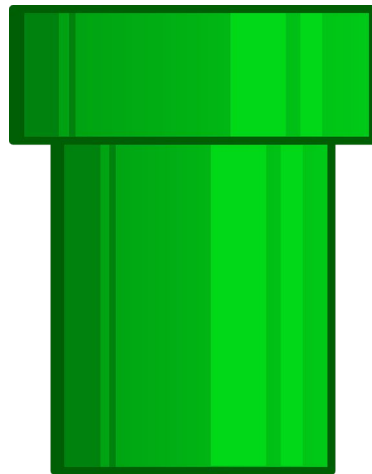


Playful

Find your
new favorite
computer game



Elizabeth Ferriss
Insight Data
Science Fellow
Winter, 2018





The Steam game store uses game tags

Steam View Friends Games Help

← → **STORE** LIBRARY COMMUNITY ELIZABETH.FERRISS

http://store.steampowered.com/ WISHLIST

Your Store Games Software Hardware Videos News search the store

STEAM

GIFT CARDS
Now Available on Steam

RECOMMENDED
By Friends
By Curators
Tags

DISCOVERY QUEUES
Recommendations
New Releases

BROWSE CATEGORIES
Top Sellers
Recently Updated
New Releases
Upcoming
Specials
Virtual Reality

FEATURED & RECOMMENDED

**MAKING HISTORY
THE CALM & THE STORM**

Making History: The Calm & the Storm

Recommended because you played games tagged with

Strategy Turn-Based Strategy Grand Strategy

\$4.99

But not all tags work well (like vampires)

User owns this

Twilight



The Hunger Games



Dracula

Collaborative filtering with implicit feedback

	Tetris	Mario Kart	.	.	.	Game #20K
Emily	0	1	.	.	.	1
Rockson	1	0	.	.	.	1
.	.	.				.
.	.	.				.
.	.	.				.
User #42K	1	0	.	.	.	0

0.8% filled

← **Interaction matrix**
1 = user owns game
0 = user does not own game
(but might like it!)

Matrix factorization

1s, 0s → likelihood each
user interested
in each game

Item to item recommendations

People who own **FINAL FANTASY VII** also own:



FINAL FANTASY III

Dungeons & Dragons: Chronicles of Mystara

FINAL FANTASY IX

FINAL FANTASY VIII

Dragon's Lair

FINAL FANTASY V

Child of Light

FINAL FANTASY IV

playful.live

Recall@k

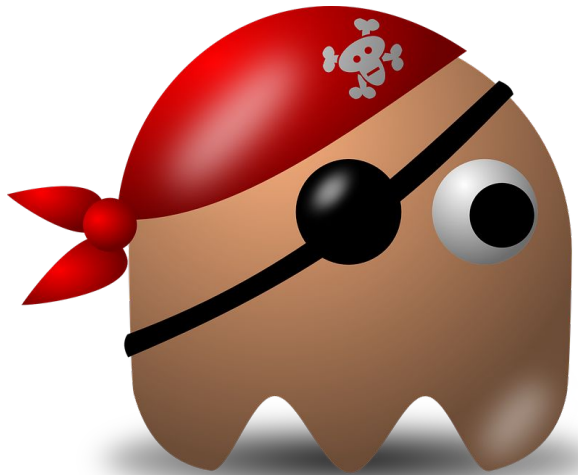
1. Mary owns 50 games
2. Randomly drop 10 of Mary's games
3. Train the model
4. Recommend 10 games to Mary



How likely am I to recommend Mary's 10 dropped games?

Recall@10 after optimizing hyperparameters = 0.083

Random guessing = $10/20,000$ games = 0.0005



I used Steam game data
to build a recommender
system for computer
games **150 times better**
than random guessing.

About me

Elizabeth
Ferriss



PhD
University of Michigan



Research scientist
at Columbia University

How I dealt with the cold start problem

API call +
item-to-item
recommendations for
your favorite games



If I had another 2 weeks...

- The model

- Train with data for all 400,000 reviewers
- Use a function of the hours played in the interactions matrix, not just owned/not owned

- The app

- Make pages with game info, similar games when you click on a game
- Automatically update the model periodically



