

# **Full Stack Web Development**

## **CinaVerse - Movie Watchlist Web Application**

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## 1. Introduction

In today's digital entertainment landscape, binge-watchers, students, and casual viewers often struggle to keep track of what they want to watch across multiple platforms. Existing solutions are either paid, lack personalization, or don't combine all the necessary features in one place. To solve this, our group proposes **CinaVerse**, a full-stack movie watchlist web application. Unlike other apps, CinaVerse not only integrates with the TMDb API to provide real-time movie search, details, and streaming availability, but also offers a centralized, user-friendly hub where users can track, categorize, and manage all their movie preferences without switching between different apps.

## 2. Problem Statement

Movie lovers often:

- Forget titles of movies they want to watch.
- Struggle to find where a movie is streaming.
- Lack a single, personalized platform to manage watchlists.

This fragmented experience makes it difficult to manage everything in one place. Even when some apps try to cover these needs, none of them successfully combine search, trailers, streaming availability, and personal watchlist management in one integrated platform. This gap highlights the need for a centralized, all-in-one solution where users can seamlessly track, search, and organize their movie-watching preferences.

## 3. Proposed Solution

Our solution is a web-based platform where users can:

- Search movies using the TMDb API.
- View details such as ratings, cast, and trailers.
- Add movies to a personal watchlist.
- Check streaming availability across platforms.
- Manage watchlists (update, delete, categorize).
- Authenticate users so that each person has a private list.

This app will be built using Node.js/Express (backend), Vue.js/React (frontend), SQLite/PostgreSQL (database), and TMDb API integration.

## 4. API Integration

We will use The Movie Database (TMDb) API for:

- Searching for movies by title.
- Retrieving detailed movie information.
- Fetching streaming availability data.
- In addition, multi-API support will be considered:
- JustWatch API can be used as a fallback if TMDb doesn't provide complete streaming
- We may also store frequently accessed results in the database to reduce API hits. (This optimization is especially useful if the application is deployed for long-term use.)

## 5. Features & CRUD Operations

*Table 1 - CRUD Operations*

Feature	CRUD Operation
User Registration	Create User
User Login	Read & Verify User
Update Profile	Update User
Delete Account	Delete User
Search Movies via API	Read Movie Data
Add Movie to Watchlist	Create Watchlist Entry
View Watchlist	Read Watchlist
Update Watchlist (e.g., mark as watched)	Update Watchlist
Remove Movie from Watchlist	Delete Watchlist Entry
Rate/Comment on Movie	Create/Update/Delete Review

## 6. Authentication & Authorization

Authentication will be enhanced beyond basic login:

- Google Login integration (OAuth 2.0) for easy access.
- Standard email/password login option.
- Additional features under consideration: password reset and two-factor authentication (2FA) for stronger security.

### Authorization:

- Each user will only be able to view and manage their own watchlists.
- Admin role (optional): manage user accounts or featured movie lists.

## 7. Database Requirements

Proposed tables:

- **Users Table** – stores user credentials and profiles.
- **Watchlist Table** – links users to their movies.
- **Movies Table** – stores locally cached TMDb movie data for faster access.
- **Reviews Table** – stores ratings/comments from users.
- **Log Tables** – track login activity and API usage for monitoring and analytics.

## 8. User Interface & Design Appeal

- **Modern UI:** Inspired by popular streaming platforms.
- **Responsive Design:** Works on desktop, tablet, and mobile.
- **Dark Mode Theme:** Optimized for movie browsing.
- **Interactive Elements:** Hover effects, smooth transitions, and posters with details.

## 9. Complexity & Technical Stack

- **Frontend:** Vue.js / React (responsive UI, API consumption)
- **Backend:** Node.js + Express (API, authentication, CRUD)
- **Database:** SQLite/PostgreSQL (persistent storage)
- **API:** TMDb API
- **Authentication:** JWT-based secure login
- **Deployment:** GitHub + Vercel/Netlify (frontend) and Render/Heroku (backend)

Complexities include:

- API data synchronization with local DB.
- User authentication & role management.
- Handling real-time updates to watchlist.

Deployment will be managed via GitHub, with proper commits, version control, and collaboration across the team. This ensures teamwork, and continuous progress tracking.

- Unlike simple CRUD apps, this project combines real API integration, authentication, and personalized recommendations.
- It allows students to learn end-to-end full-stack development with modern frameworks.

## 5. Iteration / Sprint Plan

We will follow an Agile methodology with short iterations (sprints). Each sprint focuses on completing a set of deliverables and will last two weeks, making the entire development cycle approximately 8 weeks.

Sprint	Duration	Key Deliverables
Sprint 1: Requirements & Design	Week 1–2	Finalize project requirements, create Figma mockups (signup, homepage, watchlist), set up GitHub repository, and decide final tech stack.
Sprint 2: Backend & Database Setup	Week 3–4	Implement Node.js + Express backend, design database schema (Users, Watchlist, Movies, Reviews), and integrate TMDb API for movie search.
Sprint 3: Frontend Development	Week 5–6	Build frontend using React/Vue, connect frontend with backend APIs, implement authentication (JWT + Google OAuth), and develop CRUD operations for watchlist.
Sprint 4: Testing & Deployment	Week 7–8	Perform unit and integration testing, optimize API usage, deploy frontend (Vercel/Netlify) and backend (Render/Heroku), finalize documentation, and prepare project presentation.

This ensures incremental progress, continuous feedback and clear deliverables at each stage.

## 10. Mockup Screens

### Design 01:

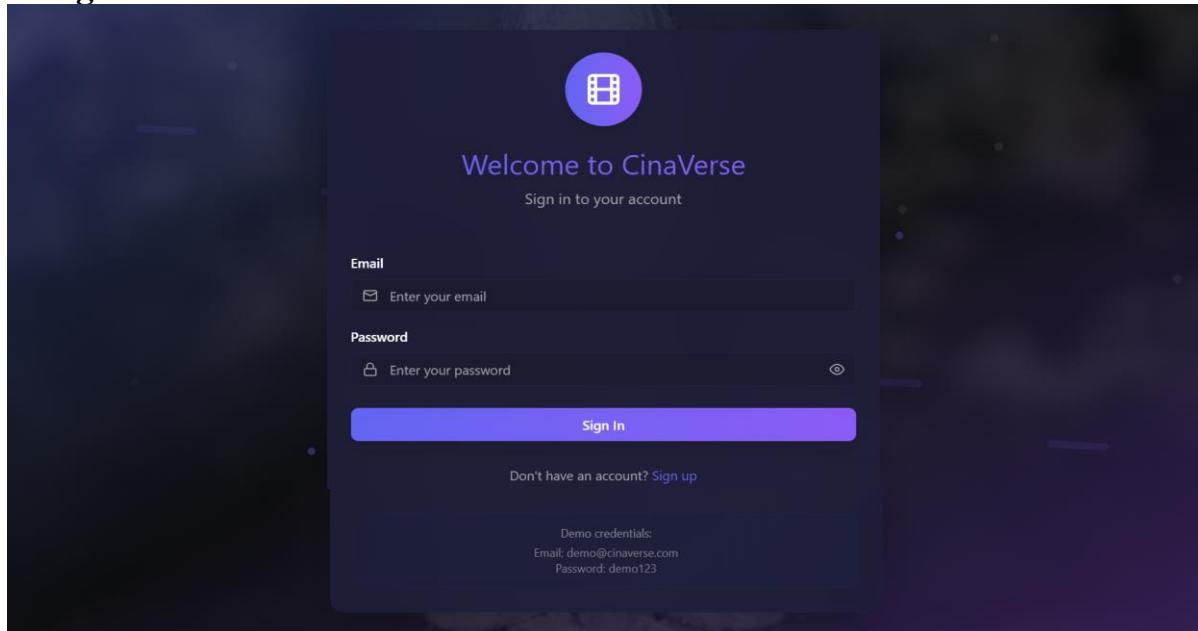


Figure 1 - signin page

**CinaVerse** Movie Universe

Search movies... Home Trending Watch Later Profile Welcome, Movie Lover

Featured Movie

# The Dark Knight

Batman raises the stakes in his war on crime with the help of Lt. Jim Gordon and District Attorney Harvey Dent. This escalates when the Joker arrives to wreak havoc upon Gotham City.

2008 • 152 min • ★ 9/10

Watch Now More Info

Trending Now

**The Dark Knight** ★ 9.0  
Batman raises the stakes in his war on crime with...  
2008 28503 reviews

**Inception** ★ 8.8  
Cobb, a skilled thief who commits corporate...  
2010 35179 reviews

**Interstellar** ★ 8.6  
The adventures of a group of explorers who...  
2014 32734 reviews

**Avengers: Endgame** ★ 8.4  
After the devastating events of Infinity War, th...  
2019 24938 reviews

**Parasite** ★ 8.5  
Act like you own the place. A poor family...  
2019 17344 reviews

View All

Latest Releases

**The Dark Knight** ★ 9.0  
Batman raises the stakes in his war on crime with...  
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2019 24938 reviews

Discover Your Next Favorite Movie

Join millions of movie lovers and build your perfect watchlist. Get personalized recommendations and never miss a great film again.

Start Exploring

Figure 2 - Homepage

The screenshot shows the Cinaverse website's trending page. At the top, there is a navigation bar with the Cinaverse logo, a search bar, and links for Home, Trending, Watch Later, and Profile. The main heading is "Discover What's Hot" with a subtext "Explore the most popular movies, trending films, and upcoming releases that everyone is talking about." Below this, there are three filter buttons: "Live Updates", "Top Rated", and "Updated Daily". A large banner features the word "CINEMA" in large letters. Underneath, a section titled "Trending This Week" displays "The Dark Knight" as the "#1 Trending Movie". The movie's poster is shown, along with its rating (9/10), year (2008), and review count (28503). Buttons for "View Details" and "Add to Watchlist" are also present. Below this, a grid of five movie cards is displayed:

Movie	Rating	Release Year	Review Count
Inception	8.8	2010	35179 reviews
Interstellar	8.6	2014	32734 reviews
Avengers: Endgame	8.4	2019	24938 reviews
Parasite	8.5	2019	17344 reviews
Dune	8.0	2021	11239 reviews

At the bottom, four summary cards provide quick stats: "50+" Trending Movies, "25+" New Releases, "100+" Top Rated, and "30+" Coming Soon.

Figure 3 - Trending page

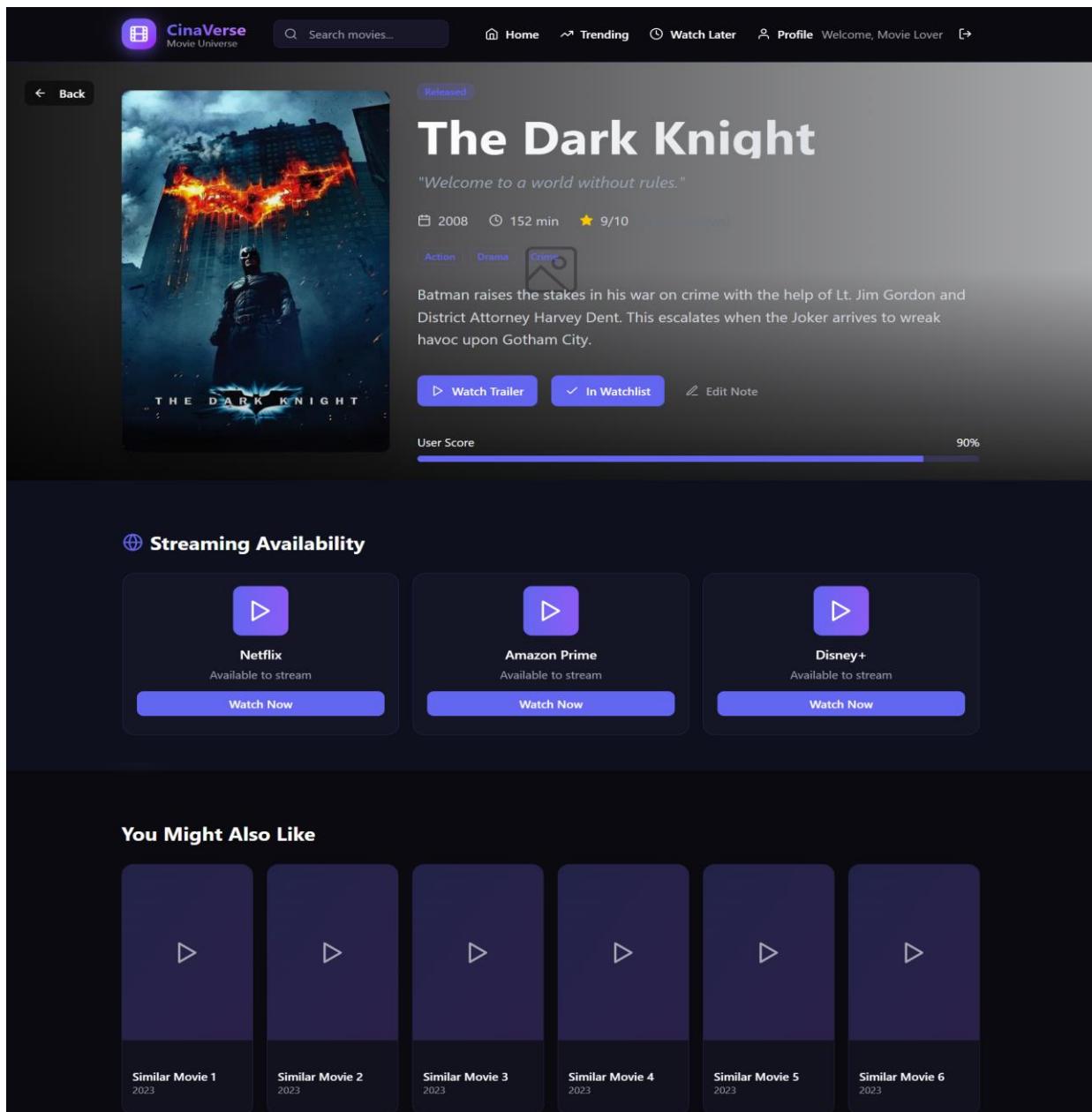


Figure 4 - Movie details page

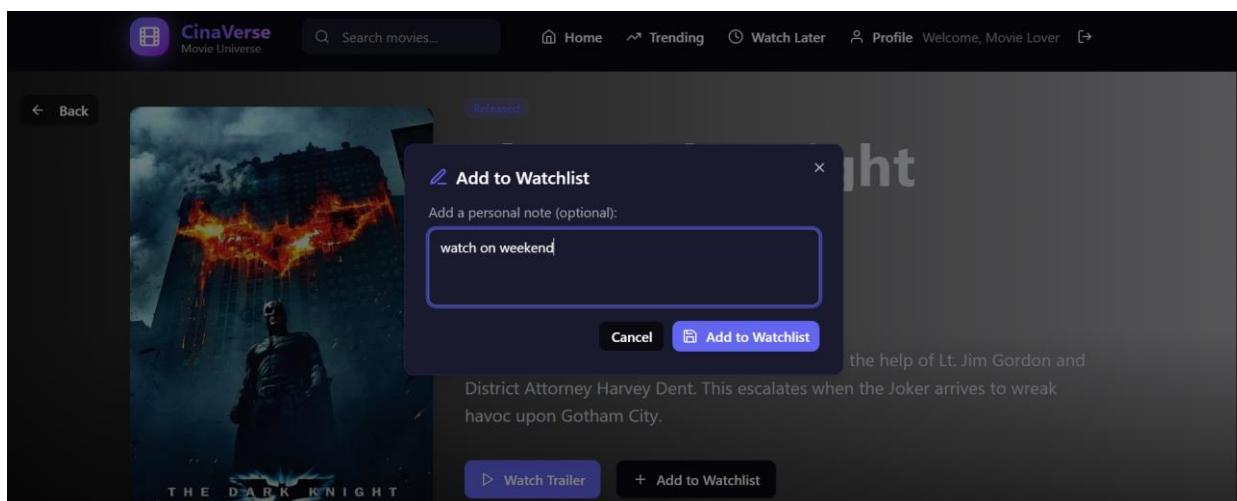


Figure 5 - Additional note option while adding in watchlist

*t*

The screenshot shows the user profile page for 'Movie Lover' on the CinaVerse Movie Universe platform. At the top, there's a navigation bar with icons for Home, Trending, Watch Later, Profile, and Logout. The profile section features a circular profile picture of a man, the name 'Movie Lover', an email address (maheenfatima4466@gmail.com), a location (New York, USA), and a member since date (2023). Below this is a bio: 'Movie enthusiast who loves exploring different genres and discovering hidden gems.' There are three categories under the bio: Favorite Action, Movie Enthusiast, and Critic.

Key statistics are displayed in four boxes: 147 Movies Watched, 294h Hours Watched, 7.8 Average Rating, and 2 In Watchlist.

The 'Genre Preferences' section shows the following distribution of movies watched:

Genre	Count	Percentage
Action	45 movies	(31%)
Drama	38 movies	(26%)
Comedy	29 movies	(20%)
Sci-Fi	22 movies	(15%)
Horror	13 movies	(8%)

The 'Recent Activity' section lists the following events:

- Added to watchlist The Dark Knight (2 hours ago)
- Rated Inception (1 day ago)
- Watched Interstellar (3 days ago)
- Added to watchlist Dune (1 week ago)

The 'Your Watchlist (2 movies)' section shows two entries: Inception and The Dark Knight.

**Inception**  
Cobb, a skilled thief who commits corporate...  
2010      35179 reviews

**The Dark Knight**  
Batman raises the stakes in his war on crime wit...  
2008      28503 reviews

**View All**

Figure 6 - User profilepage

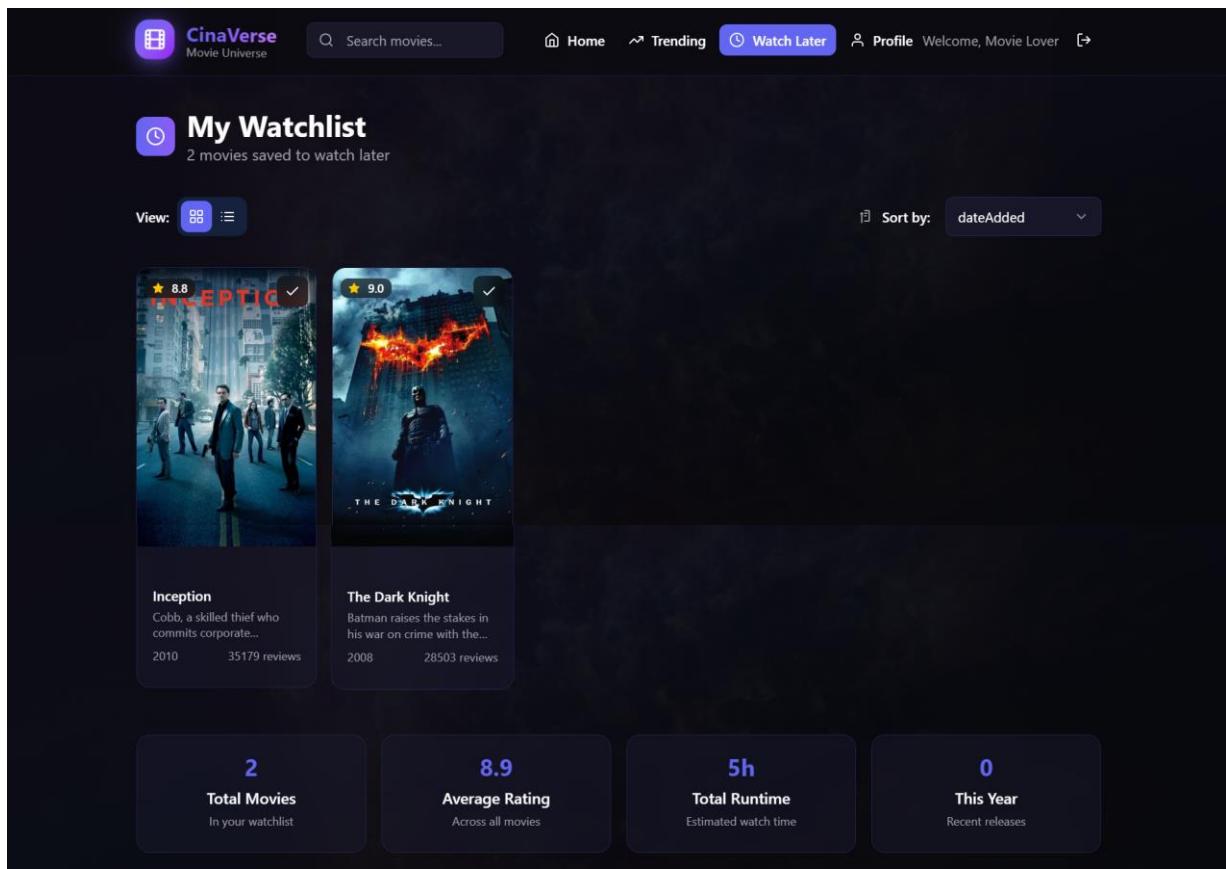


Figure 7 - Watchlist page

## Design 02:

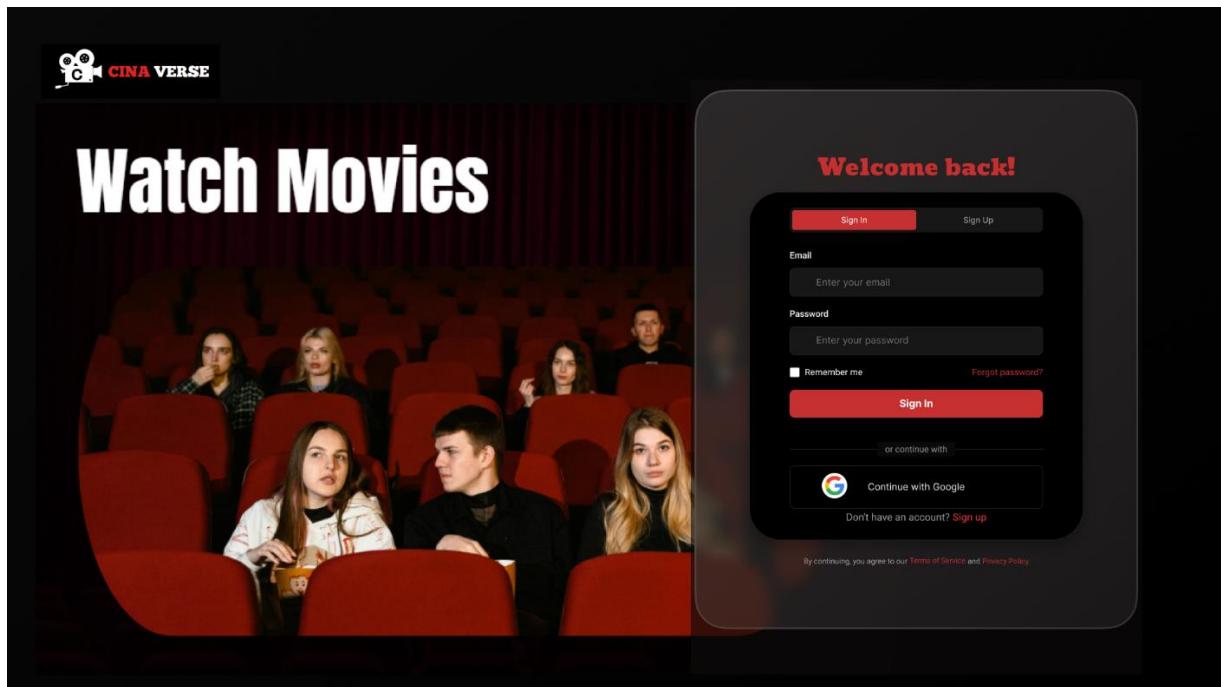


Figure 6 - Signup / Signin Page

**CINA VERSE**

Home Movies Wishlist TV Guide Sign Up

Featured 8.5

## The Dark Knight

When the menace known as the Joker wreaks havoc and chaos on the people of Gotham, Batman must accept one of the greatest psychological and physical tests.

Play Now More Info

**Trending Now**

- MONKEY MAN
- OPPENHEIMER
- CARGO
- MY TRIP
- THE GODFATHER
- AVENGERS: ENDGAME

**Latest Releases**

- D3: HINoE
- JUJU KAI
- 進撃の巨人
- WIND BREAKER
- DEMON SLAYER
- DRAGON BALL SUPER

**Cars 3**

IMDb 6.7 (134k) 69%

Lightning McQueen sets out to prove to a new generation of racers that he's still the best race car in the world.

Watch Now Watch trailer

**Exclusive Shows**

- the Office
- modern family
- FRIENDS
- GOTHAM
- THE 100
- Breaking Bad

**Top Rated**

Figure 7 - HomePage(1)

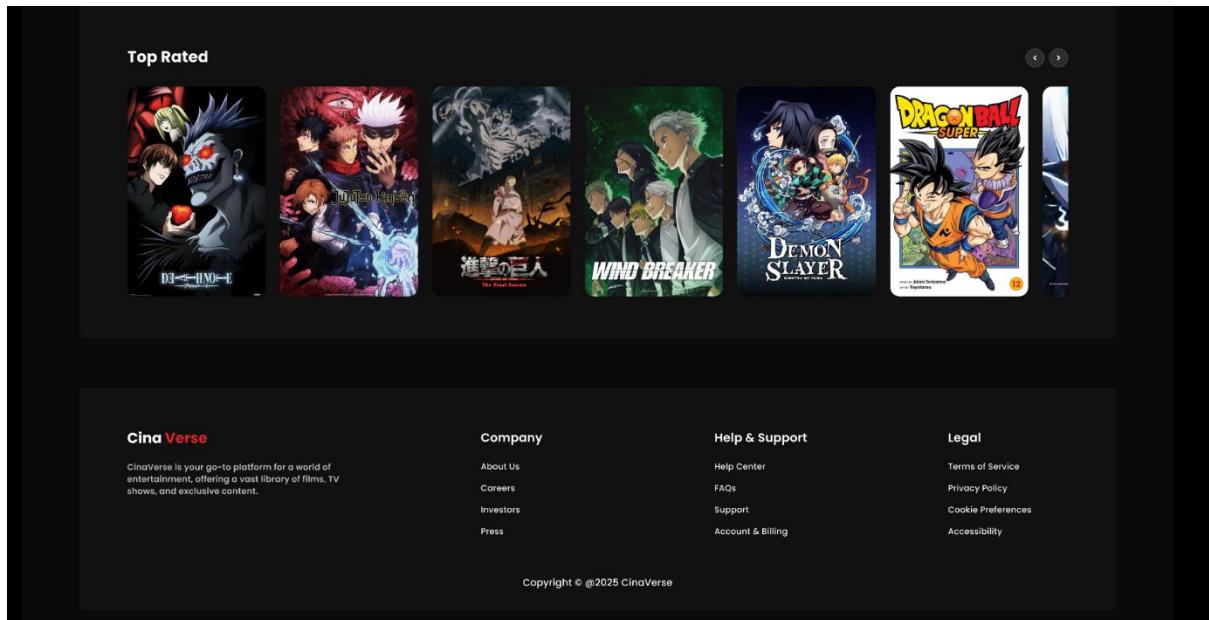


Figure 8 - HomePage(2)

This screenshot shows the movie streaming page for "ALIEN (1979)" on CinaVerse. The page features a large poster of the movie with a play button in the center. Key details include the director Ridley Scott, a rating of 5 stars, and a runtime of 2 hours. The movie is categorized as Drama, Action and Adventure. Buttons for "WATCH TRAILER" and "WATCH FULL MOVIE" are present. Below the poster, the "Story line" is described: "After investigating a mysterious transmission of unknown origin, the crew of a commercial spacecraft encounters a deadly lifeform." To the right, bios for the "DIRECTOR" (Ridley Scott), "WRITERS" (Dan O'Bannon, Ronald Shusett), and "STARS" (Sigourney Weaver, Tom Skerrit, John Fister) are provided. At the bottom, there are social sharing options ("SHARE", "WATCH", "RATE") and a footer with standard website links for Company, Help & Support, and Legal.

Figure 9 - MovieStreaming page

**CINA VERSE**

Home Movies Wishlist TV Guide Sign Up

← Back to Home

## Discover Your Next Favorite Movie

Explore curated collections, hidden gems, and personalized recommendations tailored just for you in the CinaVerse.

Surprise Me Advanced Filters This Week's Trending

**Just For You**  
Based on your viewing history and preferences

**Award Winners**  
Critically acclaimed masterpieces

**Editor's Choice**  
Hand-picked by our cinema experts

**Explore by Genre**  
Dive deep into your favorite movie categories

Figure 11 - DiscoverPage (1)

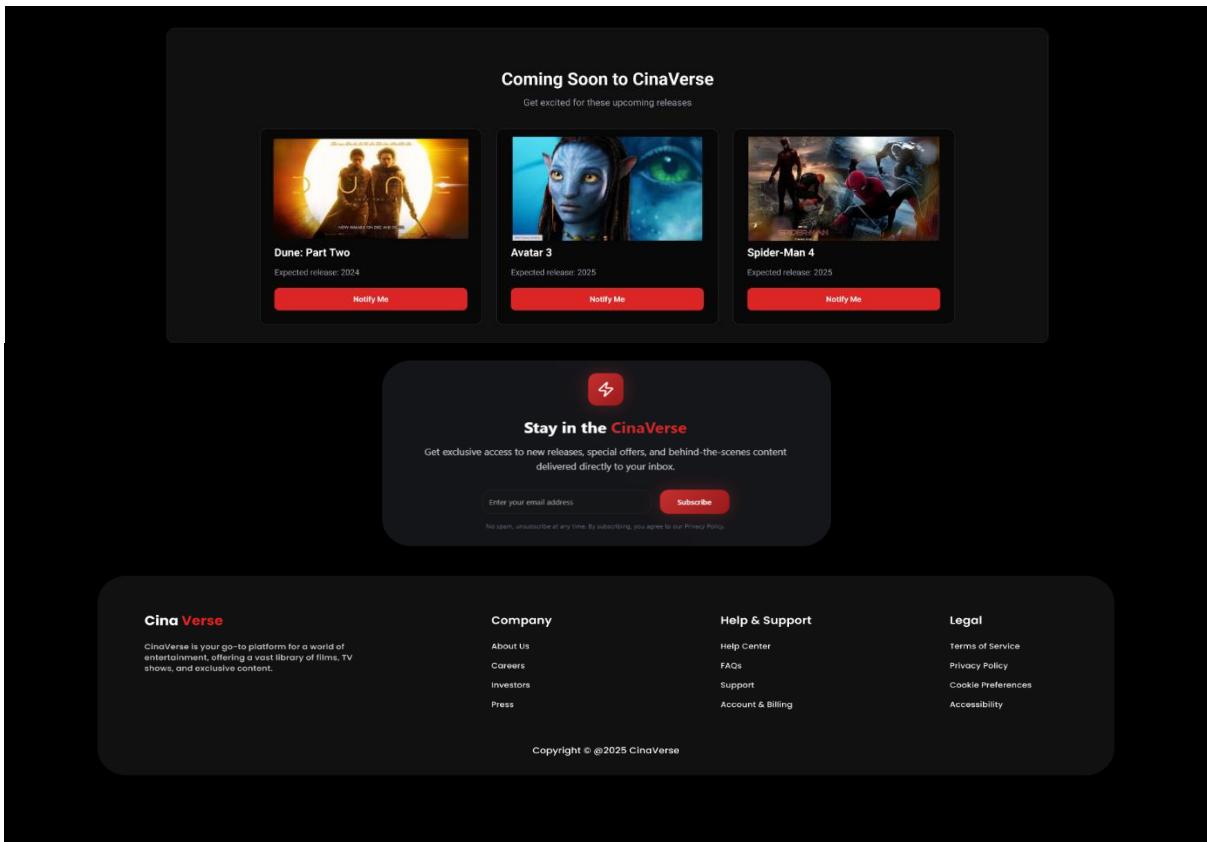


Figure 12 - DiscoverPage(2)

The profile page for 'Mamoona' (Roman Member) shows basic account information: 'Movie enthusiast • Joined CinaVerse in 2023 • Active viewer', 'Member since Dec 2023', and 'Last active today'. It includes a 'Edit Profile' and 'Settings' button. Key stats are displayed in cards: '247 Movies Watched', '486h Hours Streamed', and '12 Watchlist Items'. The 'Viewing Activity' section lists recently watched movies: 'Inception' (2010), 'Joker' (2019), and 'Interstellar' (2014). The 'Favorite Genres' section includes Action, Sci-Fi, Drama, and Horror. The 'Quick Actions' section offers links for Downloads, Notifications, and My Lists, along with a 'Sign Out' button. A 'Premium Plan' section at the bottom indicates 'Unlimited streaming in 4K quality' and 'Expires on January 15, 2024', with a 'Manage Subscription' button.

Figure 13 - Profile Page

## 6. Conclusion

CinaVerse addresses a clear gap in the digital entertainment space by providing a centralized movie watchlist platform that combines movie search, details, streaming availability, and personalized management into one solution. By integrating the TMDb API, implementing secure authentication, and offering a modern, responsive UI, this project goes beyond a simple CRUD application.

The development process not only enhances our technical skills in full-stack development (Node.js, Express, React/Vue, PostgreSQL/SQLite) but also exposes us to real-world challenges such as API integration, authentication, and deployment. With a structured sprint plan, CinaVerse is both feasible within the semester and provides significant learning value for the team.

This project will serve as a practical demonstration of how full-stack applications are designed, built, and deployed in real-world scenarios while delivering a user-friendly and impactful solution for movie lovers.