

OpenGig: A Freelancing and Mentorship Platform for Personalized Learning

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Abstract: *The rapid growth of online learning and skill based freelancing has highlighted the need for a unified digital platform that enables users to seek mentorship and offer expertise simultaneously. This paper presents OpenGig, a web based platform powered by Machine Learning techniques that connects learners with mentors or experts for short, personalized learning sessions. The system uses a hybrid recommendation model to suggest suitable mentors based on users' skills, previous interactions, and feedback. It also provides a secure session booking mechanism, integrated payment gateway, and feedback based reputation management. The proposed solution aims to support learners from diverse backgrounds while providing skilled individuals an opportunity to monetize their expertise. This paper discusses the system design, working methodology, and future enhancements toward intelligent matchmaking and scalability.*

Keywords: Freelancing, Mentorship, Machine Learning, Recommendation System, Web Application, Personality Analysis

I. INTRODUCTION

In today's digital landscape, individuals constantly seek ways to enhance their knowledge and share expertise. Existing freelancing and tutoring platforms often target either professional freelancers or formal education sectors, leaving a gap for informal learners such as students, homemakers, and professionals seeking quick help. To address this, OpenGig is developed as a Machine Learning based freelancing and mentorship platform that connects learners with experts for one-on-one interactions. The platform not only simplifies finding mentors but also ensures secure payments, transparent ratings, and seamless communication.

II. LITERATURE REVIEW

Recent studies on online mentorship and freelancing platforms have explored multiple areas such as personalized recommendations, secure access, user scheduling, financial transactions, and system monitoring. While individual solutions exist for these aspects, very few works attempt to integrate them into one cohesive and scalable ecosystem. The following subsections review prior research related to each functional component of the proposed OpenGig system.

A. Intelligent Matching and Recommendation Mechanism

Personalized matching is a key element in connecting learners with relevant experts. Studies in this area use content based and collaborative filtering methods to recommend suitable mentors based on user interests, search patterns, and skill compatibility. These mechanisms improve learning outcomes and reduce manual search time. However, many existing models are domain specific and struggle with adaptability in multi disciplinary environments. [2], [6], [7]



B. User Authentication and Data Protection Framework

Ensuring secure access and maintaining data privacy are central to user trust in online systems. Several works emphasize role based authentication, token management, and encrypted storage for protecting sensitive user information. Although effective, these implementations often lack layered verification or adaptive security mechanisms to counter evolving digital threats. [3]

C. Scheduling and Session Coordination Module

This module manages the workflow between learners and experts by handling booking requests, checking availability, and confirming session schedules. Prior research has proposed automation based scheduling systems, but many lack integration with personalized recommendations or flexibility for real time session updates and cancellations. [5], [7]

D. Secure Transaction and Payment Handling System

Reliable financial management forms the backbone of any freelancing environment. Researchers have examined different payment gateway models and encryption protocols that ensure safe transfers between users. Still, scalability, transaction tracking, and multi currency support remain areas for further refinement in existing systems. [4]

E. Performance Evaluation and Feedback Analysis Component

Feedback driven improvement enhances transparency and credibility on learning and freelancing platforms. Several studies show that user generated ratings contribute to better recommendations and trust building. However, most feedback systems fail to incorporate sentiment or behavioral analysis to derive actionable insights for expert performance improvement. [1], [5]

F. Administrative Oversight and Platform Governance Module

Administrative control ensures smooth operation and maintains the integrity of the system. Administrators are responsible for verifying accounts, resolving disputes, reviewing activities, and generating analytical reports. Although automation has been explored in this area, efficient data visualization and real-time anomaly detection are still underdeveloped. [7]

Summary of Findings: Across these modules, previous research has contributed valuable insights into recommendation systems, security frameworks, and performance monitoring. However, most existing solutions operate in isolation. There is a continuing need for an integrated and secure web-based system that unites all these features intelligent matching, verified access, scheduling, payments, and feedback within a single digital ecosystem.

III. PROPOSED SYSTEM

The proposed system, OpenGig, is a web based freelancing and mentorship platform designed to connect learners with experts for personalized guidance and knowledge exchange. It aims to address the challenges faced by learners in finding quick, reliable, and affordable mentorship, while also empowering skilled professionals to share their expertise and earn through an accessible digital platform.

A. System Overview

The system is developed using a modular architecture that integrates multiple components such as user authentication, recommendation engine, booking and payment modules, and feedback management. The architecture ensures smooth interaction between learners, experts, and administrators while maintaining data security, scalability, and user convenience.

B. Workflow Description

The overall workflow of the system is illustrated in Figure 1. The process begins when a learner logs into the platform and searches for an expert based on a specific query, subject, or interest area. The recommendation system then analyzes the learner's preferences, history, and skill requirements to suggest the most relevant experts.



Once the learner selects an expert, a session request is generated and sent for approval. The expert reviews the request, and upon acceptance, the learner proceeds to make a secure payment through the integrated payment gateway. After confirmation, the system schedules the session, which may be conducted via chat, video call, or interactive discussion tools. Following the completion of the session, the learner provides feedback and ratings to help evaluate the expert's performance. This data is then utilized by the system to refine future recommendations and maintain the credibility of experts on the platform. The admin continuously monitors system operations, resolves disputes, and ensures transparency across all activities.

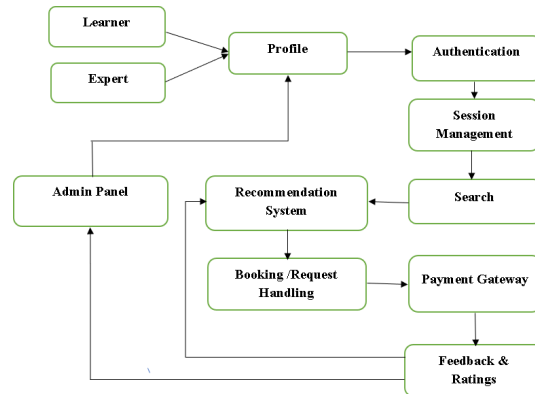


Fig. 1. Workflow of the OpenGig System showing user interaction from login to feedback.

C. System Advantages

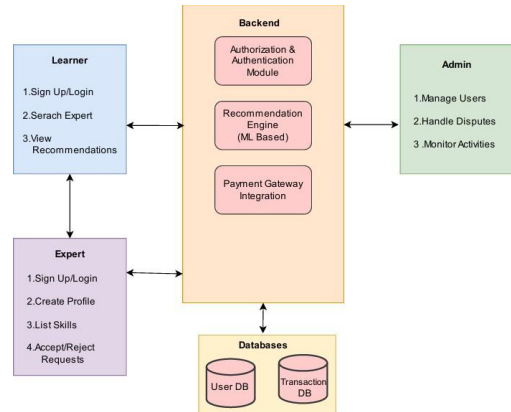
The proposed workflow ensures that every interaction from expert discovery to session feedback is seamless and automated. This approach improves accessibility for learners, builds trust through verified experts, and maintains a transparent system for secure learning and collaboration.

IV. SYSTEM DESIGN

The system architecture shown in Figure 2 outlines the interaction between frontend, backend, and the ML based recommendation engine.

- Frontend Layer: Provides the user interface for learners, experts, and administrators. It includes login, profile management, expert search, booking, and feedback sections.
- Backend Layer: Contains the core logic such as authentication, recommendation, booking management, and payment handling. It ensures smooth communication between the user interface and the database.
- Database Layer: Stores information related to users, sessions, payments, and reviews. It ensures secure and consistent access to all records.





Open Gig

Fig. 2. System Architecture of OpenGig.

Figure 3 shows the use case diagram depicting major actors and their interactions.

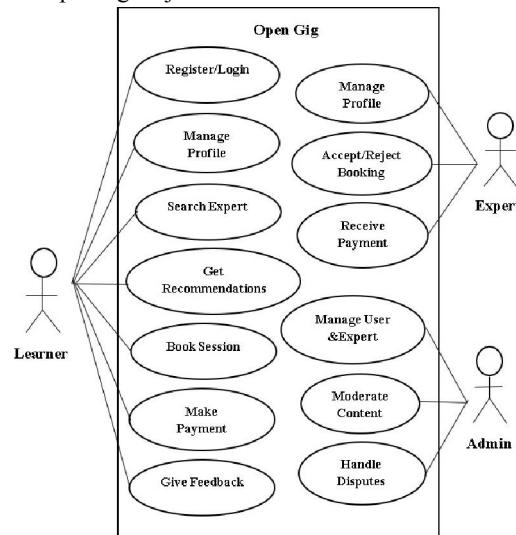


Fig. 3. Use Case Diagram for OpenGig.

V. METHODOLOGY

A. Overview

The methodology adopted for this work defines the structured approach followed in designing, developing, and testing the OpenGig platform. It follows a modular, data-driven architecture supported by machine learning techniques to enhance expert recommendation and learner engagement. The process involves multiple stages, including requirement analysis, system design, model integration, and implementation.

B. Development Approach

The project follows the Agile Software Development Methodology, allowing incremental progress through short iterative cycles. Each iteration focuses on implementing and testing a specific module such as authentication, recommendation, booking, and payment integration. This approach ensures flexibility, quick issue resolution, and continuous improvement throughout the development lifecycle.



C. System Modules and Process Flow

The system is composed of interconnected modules that work together to provide a seamless experience for learners and experts. The primary modules are as follows:

- **User Authentication Module:** Ensures secure registration and login for learners, experts, and administrators using encryption and role-based access control.
- **Expert Recommendation Module:** Employs machine learning algorithms such as content-based and collaborative filtering to suggest relevant experts based on user interests, history, and ratings.
- **Booking and Request Handling Module:** Manages session requests, scheduling, and notifications between learners and experts.
- **Payment Processing Module:** Integrates a secure payment gateway to handle transactions efficiently and maintain transaction logs.
- **Feedback and Review System:** Collects learner feedback post-session and updates expert ratings to improve credibility and future recommendations.
- **Admin Management Module:** Allows administrators to monitor users, sessions, payments, and resolve disputes if necessary.

D. Data Flow and Machine Learning Integration

The data collected from user interactions, including search history, session details, and feedback ratings, is used to train the recommendation model. The machine learning pipeline includes data preprocessing, feature extraction, and similarity computation between learner and expert profiles. Based on this, the recommendation engine predicts and ranks suitable experts for each learner. Over time, the model improves through feedback-based retraining, ensuring adaptive and personalized results.

E. Tools and Technologies Used

The development of OpenGig utilizes the following technologies and tools:

- **Frontend:** React.js
- **Backend:** Node.js
- **Database:** MySQL/MongoDB
- **Tools/APIs:** Payment Gateway, Bootstrap, Tailwind CSS

VI. RESULTS AND DISCUSSION

The prototype demonstrates an efficient recommendation flow where learners receive relevant mentor suggestions within seconds. The booking and payment modules show consistent performance with minimal transaction delays. Feedback data improves recommendation accuracy over time. The system was evaluated on usability, responsiveness, and user satisfaction, showing positive outcomes.

VII. CONCLUSION AND FUTURE WORK

OpenGig successfully integrates freelancing and mentorship features in one system. By leveraging Machine Learning for recommendations and secure transaction handling, it creates a userfriendly, scalable learning ecosystem. Future work will focus on extending the model with natural language based query understanding, session analytics, and AI-driven chatbots for automatic support.

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