique users

Recommender Models

Popularity

Content Based

Collaborative Filtering

Recommender Models

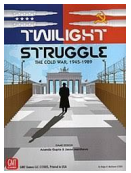
Popularity Content Based Collaborative Filtering

- Based on number of voters and the rank
- Categories:
  - Overall rank
  - Abstract
  - Children's
  - Thematic
  - Party
  - Strategy
  - War

Overall rank: 4
Overall rank: 1

Overall rank: 2

Overall rank: 9
Overall rank: 3



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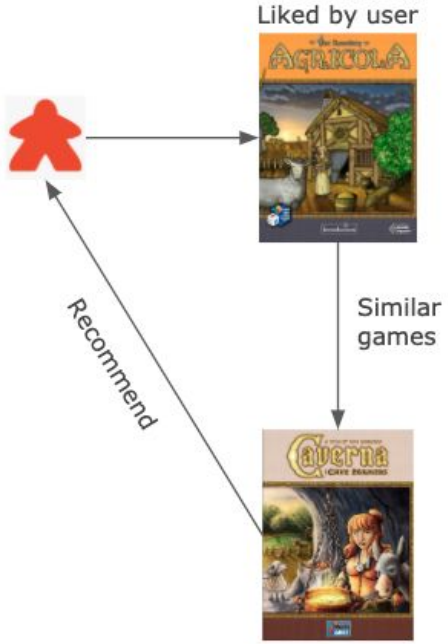
Recommender Models

Popularity | **Content Based** | Collaborative Filtering

- Similarity between games using:
  - Category
  - Designer
  - Complexity
  - Mechanism
- Methods:
  - CountVectorizer
  - Cosine similarity
  - RMSE: 1.32

- Drawback:
  - Over specialization



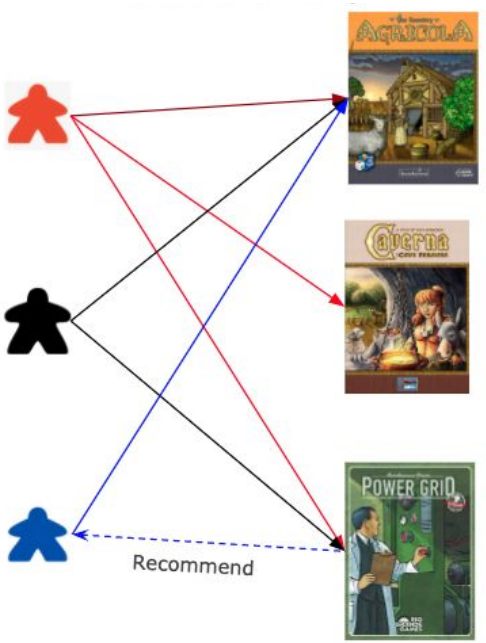
Recommender Models

Popularity

Content Based

Collaborative Filtering

- Similarity between games based on the user ratings
- Methods:
  - Alternating Least Square
    - Regularization param: 0.05
    - Max Iterations: 15
    - Rank: 5
    - RMSE: 2.3
  - Fastai + KNN
    - Initial RMSE: 1.34
    - Epoch: 5
    - Learning rate: 1e-2
    - Weight decay: 0.15
    - RMSE: 1.23



Results

- Recommendation flow: Collaborative -> Content -> Popular
- Recommender app demo: http://recommender.jankichauhan.com/

For Future

- Include an option of using BoardGameGeek username and recommend games based on users past activity.
- Build a better content based recommender using game descriptions and reviews.
- Update recommender to handle live data and user feedback.

Questions?

Thank you!

[Project github]