**D. G. Ruparel College of Arts, Science and Commerce** **Department of Information Technology and Computer Science** **2025-26**

**T.Y.B.Sc (Computer Science) - Project Synopsis (Sem-V)**

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**Title of the Project :** CineMatch: A Movie & Series Suggester

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**Introduction**

In the current age of streaming, users are often overwhelmed by the sheer volume of available movies and TV series, leading to "decision fatigue." **CineMatch** is a dynamic web application designed to solve this problem by not only allowing users to search for titles but also helping them discover new content. It provides random suggestions, detailed information including fun trivia, and a practical guide on where to stream the content online, making it a comprehensive tool for any movie enthusiast.

**Objective**

* To develop a responsive web application that allows users to search for movies by title.
* To implement a **"Surprise Me"** feature that provides users with a random, highly-rated movie suggestion to encourage discovery.
* To integrate with a third-party API to fetch real-time data, including movie details, trivia (like taglines), and streaming provider information.
* To create a **"Where to Watch"** feature that shows which streaming services a movie is available on.
* To build a robust FastAPI backend that handles multiple endpoints, manages API keys securely, and implements error handling for network instability.

**Scope**

The system will allow a user to:

* Search for a movie by title and view a grid of matching results.
* Click a **"Surprise Me"** button to get a single, random movie suggestion.
* For each movie, view its poster, title, release date, and a brief synopsis.
* See interesting **trivia** or the official tagline for a selected movie.
* View a list of streaming services where the movie is available to watch in their region.
* Receive user-friendly feedback, such as loading indicators and clear error messages.

**Methodology**

The project follows a feature-driven development approach, building one complete "vertical slice" of functionality at a time.

1. **Backend First (FastAPI):** A RESTful API will be developed to serve as a bridge between the user and the external movie data API. It will expose multiple endpoints for searching, random suggestions, and fetching detailed movie information.
2. **API Integration & Risk Mitigation:** The backend will initially integrate with **The Movie Database (TMDB) API** due to its rich dataset. However, a key part of the methodology is to build the backend in a modular way that is not tightly coupled to one specific data source. Due to potential service availability issues (e.g., 503 errors) observed during week 1 testing, **alternative data sources have been identified.** This ensures that if the TMDB API proves unreliable for core features, the project can change to another source without having to rewrite the entire code
3. **Error Handling:** The backend includes a retry mechanism with exponential backoff to improve resilience against temporary network failures when connecting to the external API.
4. **Frontend Development (HTML/CSS/JS):** A separate frontend will use JavaScript's fetch() API to make requests to our own FastAPI backend endpoints based on user actions.
5. **Dynamic Rendering:** The JavaScript will be responsible for dynamically creating and rendering the movie result cards, including streaming provider logos and trivia, into the HTML.

**Tools and Technologies**

* **Frontend:** HTML5, CSS3, JavaScript (ES6+)
* **Backend:** Python 3, FastAPI, Uvicorn
* **External API:** The Movie Database (TMDB) API (or other similar data providers)
* **Version Control:** Git, GitHub
* **Development Environment:** Visual Studio Code

**Timeline (Deadline: September 30th)**

* **Week 1 (Aug 15 - Aug 31):** Backend Foundation & Core Search Feature.
* **Week 2 (Sep 1 - Sep 7):** "Surprise Me" Feature & UI Development.
* **Week 3 (Sep 8 - Sep 14):** "Where to Watch" Feature Integration.
* **Week 4 (Sep 15 - Sep 21):** "Trivia" Feature & UI Polish.
* **Week 5 (Sep 22 - Sep 30):** Final Testing, Bug Fixes, & Documentation.

**Resources**

* TMDB API Documentation
* FastAPI official documentation for backend development guidelines.

Expected Outcome

The final system will be a fully functional, single-page web application named **CineMatch**. Users will be able to visit the webpage to search for specific movies or get a random suggestion. The application will provide a rich and reliable user experience by displaying not only basic movie details and posters but also fun trivia and a practical guide on where to stream the content, making it a one-stop-shop for movie discovery.