

## **Problem Statement - E-Library with User-Based Recommendation System**

The goal is to develop an E-Library platform where students can access, upload, and share study materials. The platform should include a recommendation system that suggests resources based on user preferences, popular materials, recent uploads, and user activity such as ratings, downloads, or views.

## **Proposed Solution**

Our E-Library platform offers a comprehensive solution that goes beyond basic file sharing. We've designed a feature-rich environment that encourages collaboration, personalized learning, and community engagement.

## **Key Features**

### **1. Resource Access & Upload**

- Users can easily upload and access study materials
- File organization through user-created playlists (e.g., "Physics")

### **2. User Profiles/Dashboard**

- Personalized user accounts to track activity and preferences including heatmaps

### **3. Recommendation System**

- Machine learning-powered suggestions based on user behavior and content popularity

### **4. Search and Filter Options**

- Advanced search functionality by custom algorithms to find relevant materials quickly

### **5. Rating & Feedback System**

- Users can rate and provide feedback on resources

## **6. Bookmarking & Favorites**

- Option to save and organize preferred study materials

## **7. Chat Rooms**

- Real-time discussion forums for collaborative learning

## **8. Leaderboard**

- Gamification element to encourage engagement and quality contributions

## **Optional Feature -**

### **9. Pricing System**

- User can lock their share files and only after specific money that user has defined is paid to the user than only the other user can access the file

## **Technology Stack**

### **1. Frontend : React.js**

- Chosen for its component-based architecture and efficient rendering

### **2. Backend : Django**

- Robust Python framework with built-in admin interface and ORM

### **3. Database : PostgreSQL**

- Scalable, reliable database for handling complex queries and relationships

### **4. File Hosting : Local storage / Google Cloud Storage**

- Flexible storage options to accommodate different deployment scenarios

5. **Machine Learning** : Custom model for recommendation system

- Leverages user data to provide personalized content suggestions

6. **ChatRooms** : WebSockets to establish chatting system

- Integration of websockets in our website for chatting with users

7. **User Analysis** : NPM libraries like react-calender-heatmap

- Integration of specialized libraries for detailed user behaviour tracking

### **Unique Aspects of Our Solution**

1. **Integrated Chat Rooms** : Unlike many E-Library platforms that focus solely on resource sharing, our solution incorporates real-time chat rooms. This feature fosters a collaborative learning environment where students can discuss materials, share insights, and form study groups.

2. **Comprehensive User Analysis** : Our platform goes beyond basic analytics by providing a detailed dashboard with heatmaps. This gives administrators and educators valuable insights into user behavior, popular resources, and engagement patterns.

3. **Viewlist Feature** : Users can create custom viewlists (e.g., "Physics") to organize their uploaded materials. This unique organization method allows for better content curation and easier navigation for both the uploader and other users.

4. **Gamification through Leaderboard** : By implementing a leaderboard system, we encourage active participation and high-quality contributions. This gamification aspect sets our platform apart by adding a motivational element to the learning process.

5. **Holistic Recommendation System** : Our machine learning model takes into account not just user preferences, but also overall popularity, recent uploads, and various user activities. This comprehensive approach ensures more accurate and diverse recommendations.

By combining these unique features with a robust technology stack, our E-Library platform offers a superior learning experience that encourages collaboration, engagement, and personalized education.