Lab 2 – FlixPicks Product Specification

Cody Rabie

Old Dominion University

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Professor J. Brunelle

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1 Introduction

Streaming is the most popular fee-based medium for consuming media content at home. Streaming represented 34.8 percent of viewership in August 2022, surpassing cable television (Fischer, 2022). The projected annual growth rate for streaming is roughly nine percent, versus cable's projected annual growth rate of four percent (Raj, 2023). More than 200 paid streaming platforms exist as of September 2023 (Cook, 2023).

The large number of streaming platforms, combined with the large and differing media libraries, has created a time consuming browsing experience for subscribers in search for content to view. A study conducted in July 2016, established that Netflix users spend an average of 17.8 minutes browsing prior to selecting something to watch (Moscaritolo, 2016). Another study conducted in August 2020 reported that users spend up to 187 hours per year searching for desirable media (Ward, 2020).

The overwhelming amount of different streaming platforms, each with their own respective libraries, has created a problem for users called decision fatigue. Decision fatigue is a phenomenon in which a large amount of choices or decisions hinders the ability to make further choices (Natal & Saltzman, 2022).

Modern streaming often detaches viewers from the social aspects of the movie watching experience. Socializing during movies or shows during viewing requires extra applications such as Rave - Watch Party, and others. Time wasted, decision fatigue, choice overload, and an isolating streaming experience are all common negative traits of the current streaming service user experience.

FlixPicks solves all of these streaming experience problems. FlixPicks has three built in features, each addressing one or more of the common user experience issues. FlixPicks is

designed to provide a single inventory to see all of a users' streaming services, with built-in features that provide a social experience, eliminate decision fatigue, collect user experience data to improve recommendations across all platforms, and eliminate choice overload.

1.1 Purpose

The current large number of streaming platforms, combined with the large and differing media libraries, has created a time consuming browsing experience for subscribers in search for content to view. A study conducted in July 2016, established that Netflix users spend an average of 17.8 minutes browsing prior to selecting something to watch (Moscaritolo, 2016). Another study conducted in August 2020 reported that users spend up to 187 hours per year searching for desirable media (Ward, 2020).

The large number of different streaming platforms, each with their own respective libraries, has created a problem for users who subscribe to multiple platforms called decision fatigue. Decision fatigue is a phenomenon in which a large amount of choices or decisions hinders the ability to make further choices (Natal & Saltzman, 2022). Modern streaming often detaches viewers from the social aspects of the movie watching experience. Socializing during viewing requires extra applications such as Rave - Watch Party, and others. Time wasted, decision fatigue, choice overload, and an isolating streaming experience are all common negative traits of the current streaming service user experience.

FlixPicks solves all of these streaming experience problems. FlixPicks has three built in features, each addressing one or more of the common user experience issues. FlixPicks is designed to provide a single inventory to see all of a users' streaming services, with built-in features that provide a social experience, eliminate decision fatigue, collect user experience data to improve recommendations across all platforms, and eliminate choice overload.

1.2 Scope

FlixPicks is an online webpage/application that allows users to see an aggregated collection of streaming service content. The FlixPicks prototype showcases the important and innovative features to demonstrate feasibility on a larger scale. The prototype has a limited amount of movie data that is accessed to populate the user library. It is capable of accessing and modeling fake users with simulated inputs for testing and risk mitigation. The Taste Profile augments user specified preferences with an Apriori algorithm to provide users with recommendations. Each media viewed by a user is fed back into the algorithm to better populate recommendations. The three main features of FlixPicks are CineRoll, CineWheel, and CineMap. CineRoll selects a recommended content choice randomly for the user. CineWheel allows for manual input of media options and randomly selects from the inputted options for the user. CineMap overlays media content (if enabled) and allows for users to see/make time-stamped interactions while viewing.

1.3 Definitions, Acronyms, and Abbreviations

Administrator: A user who, beyond having access to the full slate of features a Registered user has and the data available to a Representative, can manipulate FlixPicks data.

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.

Apriori Algorithm: Association mining that allows for common patterns in a users watch history to be used to help suggest content for other users.

Choice Overload: The phenomenon that choosing between a large variety of options can be detrimental to the decision-making process.

CineFeatures: CineFeatures is the collective name of the three features in FlixPicks: CineRoll, CineWheel, and CineMap.

CineMap: FlixPicks extension that is enabled when a user is watching media. It overlays their media and allows the user to see and make their own time-stamped comments and reactions that are stored on the FlixPicks DB.

CineRoll: FlixPicks 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 and chooses one for the user. The user has the option to reroll if they aren't satisfied with the selection.

CineWheel: FlixPicks feature that randomly selects from a set of user-inputted choices. The user provides the feature with media options and the feature randomly selects from a maximum of ten options.

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.

Decision Fatigue: The fatigue from deciding what to watch can take the joy out of watching anything.

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

Guest: An unregistered user who has limited access to features offered by FlixPicks.

HotPicks: A micro-experience tile for showing popular and trending media. Dynamically creates the list upon page refresh. Available for registered users and guests.

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.

Library: Aggregated content that is shown to users. Guest users only have access to HotPicks but registered users can see aggregated content from HotPicks and their personalized recommendations.

Linked Subscriptions: User's subscription data that will be used to filter what media is shown in the Library, users can change this in settings if they want to only view their subscriptions.

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.

Quick Click: A link from FlixPicks that redirects the user to the selected streaming media.

Reactions: Small images that the user attaches to their comment to describe a variety of emotions that the user feels about the media.

Recommendation Algorithm: An algorithm that uses a dynamically built input library and information filtering system based upon the Taste Profile that provides suggestions for media content that is most relevant to a particular user.

Registered User: A user who completed registration and Taste Profile Survey, having full access to features offered by FlixPicks.

Representative: A user who is an affiliate of a particular streaming service who has access to non-account-specific data analytics of Registered Users.

Stakeholder: 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.

Streaming Service: A streaming service is a digital platform that delivers multimedia content over the internet, allowing users to watch or listen to it in real-time without downloading. Examples include Netflix, Spotify, and Disney+.

Subscription: A user's enrollment with a Streaming Service provider, providing them access to media available through the service.

Survey: A questionnaire to establish the initial information for recommendations in the Taste Profile.

Taste Profile: A user profile on FlixPicks that stores data about user streaming subscriptions, recommended media, and user preference information. As a user makes selections the Taste Profile recommendations become more refined to the users' preferences.

User Roles: Guest, Registered User, Representative, and Administrator are the user roles for FlixPicks.

Watch History: A comprehensive list of past content viewed by a user.

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1.5 Overview

This product specification provides the hardware and software configurations, interfaces, and features included in the FlixPicks prototype. The information in the remaining sections of this document provide a detailed description of the features required for the implementation of the FlixPicks prototype.

2 General Description

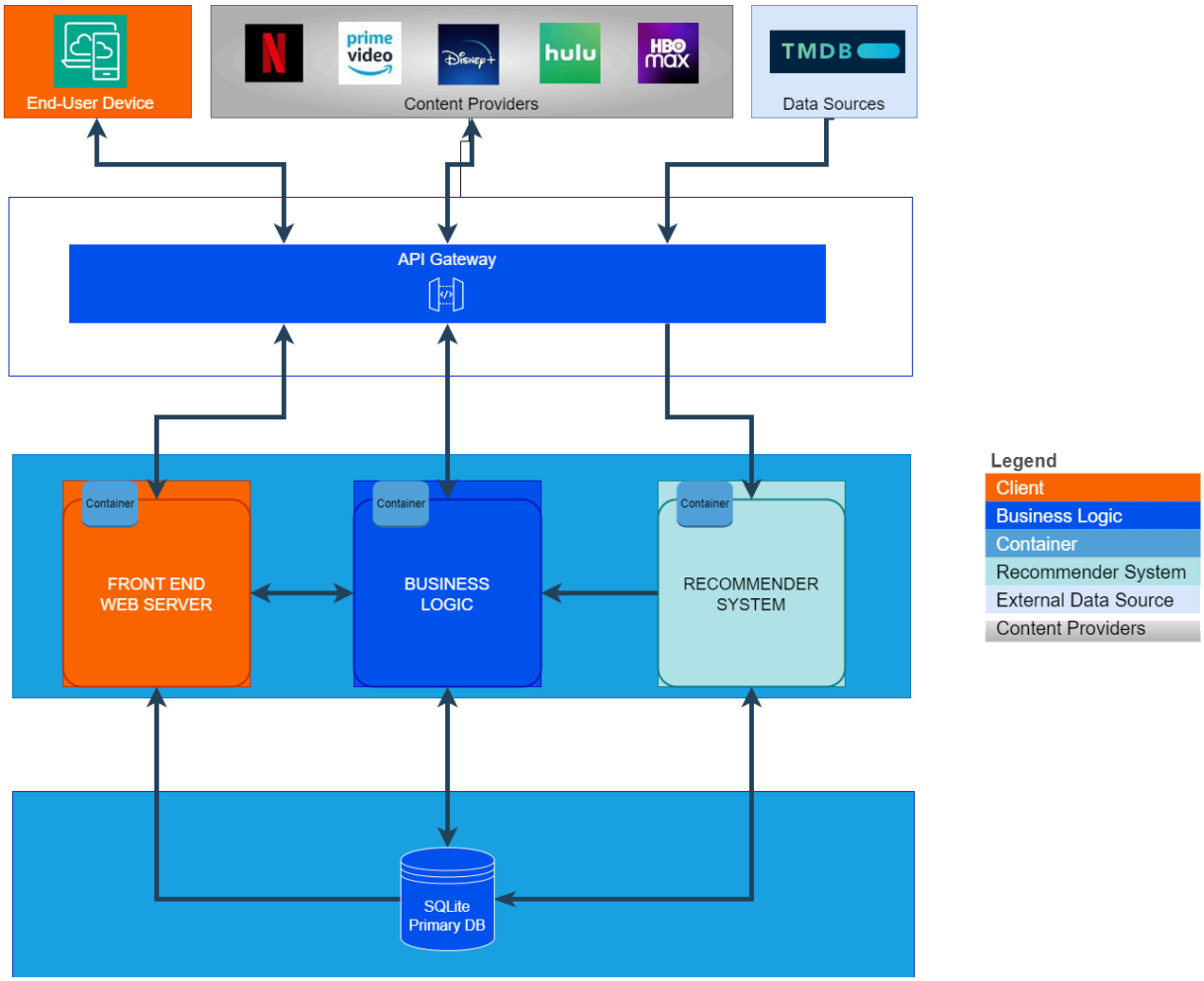
The FlixPicks prototype is capable of showcasing FlixPick's important and innovative features to demonstrate real world feasibility. The prototype models fake users, generated watch history patterns, recommendations, and risk mitigation strategy demonstrations. The prototype also includes working user interfaces for guests, registered users (localhost), and administrators (localhost:3000), with working implementations of the FlixPicks features (Taste Profile, HotPicks, Library, CineRoll, CineWheel, Watch History, and Settings).

2.1 Prototype Architecture Description

FlixPicks is structured with a front-end user interface, the back-end multi-source aggregation back-end, storage components, machine learning, database, and third party APIs. The Major Functional Component Diagram (MFCD) shown in Figure 1 illustrates the FlixPicks interfaces and interactions. The MFCD shows the interactions between TMDB API data source and content providers that the API Gateway accesses for media information.

Figure 1

FlixPicks Prototype Major Functional Component Diagram



2.2 Prototype Functional Description

FlixPick's main features are all either fully implemented or partially implemented. The features implemented in the prototype are defined in Table 2 under 12 different categories:

Subscription Service Management, Taste Profile, Recommendations, Filtering, CineRoll, CineWheel, CineMap, Analytics, Simulation, Movie Info, Reporting, and Feedback. The CineRoll feature randomly selects one option from an already generated recommended media list. The CineWheel feature allows for manual input of media options and spins an animated wheel to randomly select from these options. The CineMap feature overlays media during viewing, and allows the user to see/create time-stamped reactions and comments. The only features that are partially implemented are user subscription integration, CineMap export data, CineMap data analyzing, data analytics testing, and feedback. These features are still implemented, but not their full intended use. The core foundation of FlixPick's innovative features are demonstrated and proved useful through simulation.

Table 1

FlixPicks Feature Description and Prototype Implementation

Category	FlixPicks Feature	RWP	Prototype
Subscription Service Management	User Account Registration	Fully Implemented	Fully Implemented
	Account/Subscription Service Management	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 Survey	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
Movie Library	Browse/Search Filtering	Fully Implemented	Fully Implemented
	HotPicks	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	Partially Implemented
	CineMap Export Data	Fully Implemented	Partially Implemented
	CineMap Data Analyzing	Fully Implemented	Partially Implemented
Analytics	Data analytics testing	Fully Implemented	Partially Implemented
	Analytics	Eliminated	Fully Implemented
	Summary reporting for user/stakeholders	Eliminated	Fully Implemented
Simulation	Simulation	Eliminated	Fully Implemented
Movie Info	Create/edit Movie Info	Fully Implemented	Partially Implemented
Feedback	Feedback	Fully Implemented	Partially Implemented

2.3 External Interfaces

As a desktop application, FlixPicks uses various interfaces to achieve fundability and to allow demonstration of the prototype on desktop applications.

2.3.1 Hardware Interfaces

FlixPicks is specifically designed for personal computers which use Windows OS.

2.3.2 Software Interfaces

The FlixPicks prototype includes interfaces to databases, third party API's, and graphical tools or libraries.

2.3.3 User Interfaces

The FlixPicks user interface includes interfaces for guests, registered users, testers, and to the back-end database. The prototype uses a lesser amount of movie information than the RWP due to processing limitations and time constraints. Guests have the ability to see HotPicks and what the features are, but cannot use the features unless creating an account and logging in. Registered users see a Library of recommendations, HotPicks, and have the ability to use all features. Testers have the ability to see feedback from users and analytics. The database interface allows for simulation of users, recommendations, watch history patterns, and allows viewing of all FlixPicks databases including user information.

2.3.4 Communication Protocols and Interfaces

The TMDB third party API is used to collect movie information and the back-end FlixPicks API uses this information. The front-end makes calls using the FlixPicks API to retrieve user, movie, and other needed information for functionality.

Appendix A – Site Map