Lab 1 - FlixPicks Product Description

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21 Jan. 2024

Version 2 Draft

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1. Introduction

Streaming services are a type of platform that allow users to watch movies and television shows on demand at the cost of a monthly subscription. Streaming services are becoming increasingly popular on the market. For example, in 2022 streaming represented 34.8% of viewership, which is greater than cable television (Fischer, 2022). However, one of the biggest problems with streaming services is deciding on something to watch. On average, Netflix users spent 17.8 minutes a day browsing for something to watch in 2016 (Moscaritolo, 2016). Another study conducted in 2020 revealed that users spend 187 hours a year just searching for content to view, or about 30 minutes a day (Ward, 2020). Combine this with the fact that there are over 200 streaming platforms to pick from (Cook, 2023), and many people are subscribed to more than one streaming service, and there is an issue to be solved. Finding entertaining media is becoming increasingly tedious due to the barrage of content users must navigate through. Additionally, streaming is an isolating process. It isolates one from the social experience of going to a movie theater with their friends or family. If there was an application that allowed users to see all of one's subscriptions in one place, help users find a show to watch, and help enhance the social experience of watching movies at home, it would be a convenient solution to all these issues. FlixPicks is that solution.

2. FlixPicks Product Description

The goals of FlixPicks are to solve the problems of streaming indecisions by offering features to help users recommend and select content from streaming services. FlixPicks also offers an overlay that provides user-generated comments and shows the most replayed parts of a show or movie to enhance the social experience of streaming.

2.1 Key Product Features and Capabilities

FlixPicks is an application that has many different features that allow users to help solve the issues that come with streaming content. Users may choose to have limited access to guest features or sign in to access all the features. Guests can only see a generalized list of trending movies and use the CineRoll feature to pick a random movie. Logged in users can create a taste profile, which allows them to pick movies they like from a list to get recommendations for similar movies and genres. This taste profile can be reset at any time.

Logged in users can also see a library of content available to them from the streaming services that they are subscribed to, and it will recommend content outside of that library to entice the user to explore different streaming services. In addition to the general list that guests can see, users with an account will also be able to have a list of recommendations based on their taste profile. Logged in users can use the CineRoll function to select a random movie, or they can select a list of movies and have one of those chosen for them with the CineWheel feature.

The CineWheel feature is great for groups of people, as each person could select a movie and it could choose randomly between them.

The CineMap feature is another feature limited to logged in users. It is an overlay that will go over a movie or show being watched from a streaming service. It will allow the user to see hotspots, or the most re-watched parts of the media, and view comments other FlixPicks users have left about the movie. These features serve to help users find new media and have a more customized experience using streaming services.

2.2 Major Components (Hardware/Software)

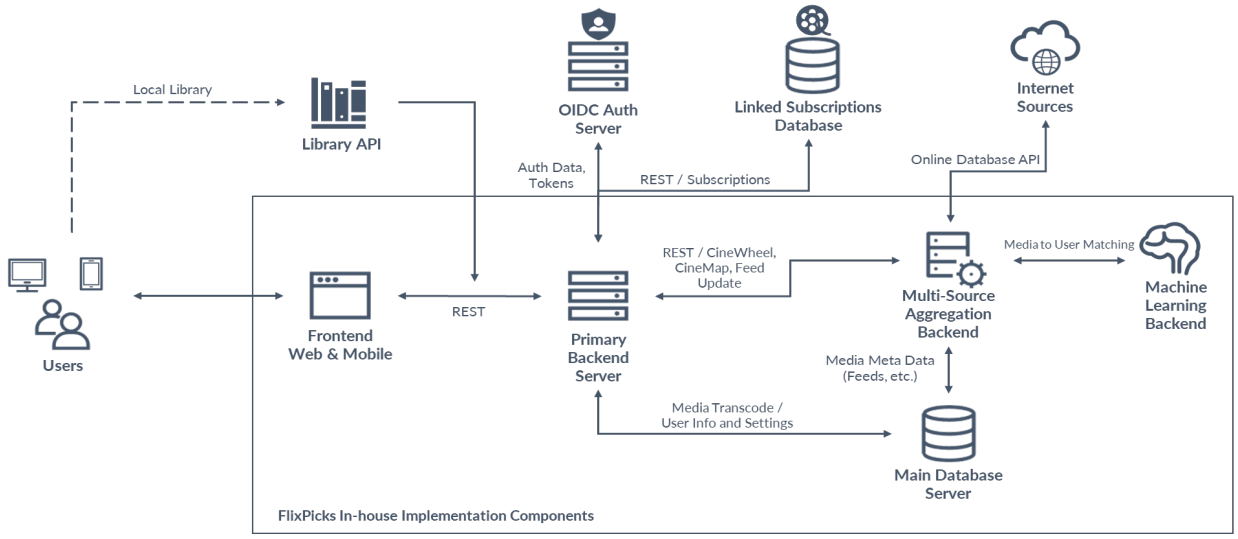
FlixPicks is supported by several different types of hardware. To use the FlixPicks website or extension for desktop computers, a computer with internet connection and a modern

web browser that supports the extension would be needed. The extension is supported by Chromium-based web browsers, such as Google Chrome and Microsoft Edge, and Firefox, as they both have compatible extension formats. There is also an app for iOS and Android and for smart televisions.

For software, FlixPicks uses many different things to meet the various requirements. The website is written in HTML, CSS, and JavaScript, and the browser extension is solely JavaScript. The app is written in Swift for iOS and Apple TVs, and Kotlin for Android devices and Android smart TVs. The API it uses to generate information about the shows and movies that are streaming is from the Youtube API for Youtube movies and from a third-party provider to get information from Netflix and other popular streaming services. The application server uses Apache Tomcat, while the database server uses MySQL Server. To run machine learning services for the recommendation algorithm, an AWS server dedicated to machine learning for these types of algorithms called Amazon Personalize is being used. The version control system is Git, with the repository being GitHub. For managing the project and tracking issues, GitHub and functions provided by the VSCode and Eclipse IDEs are used. Figure 1 shows the software components of FlixPicks.

Figure 1.

FlixPicks Major Functional Component Diagram



3. Identification of Case Study

FlixPicks targets a couple different demographics. The main target audience is people who are subscribed to multiple streaming services who have trouble deciding on what to watch. Other target audiences include people who are only subscribed to one service, groups of friends having trouble picking a movie between them, and people looking to find new content. These groups use FlixPicks to get recommendations on what to watch. Additionally, FlixPicks can benefit other users such as representatives of streaming services who wish to collect analytics on what people watch and watch services they are subscribed to, and people who are not subscribed to any streaming services that want to have help picking one.

FlixPicks also has features outside of just getting recommendations on what to watch. It can pick a movie randomly from a list of suggestions. Users that are logged in to an account can make a taste profile that tailors recommendations to them based on what movies and genres they like. It can also provide more generic recommendations such as what's currently popular.

FlixPicks also can help someone decide on what streaming service to use, as it recommends content on all the streaming services one is subscribed to and will give recommendations outside of that as well.

4. FlixPicks Prototype Product Description

The FlixPicks prototype is a proof of concept that will demonstrate the CineMap overlay functionality in the form of a browser extension. A mockup website will also be made allowing a demonstration user to log in and use the CineWheel and CineRoll functions.

4.1 Hardware

The hardware required by the prototype is any device with a modern web browser capable of running the extension. To make the prototype, the web and database server provisioned from the Old Dominion University Computer Science department is being used.

4.2 Software

For software, Docker containers for Apache, SQLite DB, and Python are used to make the backend and the database along with HTML, CSS, and JavaScript for the frontend. The VSCode and Eclipse IDEs are being used with GitHub to track issues and serve as a repository for the code.

Figure 2.

FlixPicks Real World Product Versus Prototype Features Table

Category	FlixPicks Feature	RWP	Prototype
Subscription Service Management	Account/Subscription Service Management	Fully Implemented	Fully Implemented
	User Account Creation/Registration	Fully Implemented	Fully Implemented
	User Subscription Integration	Fully Implemented	Partially Implemented
Taste Profile	Taste Profile	Fully Implemented	Fully Implemented
	Taste Profile Form Pop-Up	Fully Implemented	Fully Implemented
	Taste Profile Content-Based Filtering	Fully Implemented	Fully Implemented
	Taste Profile Collaborative Filtering	Fully Implemented	Fully Implemented
Reccomendations	Recommendations	Fully Implemented	Fully Implemented
	Filtered Recommendations (Criteria based)	Fully Implemented	Fully Implemented
Filtering	Browse/Search Filtering	Fully Implemented	Fully Implemented
CineRoll	CineRoll	Fully Implemented	Fully Implemented
CineWheel	CineWheel	Fully Implemented	Fully Implemented
CineMap	CineMap Overlay	Fully Implemented	Fully Implemented
	CineMap Commenting	Fully Implemented	Fully Implemented
	CineMap Export Data	Fully Implemented	Partially Implemented
	CineMap Data Analyzing	Fully Implemented	Partially Implemented
Analytics	Data analytics testing	Fully Implemented	Partially Implemented
	Analytics	Fully Implemented	Partially Implemented
Simulation	Simulation	Eliminated	Fully Implemented
Movie Info	Create/edit Movie Info	Eliminated	Fully Implemented
Reporting	Summary reporting for user/stakeholders	Eliminated	Fully Implemented
Feedback	Feedback	Fully Implemented	Partially Implemented

4.3 Prototype Features and Capabilities

In the prototype, guest users will not be able to see general recommendations from streaming services based on popularity. Guest users will be able to see all available features but can only use the CineWheel function. Registered users can see and use all the available features, including CineRoll and CineMap, and will have a taste profile. FlixPicks will analyze a survey taken by the user to create initial recommendations and use collaborative filtering to give better recommendations as the user continues to use FlixPicks. The prototype will have partial support for analytics and user feedback.

4.4 Prototype Development Challenges

The development of the prototype will have challenges that need to be overcome. Getting the database set up and configured, along with pulling data from the third-party APIs, is a key feature that will be challenging to implement. Another challenge that must be overcome is

learning to use collaborative filtering and other machine learning tools. Identifying and handling time conflicts must also be done for the development team to work effectively together.

5. Glossary

Android: An operating system for mobile devices manufactured by Google, Samsung, and other companies.

Apache Tomcat: An open-source implementation of the Java Servlet, Java Server Pages, Java Expression Language, and WebSocket technologies. Tomcat provides a "pure Java" HTTP web server environment in which Java code can run.

API: An application programming interface is an interface that allows for interactions between multiple software applications or mixed hardware-software intermediaries.

CineRoll: A feature that selects a movie at random or based on the user's taste profile.

CineWheel: A feature that randomly selects a movie from a list of movies selected by the user.

CineMap: An overlay that goes overtop of media streamed from a streaming service to provide comments and show the most replayed parts.

CSS: Cascading style sheets is a markup language used for customizing the appearance of a document written in another markup language such as HTML. CSS is a cornerstone technology of the world wide web, alongside HTML and JavaScript.

Git: Software for tracking changes in any set of files, usually used for coordinating work among programmers collaboratively developing source code during software development.

HTML: HTML is the standard markup language for creating web pages. HTML elements tell the browser how to display the content and define the structure of web pages.

IDE: An integrated development environment is a software application that provides comprehensive facilities to computer programmers for software development.

iOS: An operating system used for mobile devices manufactured by Apple Inc.

JavaScript: A scripting or programming language that allows you to implement complex features and interactivity on web pages.

MySQL: An open-source relational database management system.

Netflix: A subscription-based streaming service that allows members to watch TV shows and movies on internet-connected devices.

Streaming: A method of transmitting or receiving data over a computer network as a steady, continuous flow, allowing playback to start while the rest of the data is being received.

Taste Profile: A profile made for a user by the FlixPicks service to tailor recommendations to them.

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