Improving the Discoverability of Indie Games by Leveraging their Similarity to Top-Selling Games

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The game industry is shifting towards online distribution of games
Prior work focused on other distribution platforms

Our study leverages data from both Steam and Itch.io

To help indie games developers
The itch.io platform places strong focus on the online distribution of indie games.

> 200,000 games
There are many large game studios and even more smaller indie game developers.
Indie games are facing a discoverability problem

- Low marketing budget
- Large number of indie games
We leveraged the similarity between indie games and top-selling Steam games to make recommendation

Gamers who play *Surviving Mars*…

…are recommended to play *Intelligent Design*

Both games share the theme of creating life on another planet (Mars)
We match indie games and top-selling games based on their similarity in tags, genres, and description.

Cosine similarity calculation

List of matched Steam games
Four separate recommendation lists are merged

- Tag-heavily-weighted
- Description-heavily-weighted
- Genre-heavily-weighted
- Genres, Tags, Desc. combined

Merged list of 5 – 15 matched Steam games
Our website shows matched Steam games for each Itch.io game, together with an evaluation form.
We used Average Precision @ 5 in the preliminary study.

<table>
<thead>
<tr>
<th>Recommended rank</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precision</td>
<td>1/1</td>
<td>2/2</td>
<td>2/3</td>
<td>3/4</td>
<td>3/5</td>
</tr>
</tbody>
</table>

**AP@5 = 0.55**

| Precision        | 0/1 | 0/2 | 1/3 | 2/4 | 3/5 |

**AP@5 = 0.22**
Our preliminary analysis shows that tag similarity contributes the most to relevant recommendations.
We studied 2 Research Questions (RQ)

• **RQ1.** How do indie developers feel about improving the discoverability of their games through our approach?

• **RQ2.** What are the requirements of a future version of an indie game recommendation system?
The response rate of our questionnaire

1,526 Itch.io indie dev were contacted

195 responded

159 non-empty overall feedback

873 explanations on down voted matches

87 representative samples (95% conf. level, 10% margin of err.)
In RQ1, we found that the majority of the indie developers support our approach to indie game recommendation.

Out of 159,…

- 67.9% of the developers showed positive support
- 29.6% of the developers were neutral
- 2.5% of the developers did not support

Players might be disappointed
Niche market
In RQ2, we lay out a set of important requirements for future indie game recommendation system by analyzing the responses.
A standardized and extensive tag and genre ontology system are needed

<table>
<thead>
<tr>
<th>Task</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refine genres</td>
<td>Splitting “RPG” into “Action RPG”, “Adventure RPG”, “Turn-based RPG”</td>
</tr>
<tr>
<td>Resolve tag inconsistencies</td>
<td>Standardize “Deck building”, “Deck-builder”, “Deckbuilding” tag</td>
</tr>
<tr>
<td>Match tag with genre</td>
<td>Match “Visual Novel” genre with “Visual Novel” tag</td>
</tr>
</tbody>
</table>
A gamer’s expectations need to be managed well

Both are survival, action, horror game but Hasty Little Man is much shorter
Integrate a gamer’s personal preference

Steam

Horizon Zero Dawn™ Complete Edition

Experience Aloy’s legendary quest to unravel the mysteries of a future Earth ruled by Machines. Use devastating tactical attack against your prey and explore a majestic open world in this award-winning action RPG!

Release Date: 7 Aug, 2020
Developer: Quantic
Publisher: PlayStation Mobile, Inc.

Itch.io

Paratopic

"Paratopic is a short first-person horror game which draws ideas from Thirty Flights Of Loving but takes them somewhere terrible. Leading them down an alley and through an unmanned door into a world which looks a bit like ours but just isn’t right."

- Rock, Paper, Shotgun

"Paratopic brilliantly plays on eerie imagery and freaky sound design to put you inside of a nightmare place."

- Rock, Paper, Shotgun

"Paratopic's city is a sorry hulk, a ruin whose scarce inhabitants eke out day-to-day existence by taking dangerous smuggling jobs, murdering for money, or reconfiguring their flesh in agonized cadaver-cry cages."

- Heterotopia

As an assassin prepares for her kill, a man is strong-armed into smuggling contraband VHS tapes over the border, and a young girl finds the rusted remnants of illicit industry deep in a dark forest.

- Paratopic is a short but dynamic and detailed 30–50 minute game.
- Paratopic is currently available for Windows, Mac and Linux.
- Get the 9-track Soundtrack Edition for $6.99. FLAC & MP3 downloads provided, as well as a bonus 9-track collection of outtakes & extended cuts!
- Content Warning: The game contains violence, dismemberment, gore, body horror and coarse language.
- Paratopic contains three short instances of fast flashing lights.

A game by @DrunkFATE, @EzrugArmstead and @Lucasius_Audio

Press Screenshots
Contact enquiries: contact@furymetric.com

These games are not similar, but a gamer might like both
Implement standardized age-based restriction on explicit contents

Steam

Steam uses ESRB for rating while Itch.io does not integrate such a system.
Also recommend the indie games that are the least similar to showcase their uniqueness

Suggesting non-similar games separately could improve variation in recommendation
Limit the range of the recommended indie games’ popularity

<table>
<thead>
<tr>
<th>Updated</th>
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<tbody>
<tr>
<td>Status</td>
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<td>Platforms</td>
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<tr>
<td>Release date</td>
<td>Jul 30, 2019</td>
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<td>Rating</td>
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<tr>
<td>Author</td>
<td>adagryu</td>
</tr>
<tr>
<td>Genre</td>
<td>Adventure, Platformer</td>
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<tr>
<td>Made with</td>
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<tr>
<td>Tags</td>
<td>3D, Atmospheric, Cute, Funny, nature, Relaxing, Short, Walking simulator</td>
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<tr>
<td>Average session</td>
<td>About an hour</td>
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<tr>
<td>Languages</td>
<td>English</td>
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<tr>
<td>Inputs</td>
<td>Keyboard, Mouse, Xbox controller, Playstation controller</td>
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<tr>
<td>Accessibility</td>
<td>Subtitles, Configurable controls</td>
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<td>Links</td>
<td>Steam, Homepage, Soundtrack, Twitter, Steam itch.io Recommends: cults and relaxation..., Hit</td>
</tr>
<tr>
<td>Mentions</td>
<td>2020 running with a list of our favo..., Announcing the itch.io Summer sale and S...</td>
</tr>
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</table>
Prior work focused on other distribution platforms.

Our study is the first to mine the itch.io platform to help indie game developers.
Prior work focused on other distribution platforms

Our study leverages data from both Steam and Itch.io

Steam + Itch.io

To help indie games developers
We match indie games and top-selling games based on their similarity in tags, genres, and description.

Cosine similarity calculation

List of matched Steam games
Prior work focused on other distribution platforms

Google Play  App Store  Steam  Nexus Mods  CURSEFORGE

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Steam  Itch.io

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Tag  Genre  Description

Cosine similarity calculation

List of matched Steam games
Take-away for future indie game recommendation studies

**Requirement**

- A standardized and extensive tag and genre system
- Manage a gamer’s expectations
- Integrate a gamer’s personal preferences
- A standardized age-based restriction on explicit contents
- Also recommend the indie games that are the least similar
- Limit the range of the recommended indie games’ popularity
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