Skill Swap App: Optimizing Peer-to-Peer Skill Exchange

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Abstract - **Skill development is essential for students and beginners; however, many learners face challenges such as high course fees, lack of personalized guidance, and difficulty in finding suitable learning partners. Existing learning platforms often rely on paid courses or provide one-way learning without interaction. This paper proposes Skill Swap, a peer-to-peer skill exchange platform that enables users to teach and learn skills mutually without monetary cost. The proposed system focuses on matching users based on skill compatibility, proficiency level, availability, and feedback history. Skill Swap is intended to be developed using Python for backend processing, MySQL for data storage, and web technologies for the user interface. The platform aims to reduce manual searching effort and promote collaborative learning in educational environments. This work serves as a conceptual and design-level study prior to system implementation.**

Keywords: Skill Swap, Peer Learning, Skill Exchange, Collaborative Learning, Proposed System.

I. INTRODUCTION

In today's digital environment, continuous skill development is crucial for academic and professional growth. Although many online learning platforms exist, learners often face barriers such as high costs, rigid structures, and lack of interactive learning. Video-based platforms mainly support one-way knowledge transfer and do not provide personalized guidance

To address these challenges, this paper proposes SkillSwap, a peer-to-peer skill exchange platform where users exchange skills instead of paying for courses. For example, a user skilled in programming may help another user who, in return, offers skills such as design or communication. The proposed platform emphasizes collaboration, flexibility, and accessibility, making it suitable for student communities.

The proposed SkillSwap platform aims to provide a structured environment for peer-based learning by allowing users to create profiles, list skills they can offer, and specify skills they wish to learn. Based on this information, the system facilitates effective matching between users with complementary skill requirements. By incorporating features such as communication tools and feedback mechanisms, the platform ensures reliable interactions and continuous improvement in learning quality. This approach helps learners gain practical experience, improves engagement, and supports skill development in a cost-effective and user-friendly manner.

II. LITERATURE SURVEY

Previous research on peer learning and collaborative platforms highlights that interactive learning environments improve learner engagement and understanding. Studies on skill-sharing communities and mentorship systems indicate that mutual learning promotes better retention and motivation. However, many existing platforms either depend on paid subscriptions or lack structured skill-matching mechanisms.

Research also emphasizes the importance of skill compatibility, learner availability, and trust mechanisms in peer- to-peer systems. Based on these findings, SkillSwap is proposed as a structured and cost-free platform that supports organized skill exchange using basic matching logic.

III. PROBLEM STATEMENT

Learners face difficulty in identifying suitable peers for skill exchange due to manual searching, unstructured skill information, and the absence of intelligent matching mechanisms. Existing systems do not effectively consider important factors such as skill proficiency level, time availability, and user reliability, which often results in inefficient and mismatched learning interactions. As a result, learners spend significant time searching for appropriate partners and may experience low engagement, poor learning outcomes, and lack of trust in peer-based platforms.

IV. SYSTEM DESIGN OVERVIEW

1. The proposed system follows a client–server architecture
2. Frontend (Proposed): HTML, CSS, JavaScript
3. Backend (Proposed): Python (Flask/Django)
4. Database (Proposed): MySQL

The system is conceptually divided into modules such as user authentication, skill management, matching logic, interaction, and feedback handling.

Figure 1: System Architecture of Skill Swap App

Fig1 illustrates the overall workflow and architecture of the proposed Skill Swap application. The process begins with the user performing actions such as sign-up, sign-in, or password recovery. User authentication and registration details are securely stored in the database. After successful authentication, the user is directed to the homepage.

From the homepage, users can manage their skills or search for suitable skill exchange matches. Once a match is found, users can communicate and exchange skills through the platform. After completing the skill exchange, both users provide feedback and reviews. This feedback is stored in the database and helps improve trust and future matching accuracy within the system.

V. EXPECTED RESULTS

The proposed SkillSwap system is expected to reduce the effort required to find suitable skill exchange partners and improve the relevance of peer matching compared to manual searching. The platform aims to promote collaborative learning, increase user engagement, and support cost-free skill development in student communities.
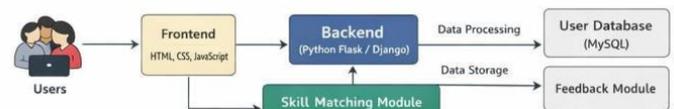

Figure 2: SkillSwap System Architecture

Shows the proposed client–server architecture of the SkillSwap app. Users access the system through a web interface, which communicates with a Python backend. The backend processes skill matching and stores data in a MySQL database.
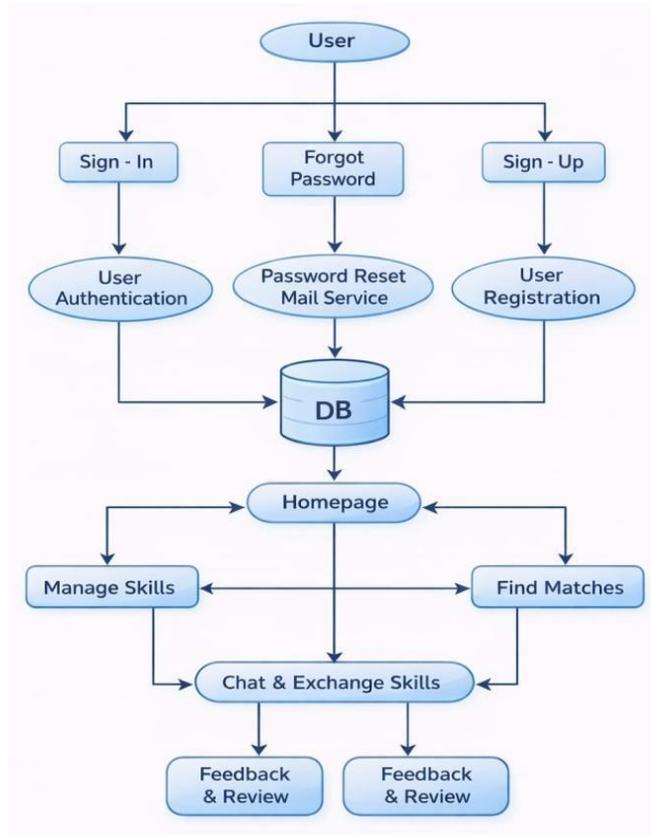

Figure 3: SkillSwap User Flow

Represents the step-by-step user interaction. Users register, add skills, receive matches, interact with others, and provide feedback after skill exchange.
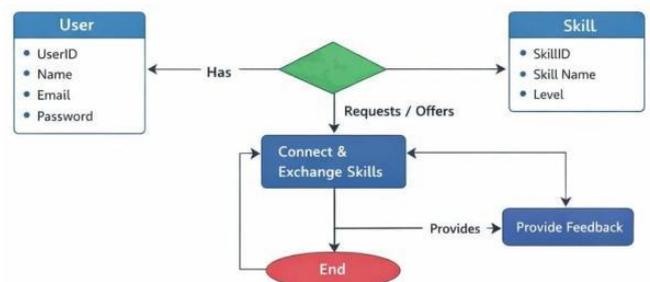

Figure 4: SkillSwap ER Diagram

Illustrates the planned database design. It shows entities such as User, Skill, Match, and Feedback and their relationships for efficient data management.

VI. CONCLUSION

This paper presents the conceptual design of SkillSwap, a peer-to-peer skill exchange platform aimed at supporting collaborative and cost-free learning. By focusing on structured matching and mutual skill exchange, the proposed system addresses limitations of existing learning platforms and provides a foundation for future implementation and enhancement.

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