

Hypegames with Recommendation System

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Abstract: Hypegames with Recommender Systems will be the one site for all your gaming needs. The main idea behind Hype is to be able to provide people with a single place where they can find any game they want to play. Irrespective of the platform.

Gaming industry has become one of the largest growing industries worth \$156.76 billion and about 340 million gamers at any given time.

Ever since the flash media player was disbanded, making all the web applications unavailable, including a lot of games which people loved to play and pass their time. For example, Pocket Tanks, Crazy Taxi, Age of War, this is the Only Level, Shift Heads (All of them), Earn to Die, Fancy Pants Adventures, The World's Hardest Game, and many-many more. Even though some of them have a downloadable version available now but most of them are still not available.

Flash Games still hold a special place in the hearts of many gamers who grew up or were online during the early to mid-2000s. Anybody into the casual gaming scene could tell you that you were spoiled for choice. There were hundreds of developers, dozens of publishers and a seemingly limitless supply of new games daily. Best of all, there were no micro-transactions, no pay walls, and no downloads. As long as you had flash which was standard back in the day you could scroll through and play for as long as you wanted.

The main objective behind Hypegames with Recommender System is to bring back the games which people loved to enjoy in their free time, without them having to download each of them individually. With the help of the Hypegames with Recommender System people won't have to worry about getting too distracted because of the game they would have to download, instead they can access it whenever they want on the internet. This would not only save the computer memory but also give people access to multiple different games.

Recommender System

The most important section of our project is the introduction of a **Recommender System**, which will use Data Science, Machine Learning and Artificial Intelligence to do its tasks. The objective of this system is to recommend the user different games based on the games he has previously played.

Real World Uses

Such Recommender system are used world-wide. Amazon uses it to recommend the customers similar items to buy, based on their search history. Google uses it to show us different advertisements based on our previous searches.

Future of Recommender System

In future our Recommender system may be able to even recommend people, **In Game Friends**, which are people who have similar gaming preferences as themselves.

1. INTRODUCTION

Studies show that people who play video games may get a small

boost to their reading and visual-spatial skills. At the heart of every video game is a challenge. Some games can be mindless, like Space Invaders. But many others – from puzzles and mysteries, to managing virtual cities or empires – offers people the chance to take on a problem and work to find a solution. People who play these kinds of games improve in the three areas: planning, organization, and flexible thinking.

Some people have trouble fitting in and working as a team. Video games can sometimes be a refuge for them to find people to connect with in positive way also helping them to learn and work in team. In our busy lives, games offer virtual playdates with real-life friends.

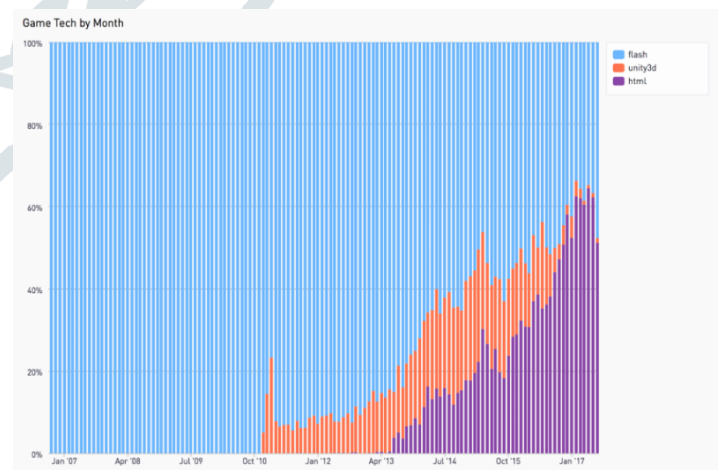
The video game industry is growing by leaps and bounds, much faster than traditional sports and entertainment. There are lots of careers in this growing industry – careers like coding, marketing or running events or even being a professional eSports player.

Those are some benefits of gaming. And Hypegames with Recommender System is just a small gateway of introduction of gaming to people who are stressed and under a lot of pressure of work.

1.2 How online games used to work?

Flash is a multimedia platform owned by Adobe. It used to provide interactive content in the browser to the users, which HTML wasn't designed for, like play games and watch videos. Now after year of development HTML has finally "**caught up**", so to speak, with the everyday needs of the users, and Flash has been "**discontinued**" in major browsers.

According to the data collected from Google Chrome users, Flash was used in almost 80% of all the websites in 2014, but 4 years later (in 2018) it got reduced to a mere 8%. YouTube ditched Adobe Flash as the default media player in 2015.



Starting 2010, game developers began rapidly transitioning to HTML5. Flash was discontinued by both Mozilla Firefox and Google Chrome by the end of 2020. Now users are unable to use Flash in-browser, even after explicitly turning it on in their

browser settings (which was a must to use Flash before).

2. TYPES OF RECOMMENDATION SYSTEM

Recommendation systems are of two types, Personalized and non-personalized. Personalized recommendation systems are those in which the group of different users is receive different suggestions where as in non-personalized recommender systems all users get same suggestions. According to J. Ben Schafer, Joseph Konstan, John, non-personalized recommendation systems are automatic because in these systems recommendations are not based on customers so these systems doesn't recognize the users from one session to another and these systems requires a physical storage. Recommendation systems are grouped into these categories-Content Based Filtering, Collaborative Filtering and Hybrid Systems. All the techniques are using in different platforms and they have their advantages and disadvantages. The paper will describe all the techniques with their advantages and limitations in the following sections.

Content Based Filtering: According to Po-Wah Yau and Allan Tomlinson, Firstly the quality of item is analyzed and after that the properties of product are matched, for this the present database is used. In content-based filtering techniques, the items are described with the help of keywords. Content based filtering algorithms predict the item that the user liked in the past and according to the rating of user the items are recommended. In content-based filtering the quality of the product or services are utilized for recommendation. For an active user content-based filtering techniques provide transparency. In content-based filtering the system compares the profile of the user with the content (item) and then find similar item and suggest to the user. According to a text classification survey by Mladenic, in the technique of content-based filtering the similar items are searched by the algorithm in the system, then the system constructs a model based on user interest. This model generates the recommendation. The following diagram clearly shows that how the content-based filtering algorithm works in the e-commercial websites.



Fig.1 Content Based Filtering

The merits of using content-based filtering are that these techniques are less cumbersome because they provide user independence with the help of rating used by the user. For a new user content-based filtering techniques are good whereas the limitations of content-based filtering are that sometime it can be suggest same type of items this is called an over specialization problem and in case of a user does not give rating or feedback then it is difficult to suggest any item or suggestion may be wrong.

Collaborative Filtering: In 1992, "Collaborative Filtering" was invented by Goldberg et al., they conclude that for humans the process of information filtering has become very effective. The meaning of word collaboration is that people collaborate to help each other to complete a task. In collaborative filtering techniques, data and information is collected by the system (database) from different users and then based on likes and dislikes of the user the results are compared and similar item will be suggested. In the methods of collaborative filtering the interest of one person is compared with the other user's interest and then similar items are suggested to the user.

According to G. Gupta and R. Katarya, Collaborative Filtering is a technique in recommender systems in which the recommendations are dependent on the user's neighbors and this technique use the concept of matrix factorization in which a matrix contain the users, items and the rating provide by the item with the different kind of users. These techniques are used in many kinds of e-commercial platforms and provide a better experience to suggest contents (items) than other techniques. The following diagram easily defines the working of collaborative filtering techniques-

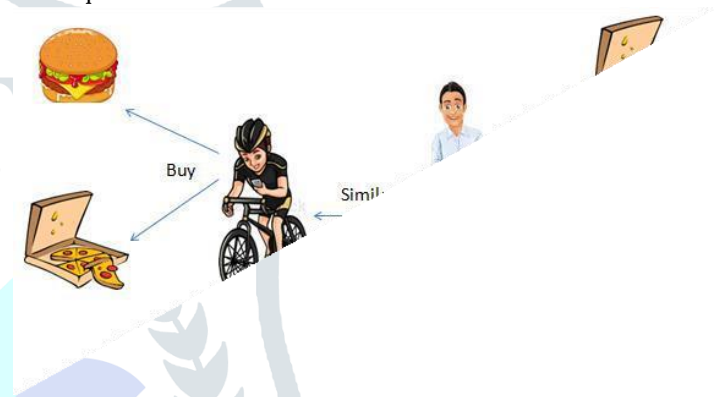


Fig. 2 Collaborative Filtering

Hybrid Systems: In content-based filtering technique, the algorithm is based on contents of items and collaborative filtering technique algorithm combines the relationship between user and item. Both of the approaches of recommendation system are suffering from some limitations, this is a big issue to predict better recommendations to the user. Hybrid systems are introduced to overcome the main limitations of these both techniques. These systems are made with the combo of content based and collaborative filtering techniques and have advantages of both the techniques. With the use of hybrid systems, the quality of recommendations is improved.

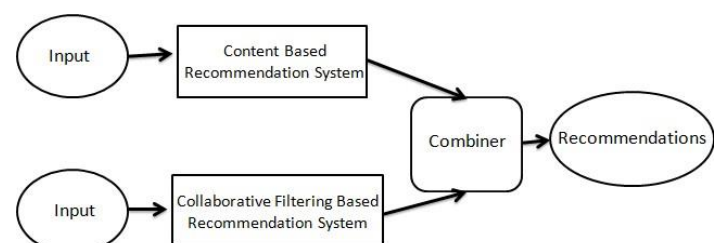


Fig. 3 Hybrid Recommendation System

3. RECOMMENDATION SYSTEM- A LITERATURE REVIEW

S. No.	Title of the Paper	Key Points	Conclusion
1.	A Case-Based Recommendation Approach for Market Basket Data.	CF; CB; AR (Association Rule); CBR (Case-Based Reasoning)	After compared the performance of developed RS conclude that CBR is the good method in case of transactions.
2.	Recommender Systems: An overview of different approaches to recommendations	Recommendation System; Information Retrieval System; CF; CBF; Hybrid Filtering	The three approaches of recommendation system and their advantages and disadvantages.
3.	Recommendation analysis on Item-based and User-based Collaboration Filtering	IBCF; UBCF; Recommender System	IBCF and UBCF with implementation metrics, and conclude that IBCF provide better results than UBCF.
4.	Recommender Systems Handbook. Springer.	CF; CB; Multi-criteria recommender; Robust CF Neighborhood-based	In the unique approaches, hybrid robust filtering methods are better.
5.	Towards privacy in a context-aware social network-based recommendation system	Content aware; social networking; privacy	Focus on protecting data and request for data, at the point of data collection.
6.	A study of hybrid recommendation algorithm based on user.	Personalization; recommendation technology; collaborative filtering; hybrid algorithm	Hybrid algorithms are generating the results according to user's rating and history record.
7.	Recommender systems in e-commerce	Electronic Commerce, cross-sell, up-sell, mass customization	The ideas of new applications in the field of recommendation systems in e-commerce sites.

3. Unity3D

Unity is a cross-platform game engine developed by Unity Technologies, first announced and released in June 2005 at AWDC (Apple Inc.'s Worldwide Developers Conference) as a Mac OS X-exclusive game engine. The engine has since been gradually extended to support a variety of desktop, mobile, console and virtual reality platforms. It is particularly popular for iOS and Android mobile game development and used for games such as *Pokémon Go*, *Monument Valley*, *Call of Duty: Mobile*, *Beat Saber* and *Cuphead*. It is considered easy to use for beginner developers and is popular for indie game development. The engine can be used to create three-dimensional (3D) and two-dimensional (2D) games, as well as interactive simulations and other experiences. The engine has been adopted by industries outside video gaming, such as film, automotive, architecture, engineering & construction.



Fig.4 Timmy the Runner (under development)

Creators can develop and sell user-generated assets to other game makers via the Unity Asset Store. This includes 3D and 2D assets and environments for developers to buy and sell. Unity Asset Store launched in 2010. By 2018, there had been approximately 40 million downloads through the digital store. Unity has been supporting not only gamers for thousands of games but also Big Game Developing Companies like, *Activision (Call of Duty: Mobile)*, *Respawn Entertainment (Apex Legends)*, *Riot Games (League of Legends, Valorant & Arcane)*.

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5. CONCLUSION

If there's anything we can learn from the ubiquity of smart phones, it's that people prefer to have an “all-in-one” experience, with smartphones consolidating the calculator, notepad, GPS, phone, and pager. A similar pattern can be observed with the browser. After all, could we ever have imagined the browser would replace our television set with platforms such as Netflix, Hulu, and YouTube? Or that social media platforms such as Discord, Twitter, and Facebook (accessible through the browser) would replace calling people on the telephone? It's not so far of a stretch, then, to believe the browser could also replace the gaming console. “IO Games” are really just the start, as WebGL opens the doors to developing easily-accessible applications without requiring plugins or downloads.