

Secure Skill Trading and Mentorship Platform

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Abstract – The demand for adaptable and inclusive learning options has determined the need for peer-to-peer skill exchange platforms. Existing peer-to-peer skill exchange platforms have limitations like trust building, less secure transactions, etc. In response, our paper highlights a Secure Skill Trading and Mentorship Platform that enables skill exchange in a trustworthy format, whether paid or barter. The suggested platform will feature payment using an escrow system. Payments will be held in escrow until the session is 100% complete, therefore ensuring a secure transaction. To assist in dispute resolution, the platform will utilise an AI-assisted dispute resolution system to analyse the session usage and make informed, fair decisions. Additionally, there will be AI-generated skill matching, chat and live meeting modules, user ratings and reviews, and skill development tracking. All of these features develop a trustworthy environment and optimise user experience. The suggested platform applies modern technologies, such as React (Vite) for the client-side, Spring Boot for the server-side, Firebase for user authentication and database management, and Razorpay for secure payment processing. With these features in mind, the Secure Skill Trading and Mentorship Platform will provide a scalable, secure, and user-friendly method for both students and individuals looking for skill development and mentoring opportunities. The Secure Skill Trading and Mentorship Platform is the most effective solution to improving the quality of mentoring through peer-to-peer skill exchanges.

1. INTRODUCTION

In today's fast-growing digital world, the way a person gains and shares knowledge has changed rapidly. Unlike traditional learning models, which have typical learning and one-way teaching methods, more flexible and peer-driven approaches have changed the way of learning new skills. In such platforms, a person can both learn and teach, which makes the whole learning process collaborative and efficient.

In recent years, peer-to-peer skill exchange platforms have appeared as an effective learning solution to bridge the gap between learners and skilled individuals. These platforms encourage accessibility by allowing users to share their expertise while gaining knowledge in other domains. However, existing platforms face some challenges, like a lack of trust between users, limited verification of skills, the absence of secure transaction mechanisms, and insufficient dispute resolution processes.

To deal with such challenges, this research paper presents the design and development of the world's first platform where users exchange their talents as currency, named the Secure Skill Trading and Mentorship program. In this platform, users can gain knowledge through both the barter and paid models. We have designed this platform for students and individuals who wish to gain knowledge of other domains by teaching their skills in exchange. The platform enables the user to learn and share knowledge in an efficient and cost-effective manner. Unlike standard platforms, it integrates multiple features such as skill-for-skill exchange, escrow-based payment handling, AI-assisted dispute resolution, and intelligent skill matching to ensure a trustworthy, clear, and transparent learning environment.

The main feature of the proposed platform is to include an Escrow payment system, where the payments are securely stored in the cloud during the session and released only after the learner is satisfied with the live session. This mechanism reduces the risk of fraud and ensures security for both the mentors and the learners. Additionally, the platform includes efficient real-time communication features such as chat and live-meeting sessions, enabling effective interactions between users. The integration of AI-based monitoring and dispute handling further strengthens users' trust in the platform by analysing the live-meeting sessions through which it is decided if the session was genuine or not, and if further payment procedures should be taken into consideration.

The proposed platform is made using modern technologies, which include a React-based frontend, Spring Boot backend, Firebase services for authentication and database management, and Razorpay for secure payment processing. This combination ensures growth, speed and safe protection of user data and transactions.

The platform aims to create a secure and easy-to-use environment for skill exchange, especially benefiting students and unemployed individuals by providing them with an opportunity for learning, mentorship, and earning from their skills. The remainder of this paper discusses existing work in this domain, identifies research gaps, and presents the methodology and design of the proposed system.

2. Literature Review

Recently, there has been growing interest in peer-to-peer learning and knowledge exchanges as a way of providing education that is flexible and easily available. Most of the research studies discuss the issues of designing and implementing educational platforms enabling peer-to-peer skills and knowledge exchange.

The topic of a possible platform that could support such an exchange is covered in Peer-to-Peer Skills and Knowledge Exchange Platform. The study emphasises the importance of collaborative learning as it implies that the users teach each other. However, it lacks adequate measures for establishing trust among the users and ensuring secure transactions.

[3] discusses online learning and mentorship platforms. The study indicates that digital platforms allow for establishing effective communication with a potential mentor, thus increasing accessibility to education. It does not consider the problem of secure payments or mechanisms for resolving disputes in the case of problems.

[5] modern technological opportunities are explored through the use of such features as cloud systems and communication platforms in educational applications. Such measures help improve user engagement with their experience due to real-time interactions; however, no verification options are provided.

One aspect worth mentioning in the discussion of payment and transaction security is the article. [1] this work covers the issue of developing mechanisms for securely handling money transfers, suggesting the implementation of third-party services. However, no escrow mechanism, which would involve transferring the money after service completion, was included in this study.

Finally, recent achievements in artificial intelligence technology are also applied to online education. [2] focuses on personalised automated decision-making for improving the overall process of education and supporting students. Dispute resolution and real-time proof of session completion are two of the areas left undeveloped here.

Overall, from the review of relevant literature, it becomes evident that modern applications are effective in terms of accessibility, interaction, development and improvement; however, they lack important components such as trust management, financial security, verification of completion of learning sessions, dispute resolution, etc.

3. Discussion and Research Gap

Recent literature reviews reveal remarkable advancements in the area of peer-to-peer learning platforms and mentorship systems. They contribute significantly to improving knowledge sharing, enhancing accessibility and

promoting collaboration. However, despite all the advantages, they suffer from serious limitations.

One of the major obstacles is associated with a lack of trust and reliability in peer-to-peer skills exchange. Communication and contact between users are provided efficiently; however, there is no effective mechanism for ensuring mutual commitment and fulfilling the terms and conditions agreed upon by the parties. As a result, the process of interaction raises certain concerns, particularly in terms of its financial aspect, and users are less inclined to pay for services.

Another crucial problem to be addressed is the lack of a reliable, secure, and conditional payment mechanism. Some platforms resort to third-party payment gateways; however, they fail to prevent users from transferring funds directly and without any assurance that the agreed transaction will be fulfilled. This may give rise to disputes. Escrow-type transactions are rather uncommon for mentorship applications at the moment.

Resolution of disputes in modern mentorship systems is usually handled manually, requiring time and human resources. Currently, there is no widespread application of advanced analytical mechanisms aimed at monitoring communication between participants, analysing their performance, and making a decision automatically.

In addition, most learning and mentoring platforms lack verification of the learning processes themselves. They may provide an opportunity to start and conduct chats and video conferences, but they do not ensure that it really happens.

Moreover, skill matching is limited to certain keyword-based mechanisms and fails to take into account other factors (e.g., skill level, common interest), which can be crucial to establishing the most effective communication between users.

Last, but not least, issues related to security and verifications of users' identities are common to many platforms and raise doubts concerning their effectiveness.

4. Proposed Methodology

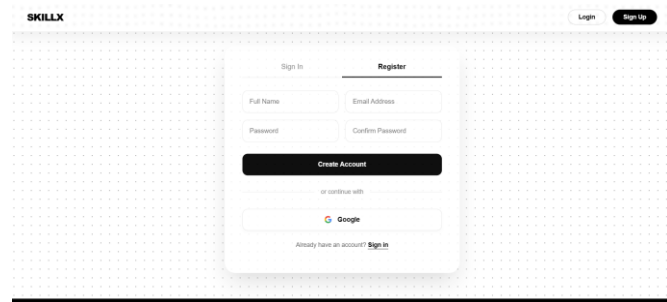


Fig 4.1 Login Page



Fig 4.2 Home Page

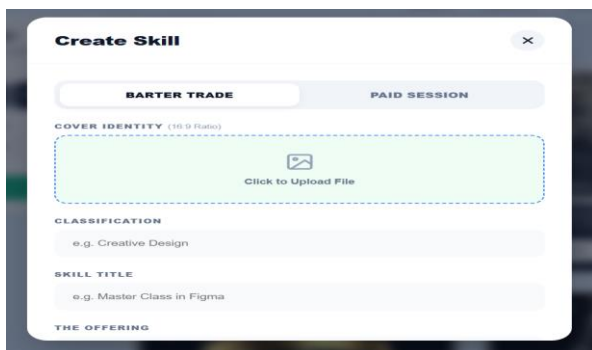


Fig 4.3 Profile Creation

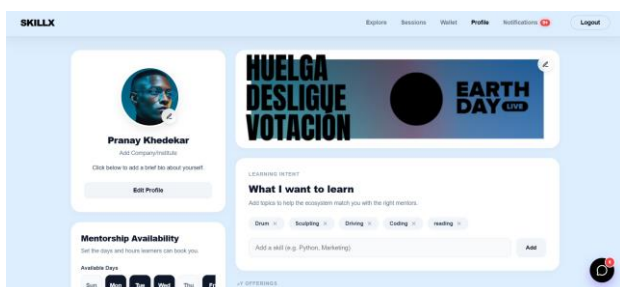


Fig 4.4 Profile Page

The Secure Skill Trading and Mentorship Platform that we propose will offer a combined way for users to learn from each other and utilise financial tools to securely do so, while providing an intelligent way to automate many of the

processes involved in skill sharing. We want to create a safe and trusted environment for members of our community who can share skills or services via the bartering method, as well as through paid services.

This system is designed using a modern multi-tier architecture and utilises React (with Vite) to build the front end of our application and Spring Boot to implement core logic and secure data management. To support storage and identity management, we will use Firebase for this purpose. Razorpay will also provide us with an escrow-based payment system that will allow us to maintain a scalable and accessible platform for all users. The overall workflow of the system is designed to provide ease of use and safety for our members. Users who register and list their skills will be matched by our artificial intelligence-based matching algorithm, as well as being matched by other members who have been identified as needing specific skills.

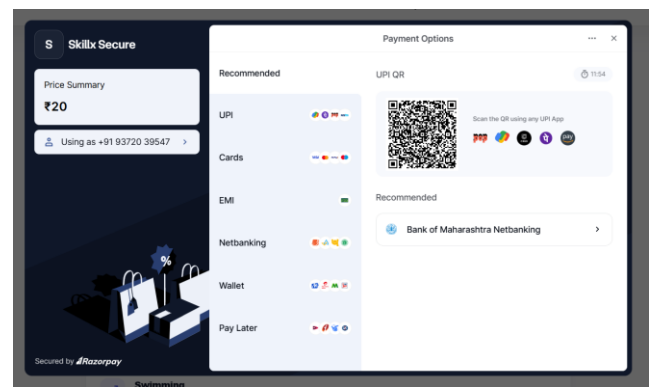


Fig 4.5 Payment

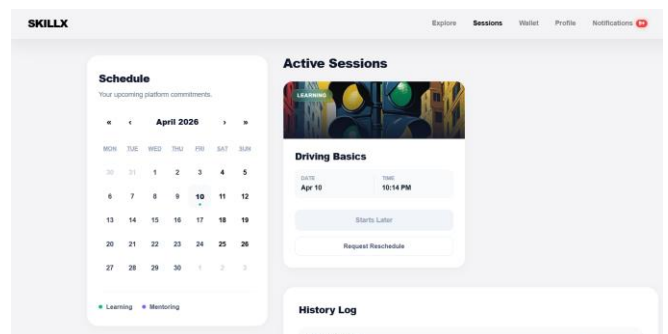


Fig 4.6 Session Page

From this point forward, users will have the ability to either directly exchange skills with each other or to participate in the paid mentorship option. If a mentor is offering to provide a paid session, we will use a unique escrow process that will hold the payment until the user is satisfied that the session was completed and meets their expectations. Through this approach, we can minimise the risk of fraud and ensure a fair process for all parties (the learner, mentor, and platform). In order to continue providing quality standards, we have built an in-house system that manages user verification, skill matching, and secure transactions.

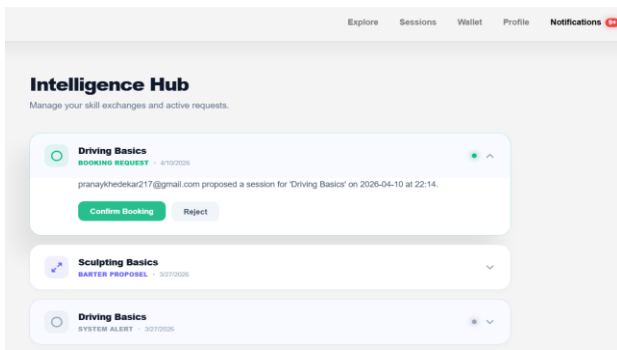


Fig 4.7 Notifications

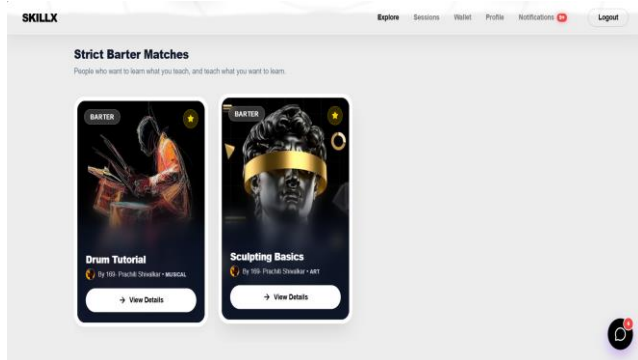


Fig 4.8 Explore

5. CONCLUSION

The paper details the overall design and implementation of a Secure Skill Trading and Mentorship Platform that enables people to exchange skills directly with each other and to do so reliably and securely. The main issue with existing skill exchanges is that they are not based on trust, there is no safe way for people to pay, and there is no simple way of resolving disputes.

This platform addresses these issues by allowing users to pay or barter for providing a given skill. Users are also able to pay from an escrow account via an escrow-based payment system. This way, they are assured that the payment will be made under the conditions set before the service is rendered, thus reducing the chances that payment will be made at all or that someone will commit fraud in the process of making a payment.

This platform will also provide significant improvements in fairness through AI-assisted dispute resolution. AI-based dispute resolution will also reduce the number of handoffs that would otherwise have to take place if an individual were to seek a resolution to a dispute using a manual process. Other helpful features are built into the platform, including AI-based skill matching, chat and meeting modules, and user progress tracking for skill development. The platform is built on several modern technologies, including React, Spring, Firebase, and Razorpay, which provide a scalable, responsive, and secure means of exchanging skills and

tracking their development. The platform has a modular architecture that provides the potential for additional functionality to be added in the future as technology advances and the needs of users and businesses change.

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