

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



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ASGAARD
Analytics of Software,
Games and Repository Data

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**UNIVERSITY OF
ALBERTA**

The game industry is shifting towards online distribution of games



STEAM[®]



itch.io

Prior work focused on other distribution platforms



Google Play



App Store



Steam



Nexus Mods



CURSEFORGE

Our study leverages data from both Steam and Itch.io



Steam

+



To help indie games developers

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

The screenshot shows the 'Past Game Jams' section on the itch.io website. The page is sorted by 'Most Joined' and displays a grid of game jam cards. A large blue overlay with yellow text reads '> 200,000 games'. The cards include details such as the jam name, host, end date, number of participants, and number of submissions.

Jam Name	Host	Ended	Participants	Submissions	Featured
GMTK Game Jam 2020	GitHub, Lee Reilly	8 months ago	3,569	226	Yes
Brackeys Jam 2020.2	Game Maker's Toolkit	2 years ago	3,313	1,010	Yes
GMTK Game Jam 2019	Yifan, Brackeys, TheDutchMagikarp, hucota7, CodeMyst, DuxeZ, AquaXV	6 months ago	2,889	702	Yes
Community Game Jam	metc, Game Maker's Toolkit	3 years ago	2,857	720	Yes
Game Off 2018	GitHub, Lee Reilly	3 years ago	2,649	196	Yes
Miz Jam 1	narrier	4 days ago	2,561	682	Yes
2019 Epic MegaJam	Unreal Engine	9 months ago	2,470	445	Yes
I Can't Draw But Want To Make A Game (Again)	charlmes	2 months ago	2,156	388	Yes
GameDev.tv Community Jam	Yang Pulse	3 months ago	1,919	225	Yes
Extra Credits Game Jam #6	Extra Credits	6 days ago	1,820	528	Yes
Brackeys Game Jam #2	CodeMyst	-	-	-	-
My First Game Jam: Summer 2020	J. Adrienne Lombardo, Iysander	-	-	-	-
I Can't Write But Want To Tell A Story	charlmes	-	-	-	-
LOWREZJAM 2020	JackOatley, Gurpreet Singh	-	-	-	-
Yogscast Game Jam	Yogscast	-	-	-	-

There are many large game studios and even more smaller indie game developers



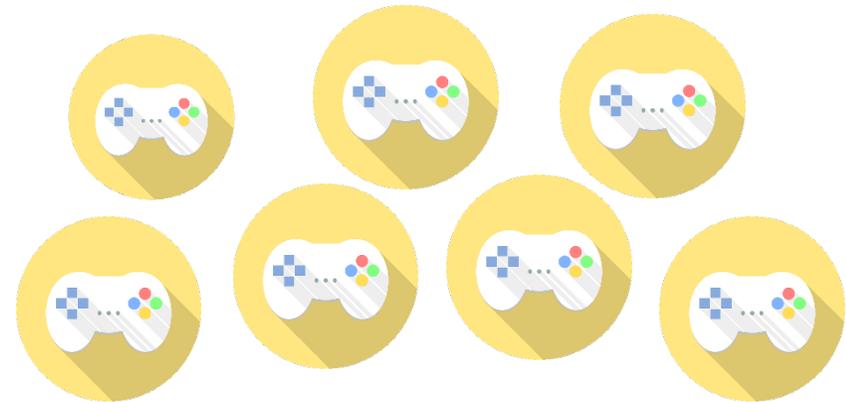
VS



Indie games are facing a discoverability problem



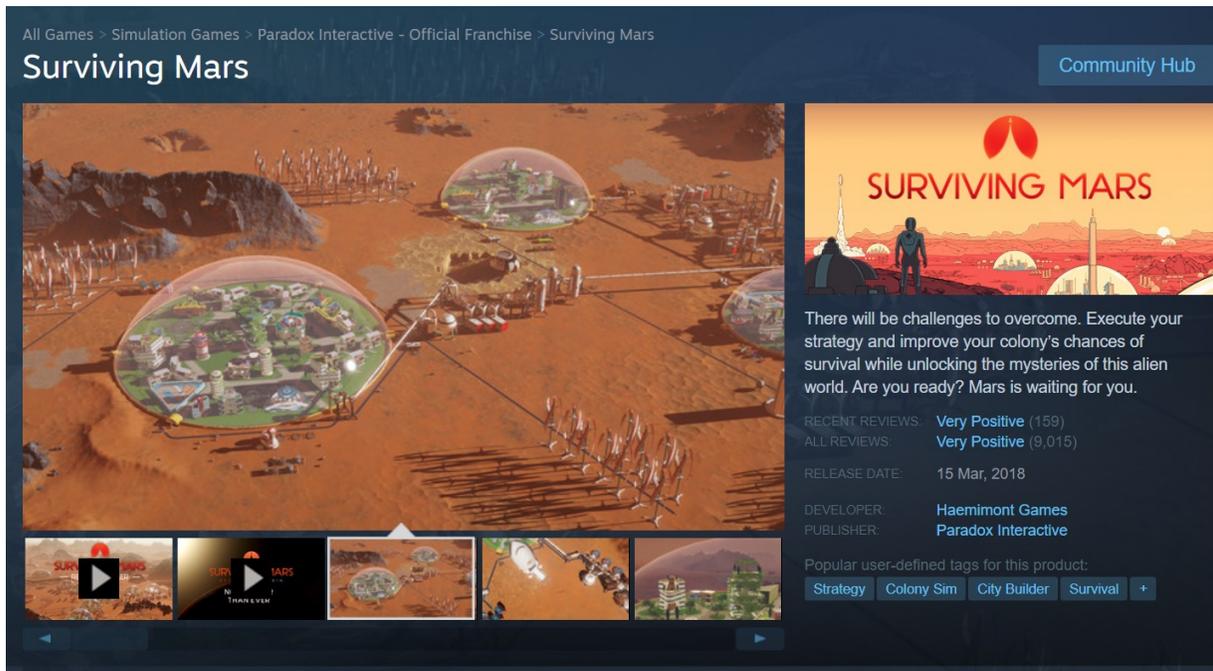
Low marketing budget



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**...



https://store.steampowered.com/app/464920/Surviving_Mars

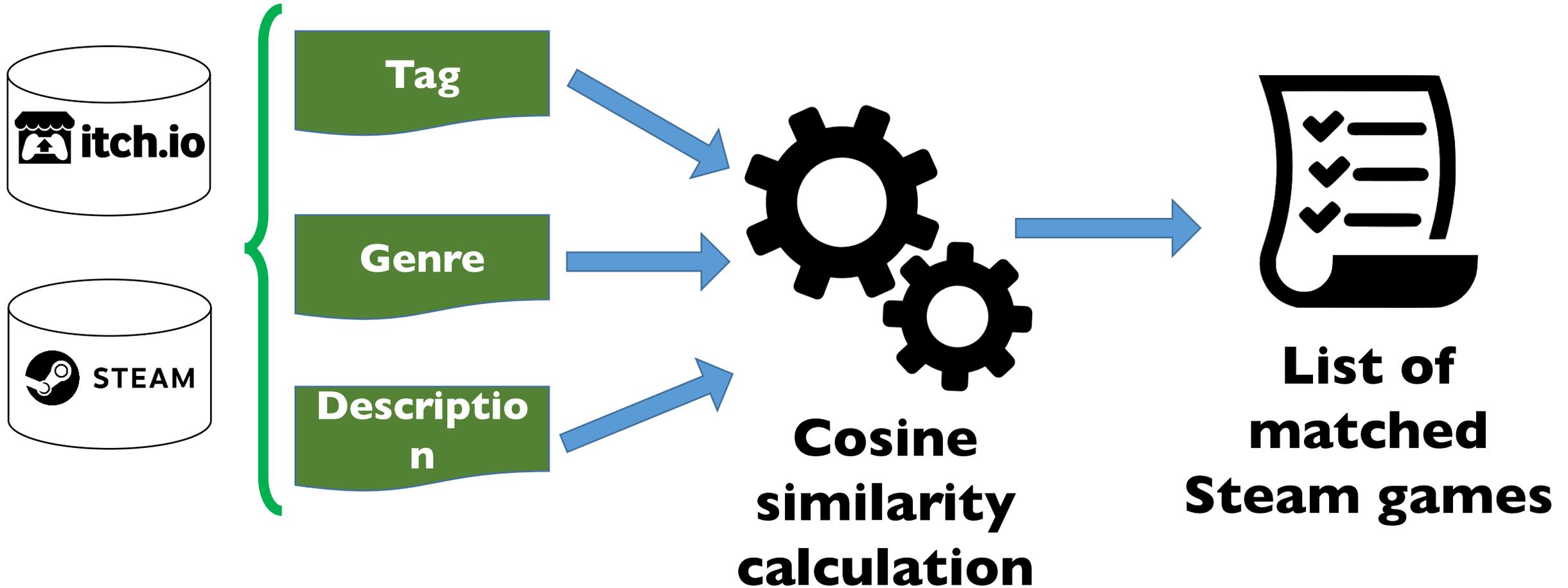
...are recommended to play **Intelligent Design**



<https://pillbuginteractive.itch.io/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



Four separate recommendation lists are merged



Tag-heavily-weighted



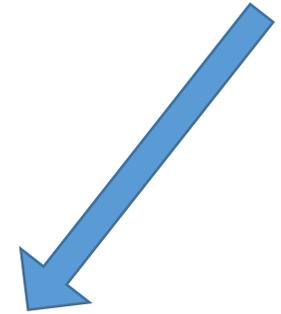
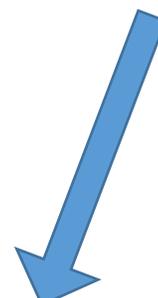
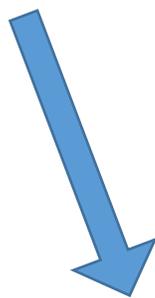
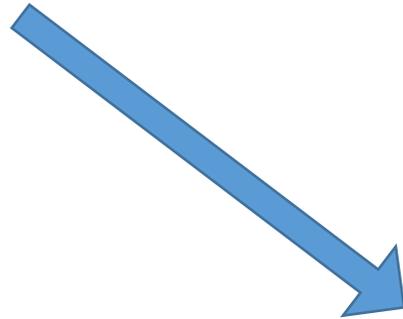
Description-heavily-weighted



Genre-heavily-weighted



Genres, Tags, Desc. combined



**Merged list of 5 – 15
matched Steam**

Our website shows matched Steam games for each Itch.io game, together with an evaluation form

Recommend Indie Games

Our algorithm shows the similarity between indie games and top-selling Steam games. (Disclaimer: Game data are retrieved from [itch.io](#) and [Steam](#)) For more information about the study, please see this [Letter of Information](#).

Search for your indie game on the left and we will display 5 - 15 similar top-selling Steam games (in terms of either contents, genres, styles, etc.). Please rate our similarity matching by clicking  or  and provide any feedback on the selection for each of your indie games. Please rate all matches for each of your itch.io games.

Note that the purpose of this website is to gather feedback from indie game developers on our algorithm of matching their indie games with similar Steam games.

The final site for users/gamers will allow them to search for their favorite Steam games and we will display a list of similar indie games (i.e. the other way around). Our goal is to increase the discoverability of indie games by recommending them based on how similar they are to a big game.

Your games ↑

- Amethyst Horologist, Radical Archaeologist
- Broken Cat's Lost Flowers
- Five Great Places to Get a Nice Cup of Tea When You Are Asleep
- I'm Just Popping Down The Dungeon, Does Anybody Want Anything?

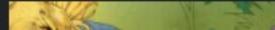
Showing 1 to 10 of 10 entries

Search:

All indie games ↑

- "Your World, 50 Years From Now"
- #MURDERJAM2016
- << FIND REWIND
- (Don't) Open Your Eyes
- //TODO: today
- 00Boyfriend

According to our algorithm, the [Broken Cat's Lost Flowers](#) game is most similar to these 10 Steam games (in no particular order):

Similar top-selling games	Description	Rating
	The post-soviet country of Chernarus is struck by an unknown virus, turning the majority population into frenzied infected. Fighting over resources has bred a hostile mentality among survivors, driving what's left of humanity to collapse. You are one of the few immune to the virus - how far will you go to survive?	Is this match similar/relevant?   Please elaborate on your selection above <input type="text"/>
	For The King is a strategic RPG that blends tabletop and roguelike elements in a challenging adventure that spans the realms. Set off on a single player experience or play cooperatively both online and locally. INTO THE DEEP ADVENTURE, NOW AVAILABLE FOR FREE!	Is this match similar/relevant?   Please elaborate on your selection above <input type="text"/>
	Age of Mythology is back! Choose your god and take to the battlefield in this classic, upgraded with full Steamworks integration and enhanced features.	Is this match similar/relevant?   Please elaborate on your selection above <input type="text"/>
	Life between myths. Lead your clan into	Is this match similar/relevant?

We used Average Precision @ 5 in the preliminary study

Recommended rank

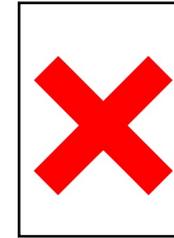
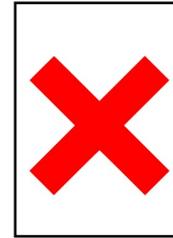
1

2

3

4

5



Precision

1/1

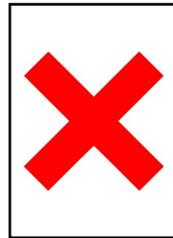
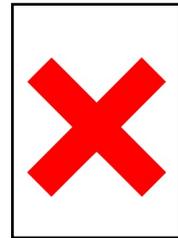
2/2

2/3

3/4

3/5

**AP@5 =
0.55**



Precision

0/1

0/2

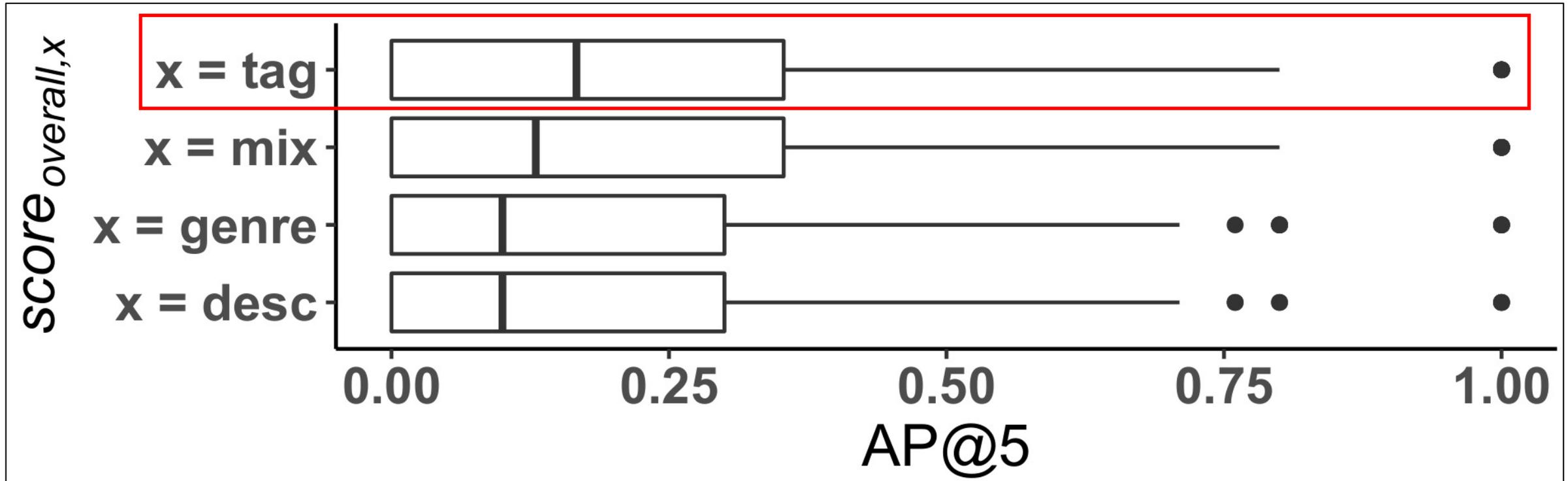
1/3

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

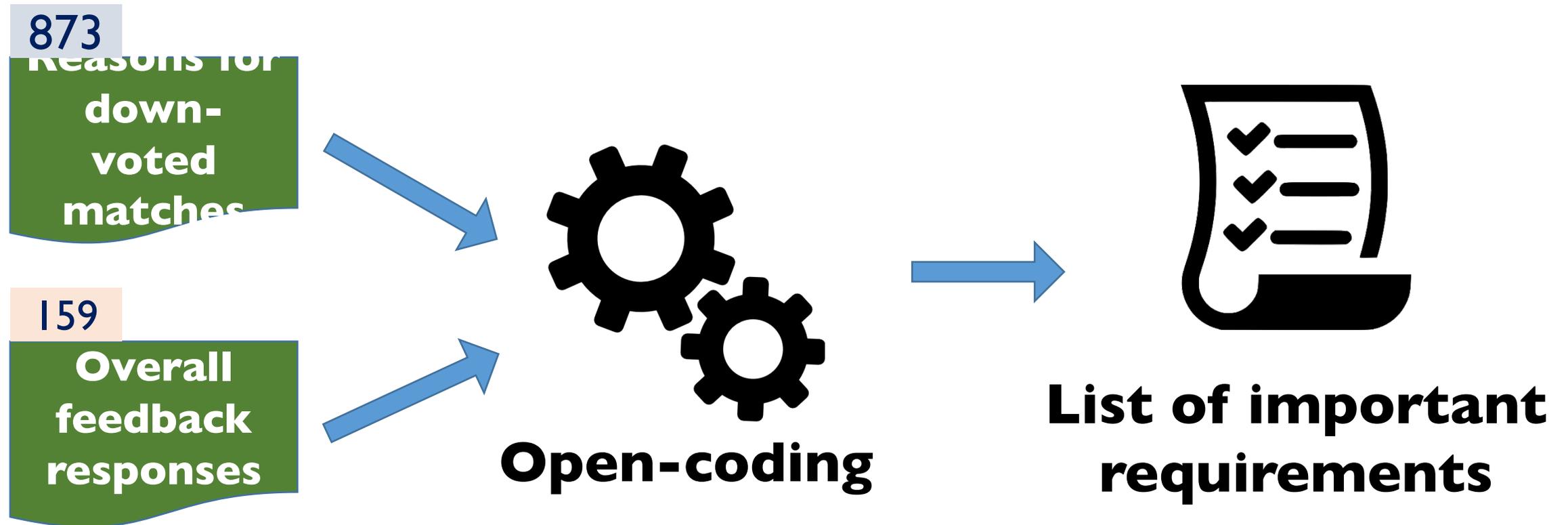
29.6% of the developers were neutral

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

Task

Refine genres

Resolve tag inconsistencies

Match tag with genre

Example

Splitting “RPG” into “Action RPG”, “Adventure RPG”, “Turn-based RPG”

Standardize “Deck building”, “Deck-builder”, “Deckbuilding” tag

Match “Visual Novel” genre with “Visual Novel” tag

A gamer's expectations need to be managed well

Steam

All Games > Action Games > Chernobylite

Chernobylite

Community Hub



Chernobylite is a science-fiction survival horror experience, mixing the free exploration of its disturbing world with challenging combat, unique crafting, and non-linear storytelling. Try to survive and reveal the twisted secrets of Chernobyl in the 3D-scanned recreation of the real Exclusion Zone.

RECENT REVIEWS: **Mixed** (95)
ALL REVIEWS: **Mostly Positive** (2,011)

RELEASE DATE: 16 Oct, 2019

DEVELOPER: **The Farm 51**
PUBLISHER: **The Farm 51**

Popular user-defined tags for this product:
[RPG](#) [Adventure](#) [Survival](#) [Action](#) [Indie](#) [FPS](#) +

Itch.io



A downloadable game for Windows and macOS

[Download Now](#) Name your own price

He's nasty, he's little, and he's got to go.

Reconstruct the cursed statue of a small, wretched man and banish his evil spirit forever. But beware—this diminutive scoundrel wants to cut you down to size.

Can you reconstruct his cursed effigy before his avatars morph you into their ranks?

Controls
Mouse & Keyboard: WASD + Mouse look
Controller: Left & Right stick



Both are survival, action, horror game but Hasty Little Man is much shorter

Integrate a gamer's personal preference

Steam

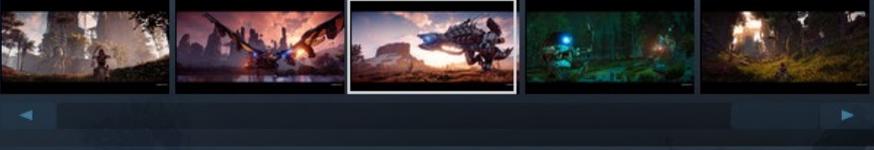
Horizon Zero Dawn™ Complete Edition [Community Hub](#)



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

ALL REVIEWS: **Mixed** (22,741)
RELEASE DATE: 7 Aug, 2020
DEVELOPER: **Guerrilla**
PUBLISHER: **PlayStation Mobile, Inc.**

Popular user-defined tags for this product:
[Adventure](#) [Open World](#) [Female Protagonist](#) [RPG](#) +



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 unmarked door into a world which looks a bit like ours but just isn't right."
- [Rock, Paper, Shotgun](#)

"Paratopic brilliantly plays on horror imagery and freaky sound design to put you inside of a nightmare place." - [Waypoint](#)

"Paratopic's city is a sooty husk, 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 cathode-ray rapture." - [Heterotopias](#)

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 \$8.99. FLAC & MP3 downloads provided, as well as a bonus 9-track collection of outtakes & extended cuts!
- *Content Warning: The game contains weirdness, dismemberment, gore, body horror and coarse language.*
- **Paratopic contains three short instances of fast flashing lights.**

A game by [@oysterFAKE](#), [@ForgetAmnesia](#) and [@Lazarus_Audio](#)

[Press Screenshots](#)

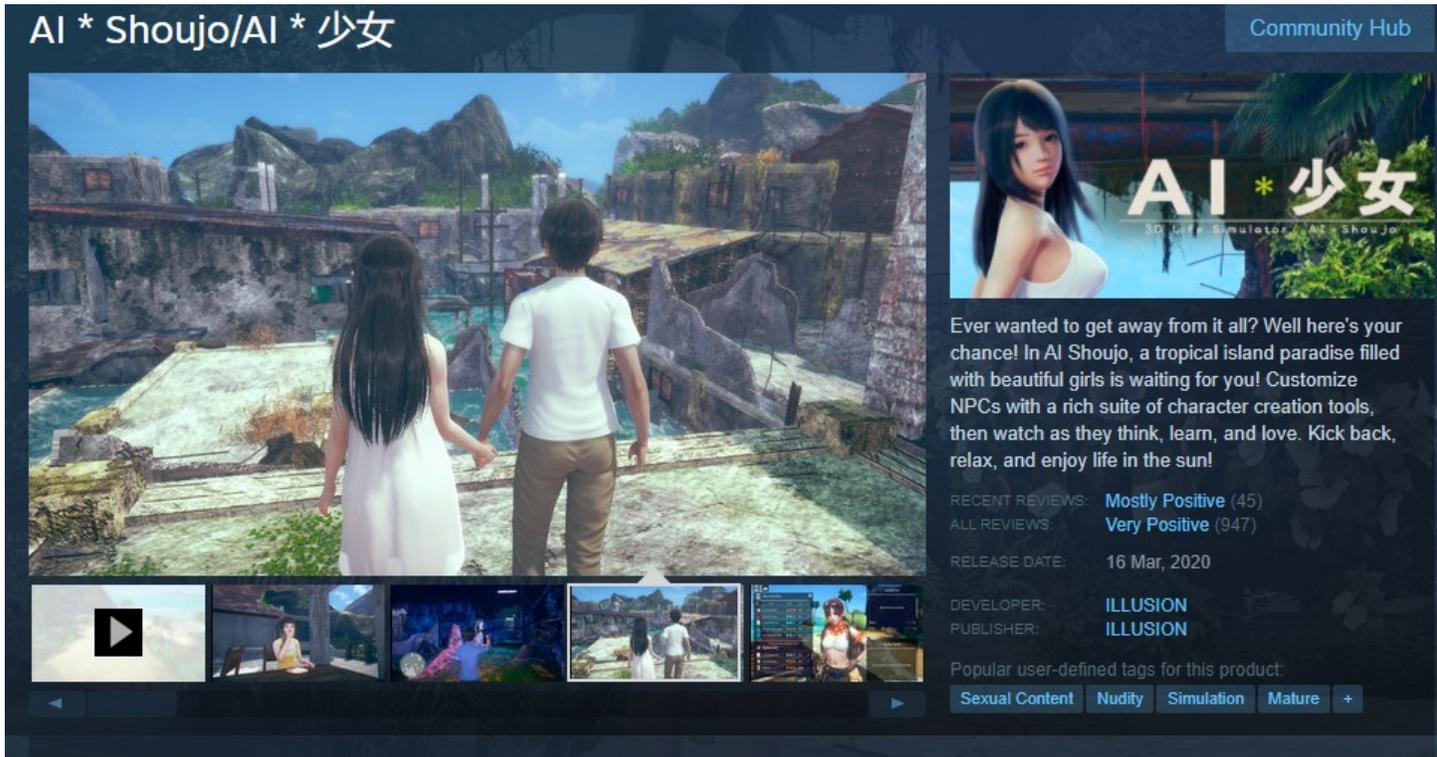
Contact enquiries: contact@ArbitraryMetric.com



These games are not similar, but a gamer might like both

Implement standardized age-based restriction on explicit contents

Steam



AI * Shoujo/AI * 少女

Community Hub

Ever wanted to get away from it all? Well here's your chance! In AI Shoujo, a tropical island paradise filled with beautiful girls is waiting for you! Customize NPCs with a rich suite of character creation tools, then watch as they think, learn, and love. Kick back, relax, and enjoy life in the sun!

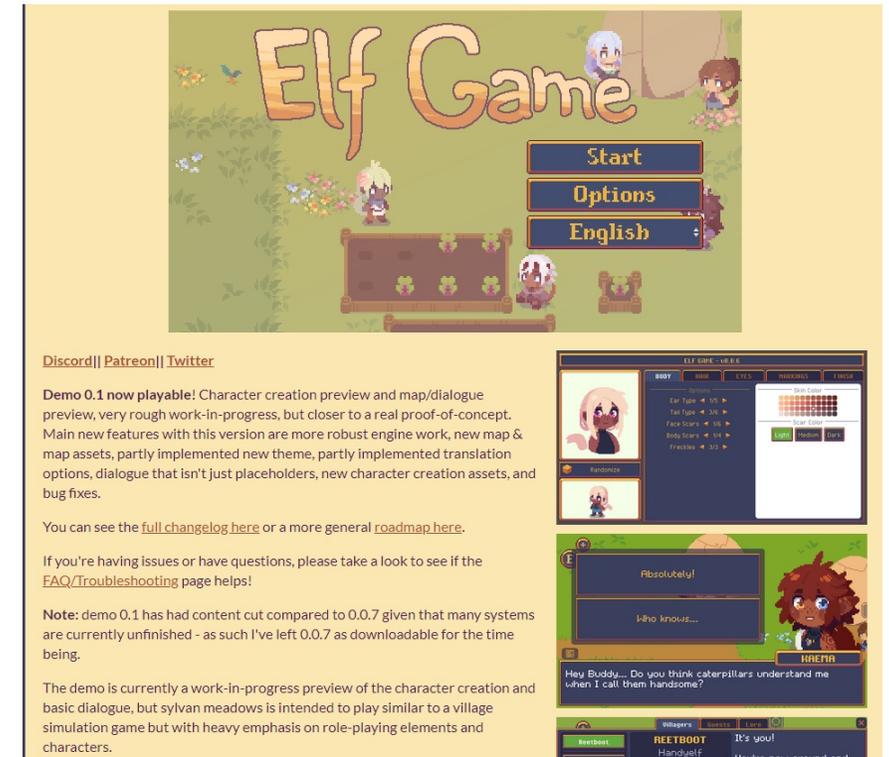
RECENT REVIEWS: **Mostly Positive** (45)
ALL REVIEWS: **Very Positive** (947)

RELEASE DATE: 16 Mar, 2020

DEVELOPER: ILLUSION
PUBLISHER: ILLUSION

Popular user-defined tags for this product:
[Sexual Content](#) [Nudity](#) [Simulation](#) [Mature](#) +

Itch.io



Elf Game

Start
Options
English

[Discord](#) | [Patreon](#) | [Twitter](#)

Demo 0.1 now playable! Character creation preview and map/dialogue preview, very rough work-in-progress, but closer to a real proof-of-concept. Main new features with this version are more robust engine work, new map & map assets, partly implemented new theme, partly implemented translation options, dialogue that isn't just placeholders, new character creation assets, and bug fixes.

You can see the [full changelog here](#) or a more general [roadmap here](#).

If you're having issues or have questions, please take a look to see if the [FAQ/Troubleshooting](#) page helps!

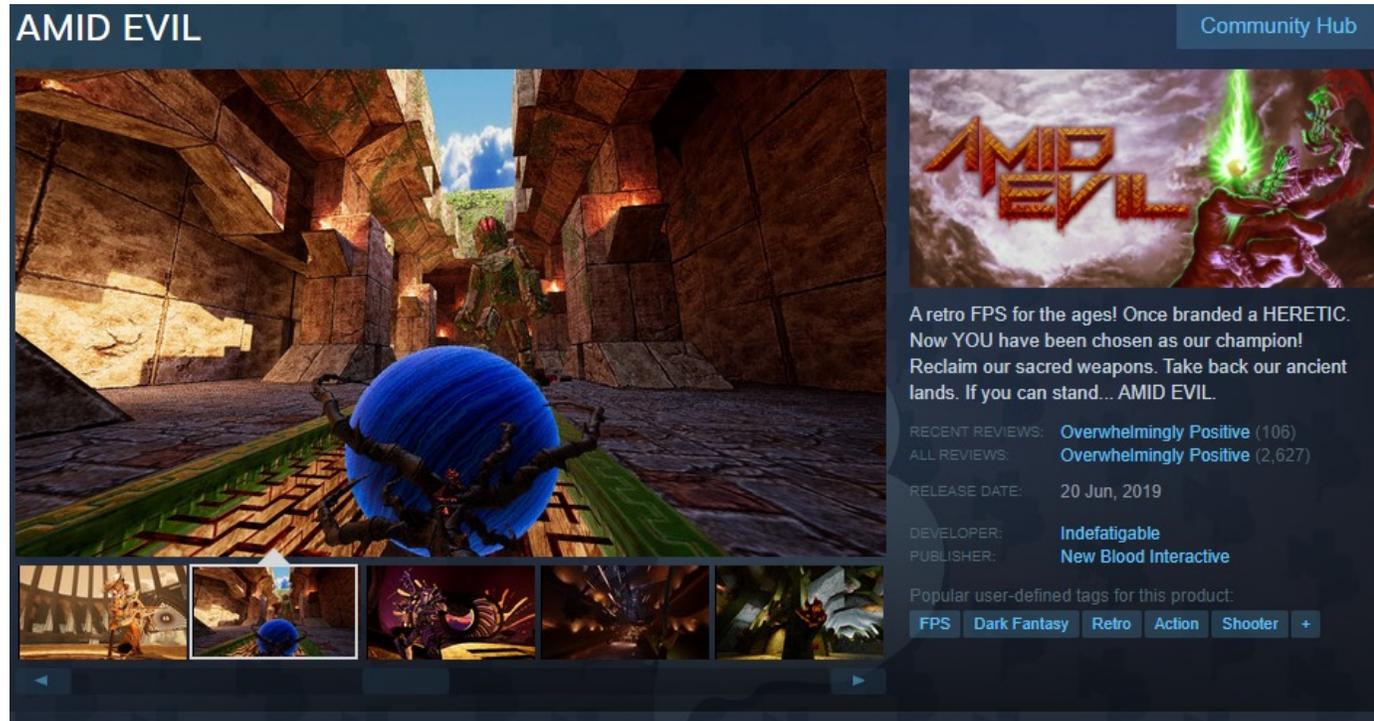
Note: demo 0.1 has had content cut compared to 0.0.7 given that many systems are currently unfinished - as such I've left 0.0.7 as downloadable for the time being.

The demo is currently a work-in-progress preview of the character creation and basic dialogue, but sylvan meadows is intended to play similar to a village simulation game but with heavy emphasis on role-playing elements and characters.

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

Steam



AMID EVIL Community Hub

A retro FPS for the ages! Once branded a HERETIC. Now YOU have been chosen as our champion! Reclaim our sacred weapons. Take back our ancient lands. If you can stand... AMID EVIL.

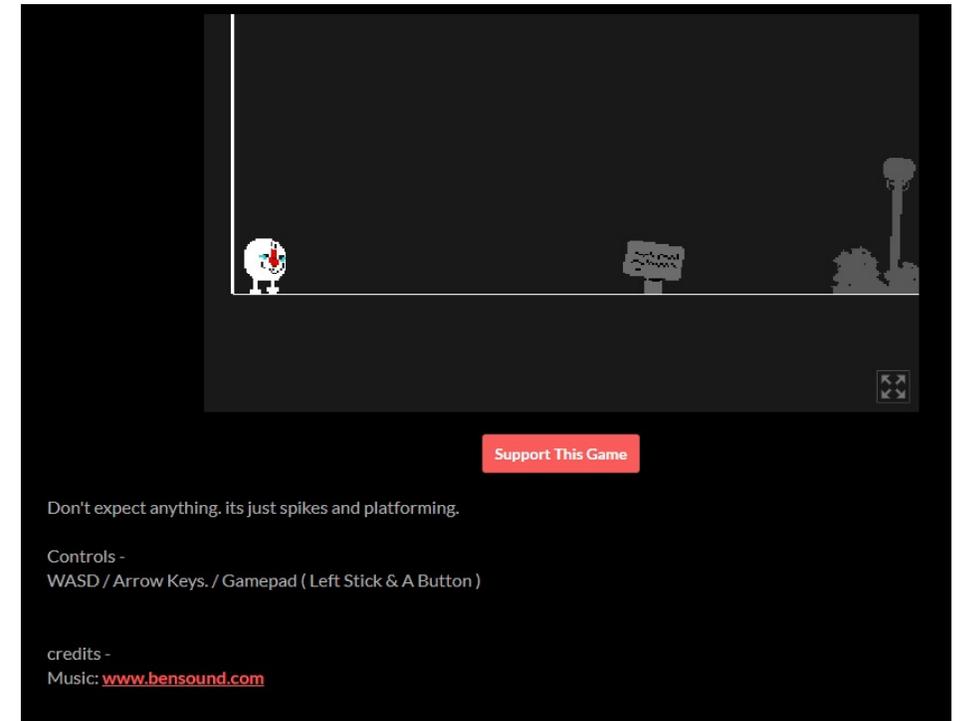
RECENT REVIEWS: **Overwhelmingly Positive** (106)
ALL REVIEWS: **Overwhelmingly Positive** (2,627)

RELEASE DATE: 20 Jun, 2019

DEVELOPER: **Indefatigable**
PUBLISHER: **New Blood Interactive**

Popular user-defined tags for this product:
FPS **Dark Fantasy** **Retro** **Action** **Shooter** +

Itch.io



Support This Game

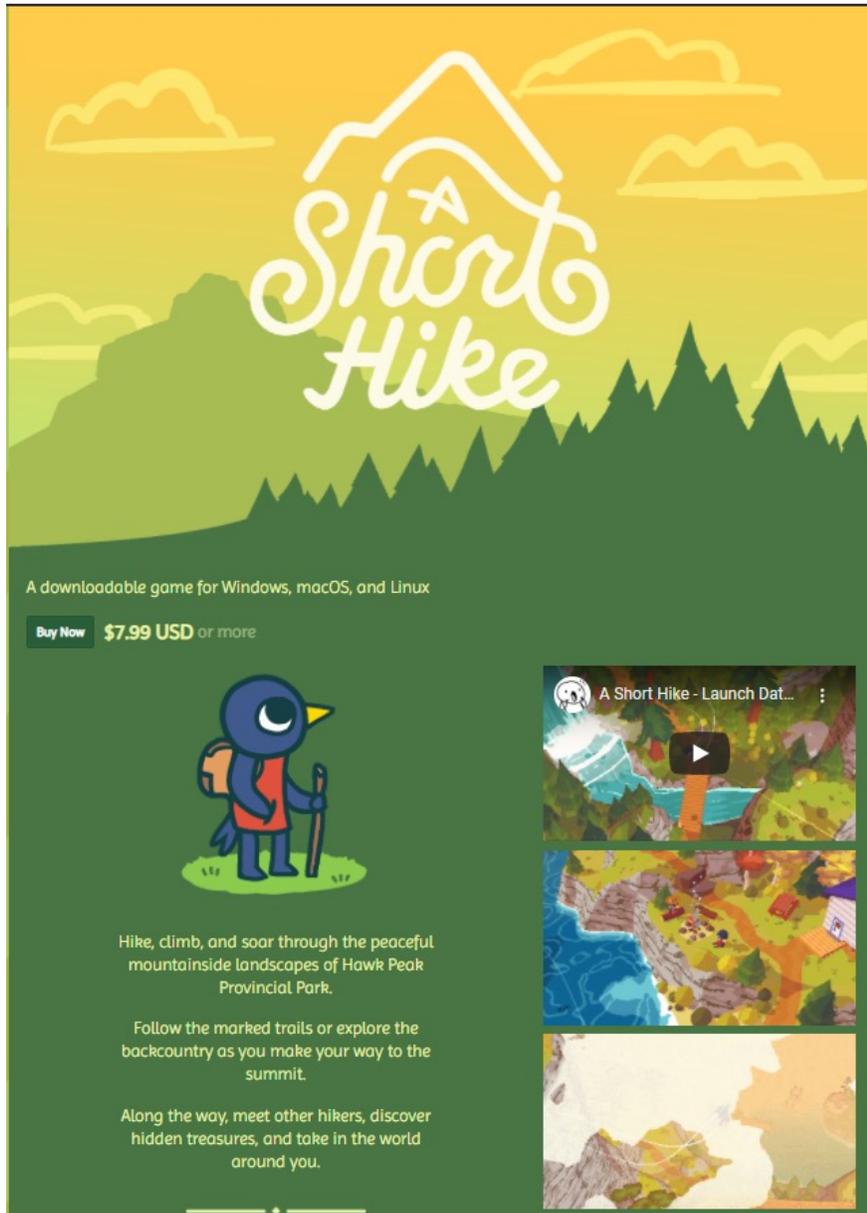
Don't expect anything. its just spikes and platforming.

Controls -
WASD / Arrow Keys. / Gamepad (Left Stick & A Button)

credits -
Music: www.bensound.com

Suggesting non-similar games separately could improve variation in recommendation

Limit the range of the recommended indie games' popularity



Updated  26 days ago
Status [Released](#)
Platforms [Windows](#), [macOS](#), [Linux](#)
Release date  Jul 30, 2019
Rating  (1804) 
Author [adamgryu](#)
Genre [Adventure](#), [Platformer](#)
Made with [Unity](#)
Tags [3D](#), [Atmospheric](#), [Cute](#), [Funny](#), [nature](#), [Relaxing](#), [Short](#), [Walking simulator](#)
Average session [About an hour](#)
Languages [English](#)
Inputs [Keyboard](#), [Mouse](#), [Xbox controller](#), [Playstation controller](#)
Accessibility [Subtitles](#), [Configurable controls](#)
Links [Steam](#), [Homepage](#), [Soundtrack](#), [Twitter](#), [Steam](#)
Mentions [itch.io Recommends: cults and relaxation...](#), [Hit 2020 running with a list of our favo...](#), [Announcing the itch.io Summer sale and S...](#)

Prior work focused on other distribution platforms



Google Play



App Store



Steam



Nexus Mods



CURSEFORGE

Our study is the first to mine the **itch.io platform**



to help indie game developers

Prior work focused on other distribution platforms



Google Play



App Store



Steam



Nexus Mods



CURSEFORGE

Our study leverages data from both Steam and Itch.io



Steam

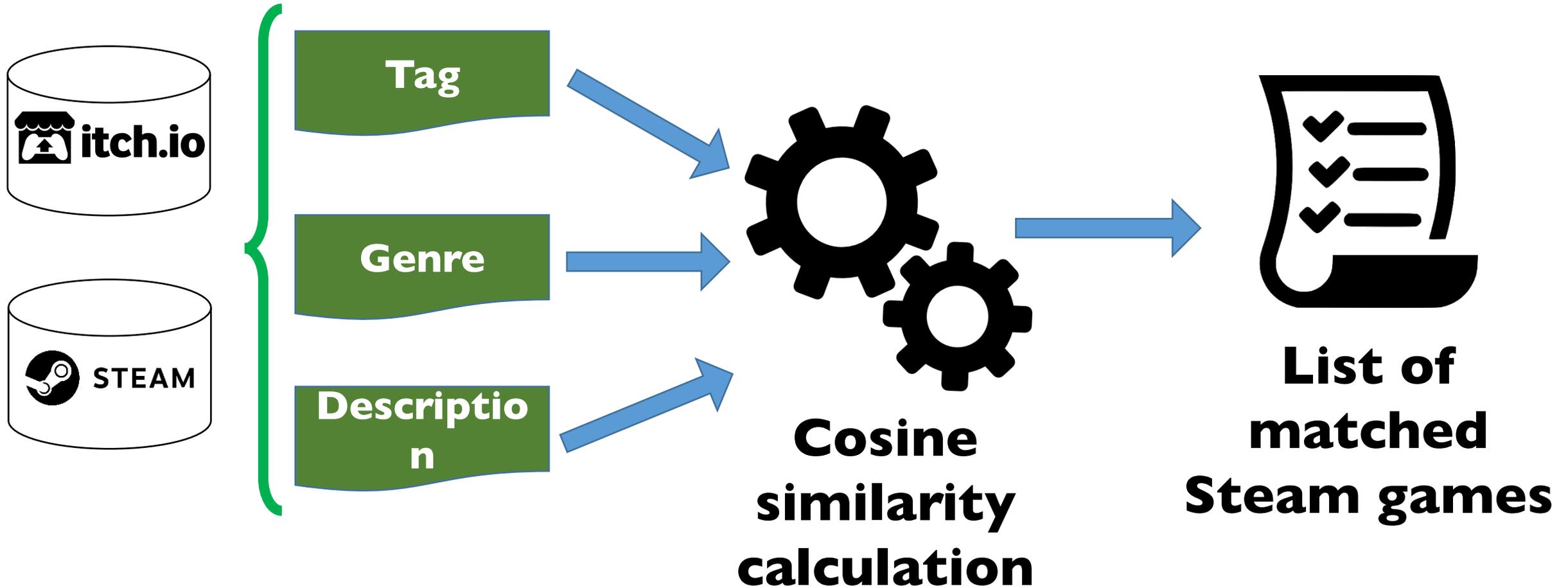
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To help indie games developers

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Prior work focused on other distribution platforms



Google Play



App Store



Steam



Nexus Mods



CURSEFORGE

Our study leverages data from both Steam and Itch.io



Steam

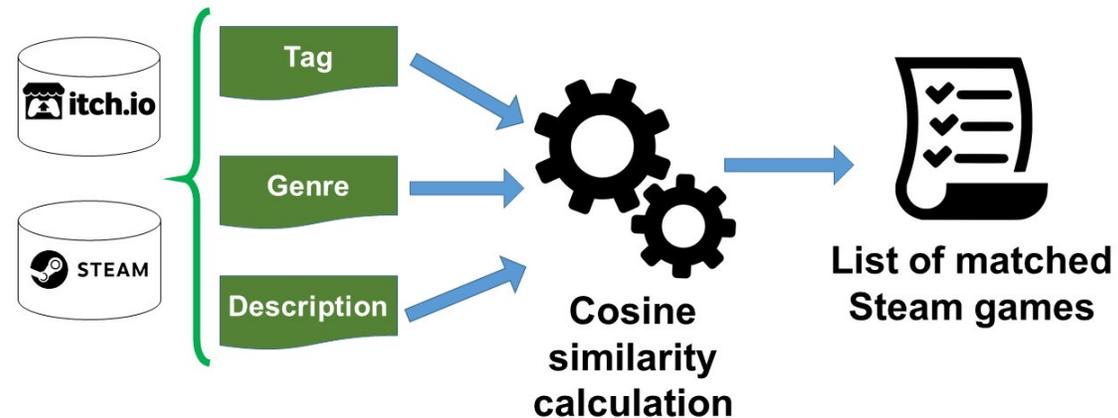
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To help indie games developers

4

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



8

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

Prior work focused on other distribution platforms



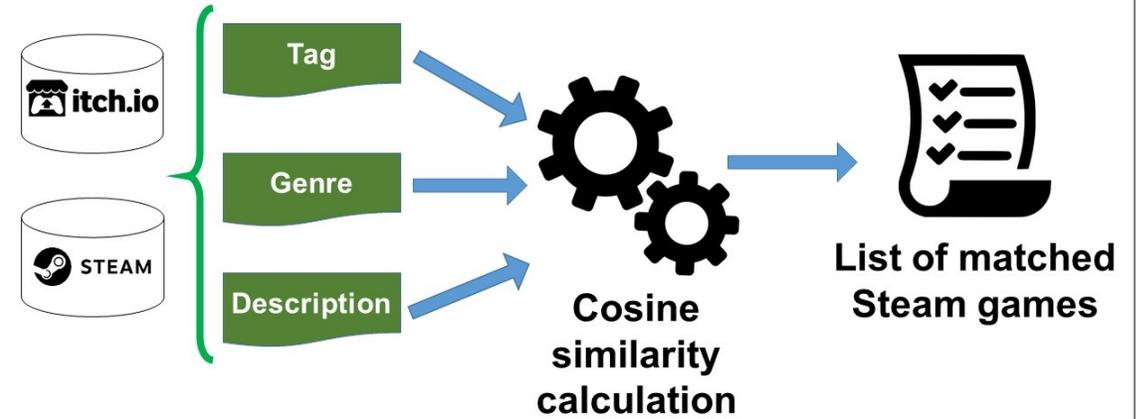
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- 💡 Limit the range of the recommended indie games' popularity

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