Lab 2 - FlixPicks Prototype Product Specification

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Table of Contents

List of Figures

List of Tables

1. Introduction

A 2016 study revealed that Netflix users spend 17.8 minutes on average searching for something to watch (Moscaritolo, 2016). Many shows are 20 minutes long. That means on average a user misses one episode every time they search for new content. The indecision caused by too many options is referred to as Choice Overload. Netflix is just one of over 200 streaming platforms (Cook, 2023). With so many services and shows to choose from the problem of finding desirable content is exacerbated. Browsing for content in every individual service takes too much time away from consumers. Many consumers pay for multiple streaming services to expand their options or watch exclusive content. While this is desirable it adds complexity when the person starts the search for a new show or movie. Half of the people who subscribe to multiple services tend to stay subscribed without using the service (Glover, 2023). The price of streaming content varies from two dollars with ads to 20 dollars or more per month per service (Clark, 2022). There is a lot of potential for consumers to waste money.

Streaming service consumption in the United States represents 34.9 percent of the total television viewership (Fisher, 2022). Many Americans utilize streaming services as their primary media consumption but must face the challenge of finding their next piece of media. Additionally, figuring out what the next movie or show will be for a group is a challenge.

The solution to this problem is FlixPicks a cross-platform app that allows for making quick media decisions by filtering content from every movie and television show across all platforms. The application allows users to filter content by their streaming service to allow users to see what media is relevant and available to them. FlixPicks recommends content for users based on media interactions. Users can engage with media through comments and ratings improving future recommendations.

1.1 Purpose

FlixPicks is a desktop web application designed to be an cross streaming platform library and movie recommendation service. The goal is to allow users to find content to watch that is relevant to them more easily. The recommendation system works through tracking user activity through watch history and Reactions. FlixPicks has a Library of movie titles and data on the application. FlixPicks uses publicly available content libraries to populate and update the Library.

1.2 Scope

The FlixPicks prototype demonstrates the key features on a smaller scale. The prototype has limited movies that it has access to (Sadler, 9). Fake users accounts with simulated media habits are used for testing and demonstration of innovative features. The simulated accounts are accessed and manipulated to see how features react to input to solve the problem. Any real user activity is tracked, and fake user activity is simulated. The prototype generates recommendations based on patterns made my multiple user activities.

1.3 Definitions, Acronyms, and Abbreviations

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.

CineMap: CineMap is an optional overlay that allows FlixPicks users to interact, make comments, and view other users' interactions. It shows a timeline that highlights points of interest throughout a movie based on activity.

CineRoll: CineRoll is a FlixPick's feature that generates random selections based on a user's interests. CineRoll uses the Taste Profile to generate selections for a user based on their recommendations.

CineWheel: CineWheel is a FlixPick's feature that randomly selects from a set of user inputted choices. CineWheel is a tool to use for when a user or multiple users in a group are indecisive.

CSS: Cascading Style Sheets is a style sheet language used for customizing the appearance of a document written in a 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: Hyper Text Markup Language. 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.

Stakeholders: A person with interest or concern in something, especially a business.

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 processed.

Taste Profile: A user profile on FlixPicks that has access to their subscriptions, recommendations, and other settings. The taste profile recommendations grow as a user makes selections on the website and can be reset at anytime by the user.

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1.5 Overview

The main purpose of FlixPicks is to allow users to see all their available content in one master library. Additionally, the app shows the user what other services offer if they want to explore their options. FlixPicks allows users to leave comments and interact with media. FlixPicks keeps track of user's content habits such as shows and movies they interact with and user watch history. The user activity information collected allows FlixPicks to generate recommendations for new content on the services they use. Additionally, FlixPicks recommends options from services they are not subscribed to.

2. General Description

The FlixPicks prototype includes most of the functionality of the real-world version. The prototype uses a smaller sample size of subscription services. The FlixPicks prototype is designed to demonstrate the key features of the final product. Simulation is used to show different types of users interacting with app for testing and user interaction risk reduction. The prototype has a limited number of movies in its database to mitigate dependency on APIs and streaming companies. Passwords are hash mapped to mitigate user unauthorized user access.

2.1. Prototype Architecture Description

Figure 1 illustrates the major functional component diagram (MFCD) for the FlixPicks prototype. The main difference between the real world MFCD and prototype MFCD is that the prototype does not use a library API. To reduce the scope of the project the prototype is only a web application. This reduction is due to the time constraints of the project as well as to allow for time to build the user simulation.

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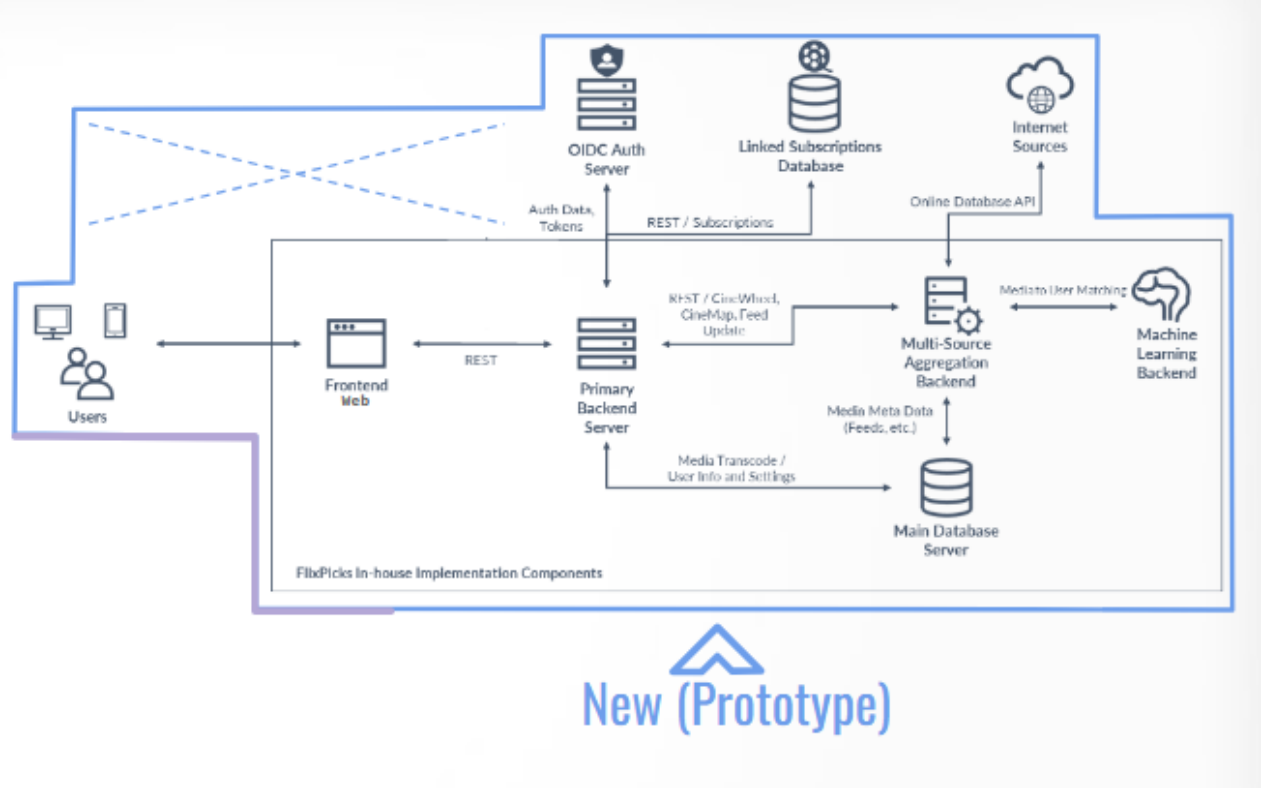
Figure 1

FlixPicks Major Functional Component Diagram



The web application can be accessed from any computer with a Chromium browser that has access to the Old Dominion University network. The prototype components are stored on the Old Dominion University servers. Alternatively, the Docker LAMP containers can be downloaded locally to test or demonstrate functionality.

The software used to create the prototype includes Docker-Lamp, Linux OS, Apache HTTP server, SQLite, and Python. The front-end uses a combination of HTML, CSS, and JavaScript so users can interact with the web app. Project management and version control are handled through Git and GitHub. VS Code and Eclipse are the IDEs used to write the prototype.

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2.2 Prototype Functional Description

The key Real World Product features of FlixPicks are included in the prototype. The key features being Cineroll, Cinewheel, Hotpicks, and the recommendation system. Additionally, to demonstrate the key features user accounts, a movie library, and analytics are partially implemented. The prototype demonstrates the solution of improving the time to find a movie across multiple streaming services based on user watch history. The recommendation algorithm collects users' Reactions and cross references it with other users to recommend movies. Cineroll and Cinewheel are both fully functional, but the database of movies is limited to 300 different titles. Users are faked for the purposes of demonstration. Table 1 describes the features that are included in the FlixPicks prototype.

Table 1

FlixPicks 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
	User Tier Level Feature Access	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
Recommendations	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

FlixsPicks is a user driven application and for that reason users are simulated in the prototype. The database of movies is limited due to lack of available web API interface at the time of development.

2.3 External Interfaces

The FlixPicks prototype runs on a host server and is accessed by users on their computer. APIs are utilized in order to access movie data.

2.3.1 Hardware Interfaces

The prototype requires a computer running on any OS that supports a chromium web browser. A mobile and TV applications are not part of the prototype. A mobile device using a web browser may still be able to access the prototype, but the formatting of the UI for mobile devices is not within the scope of the project.

2.3.2 Software Interfaces

The prototype application is a mix between Java Script and Python. The user interface is handled through html pages generated using templates. The content on the html templates are generated using a python script along with the backend database. Animations are created using Java Script and Cascading Style Sheets. Docker is utilized to build and run the prototype application. An external API called TMDB is used to add movie information to the backend database.

2.3.3 User Interfaces

The FlixPicks prototype includes user interfaces for account management, browsing and searching, Cinewheel, Cineroll, and the Media Info page. The Cinewheel feature allows for users to submit a list of movies into it and spin the wheel. The Cineroll button allows users to click to a random movie from their recommendations.

2.3.4 Communications Protocols and Interfaces

The frontend and backend communicate to display the content onto the html templates. The backend requests movie information using TMDB to populate the media library. Docker connects the separate containers for frontend, backend, and recommender. The Quick Click link redirects to the IMBD page where users can select their streaming service.