SkillSync - Skills sharing platform

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Submitted in partial fulfilment of the requirements of
the degree of

Bachelor of Engineering

(Information Technology)

By

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Under the guidance of

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VIVEKANAND EDUCATION SOCIETY'S INSTITUTE OF TECHNOLOGY, Chembur, Mumbai 400074

(An Autonomous Institute, Affiliated to University of Mumbai)

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SkillSync

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In fulfilment of degree of BE. (Sem. VI) in Information Technology for Project is approved.

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Date:17 /04 /2025
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Declaration

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Pranav Titambe 60

Abstract

SkillSync is a full-stack web application built using ReactJS, Tailwind CSS, Flask, and MongoDB, designed to create an interactive skill-sharing community. The frontend utilizes ReactJS for its component-based architecture and dynamic rendering, enabling seamless user interactions, while Tailwind CSS ensures responsive and visually appealing design across all devices. The backend, powered by Flask, handles RESTful API endpoints for features such as user authentication, skill posting, commenting, liking, and reply functionality. Secure authentication is implemented using JSON Web Tokens (JWT) or session-based mechanisms. MongoDB serves as the NoSQL database, storing structured data collections for users, skills, comments, and interactions, with optimized indexing for fast search and filtering by skill category, popularity, and user profiles. The platform supports advanced search functionality and allows users to showcase their skills through detailed posts that others can like, comment on, and engage with through replies. This interactive ecosystem fosters knowledge exchange, skill development, and community building by offering a technically sound and scalable solution that connects people based on their unique talents and interests.

Contents

Chapter 1

Introduction

1.1. Introduction

SkillSync is a full-stack web application built using ReactJS, Tailwind CSS, Flask, and MongoDB. It serves as an interactive platform to connect individuals who want to share their skills with others looking to learn new talents. The system simplifies the traditionally fragmented skill-sharing process by offering smart search filters, interactive engagement features, and an intuitive user interface.

1.2. Objectives

- To develop a responsive and user-friendly platform for skill sharing and discovery.
- To enable secure user authentication and profile management for skill providers and learners.
- To allow real-time engagement through likes, comments, and replies on skill posts.
- To streamline communication between skilled individuals and those seeking to learn.
- To promote knowledge exchange through an interactive community-driven interface.

1.3. Motivation

Finding opportunities to share skills or learn from others often involves searching through fragmented platforms with limited interaction capabilities. The motivation behind SkillSync is to harness modern web technologies to create a fast, accessible, and engaging system that not only facilitates skill sharing but also builds a community of active learners and teachers. By removing inefficiencies and enabling real-time interactions, the platform aspires to make a meaningful educational and social impact.

1.4. Scope of the Work

The scope of SkillSync includes the design, development, and deployment of a web-based platform that connects skill providers with learners in real time. The system facilitates efficient skill discovery based on categories, popularity, and user profiles, while also handling likes, comments, and replies on skill posts.

Key functionalities in scope include:

- **User Authentication**: Registration and login features for users.
- **Skill Post Creation**: Users can create posts showcasing their skills with descriptions, images, and categories.
- **Smart Discovery**: Search filters and logic to find skills of interest.
- **Engagement System**: Users can like posts, comment on them, and reply to comments.
- **Status Tracking**: Users can track their post engagement and interaction history.

1.5. Feasibility Study

Technical Feasibility

The project is technically feasible using the chosen stack:

- Frontend: ReactJS with Tailwind CSS ensures a dynamic, responsive UI.
- Backend: Flask is lightweight and well-suited for REST APIs and quick integration with Python-based logic.
- Database: MongoDB's document-based structure is ideal for storing user profiles, skill posts, comments, and dynamic interaction information.
- Deployment: Can be hosted using cloud platforms like Render, Vercel, or Heroku, with support for continuous deployment and scalability.

Operational Feasibility

The system is designed for ease of use with minimal training. Users interact with a clean and intuitive interface. Real-time engagement features, notifications, and quick search make the platform highly operable in practical scenarios.

Literature Survey

2.1. Introduction

In recent years, the need for efficient and responsive skill-sharing platforms has become increasingly critical, especially in the domain of continuous learning and personal development. Despite growing awareness of the importance of skill exchange, there remains a significant gap in real-time coordination between those with skills to share and those eager to learn. Traditional methods of skill sharing—such as physical classes, community boards, or word of mouth—are often time-consuming, inefficient, and fail to meet the diverse needs of modern learners.

SkillSync is a web-based platform developed to bridge this gap using modern web technologies. It connects individuals seeking to learn new skills with those willing to share their knowledge in real time. With user-friendly features, smart filters, and interactive engagement mechanisms, the system simplifies the skill-sharing process and ensures timely communication, promoting a responsive and community-driven solution for knowledge exchange.

2.2. Problem Definition

Despite technological advancements, the process of finding skill-sharing opportunities remains largely fragmented and inefficient in many contexts. Individuals looking to learn new skills often face challenges in locating suitable teachers or content, which can lead to abandoned learning journeys. Existing platforms, if any, lack real-time communication, personalization, and interactive engagement features.

The project SkillSync is developed to address the following core issues:

- Lack of real-time platforms for connecting skill providers and learners based on skill categories, expertise levels, and interests.
- Inability to engage directly with skill content through likes, comments, and replies.
- Absence of user-centric mechanisms to manage and filter available skills.
- Poor user experience in existing systems that don't leverage modern technologies.
- No streamlined feedback loop for verifying and managing skill quality and relevance.

SkillSync aims to overcome these limitations by building a full-stack web application that provides a transparent, responsive, and efficient environment for skill-sharing management.

2.3. Review of Literature Survey

1. A. Singh, B. Gupta, M. Sharma, R. K. Kumar and D. Srivastava, "SkillShare - Community-based Skill Exchange and Learning Platform," 2022 International Conference on Learning Technologies and Digital Education (ICLTDE), Bangalore, India, 2023, pp. 1-6, doi: 10.1109/ICLTDE56053.2023.10113983. keywords: {Education;Learning;Community platforms;Mobile applications;Sustainable development;Skill Development;Skill-Exchange;Online Learning;Mentorship;Community Learning.},

The SkillShare mobile application is an effort to ease the process of sharing and acquiring skills. This application helps users to seamlessly connect with skilled individuals and learn from them directly. It gives users information related to different skill categories, expertise levels, and community ratings. Taking into account the post-pandemic situation, in which remote learning and skill acquisition became crucial, SkillShare aims to provide a comprehensive platform for lifelong learning. Skills and knowledge exchange is an essential part of personal and professional development. Day by day, the demand for specific skills is increasing, but traditional learning methods often face accessibility and quality issues. This project aims to give people a single platform to resolve these challenges.

2. P. Patel, R. Mehta, K. L. Singh and L. Singh Sharma, "Skill Exchange System," 2022 4th International Conference on Advances in Computing, Communication Control and Networking (ICAC3N), Greater Noida, India, 2022, pp. 2143-2148, doi: 10.1109/ICAC3N56670.2022.10074313. keywords: {Learning platforms;Schedules;Communities;Organizations;Video sharing;Skills;Online Skill Sharing;e-learning;skill development;community;mentors;verification},

The goal of the Skill Exchange System project is to build an e-Learning system connecting skilled mentors with learners interested in specific domains. The learner can use this application to search online for registered mentors for the skills or knowledge areas they wish to develop. If matched, the registered mentor's contacts and profile would be displayed, and the learner can come directly in contact with the mentor. It would be like a bridge between the learner and mentor where the learner can directly contact the skilled individual. The learner can also be verified by the mentor as they're required to upload learning goals and prior experience as well. The basic aim to create this application is to create a hassle-free environment for skill acquisition and sharing of expertise that might otherwise remain unutilized.

Chapter 3

Design and Implementation

3.1. Introduction

The design and implementation phase of the **SkillSync** platform focuses on transforming the core concept of a real-time skill-sharing system into a fully functional, user-friendly, and efficient web application. This chapter outlines the technical design, architectural flow, and component-wise development that facilitate seamless interaction between skill providers and learners. The system is engineered using modern full-stack technologies to provide scalable, responsive, and secure functionality that promotes knowledge exchange while streamlining the entire skill discovery and engagement workflow.

3.2. Requirement Gathering

Functional Requirements:

- The system shall allow users to register and create profiles for skill sharing.
- The system shall enable **searching for skills** based on categories, popularity, and user profiles.
- The system shall allow **users to create skill posts** with descriptions and media.
- Users shall be able to **engage** with skills through **Likes**, **Comments**, and **Replies**.
- The system shall **track and display engagement metrics** on all active and past skill posts.
- Admin panel shall allow basic moderation and view of user activities.

Non-Functional Requirements:

- **Performance**: Requests and responses should be processed within 2--3 seconds.
- **Scalability**: The architecture must support increasing users and skill post records.
- **Security**: User data should be stored securely and protected from unauthorized access.
- **Responsiveness**: The UI should work seamlessly across different devices and screen sizes.

3.3. Proposed Design

The **SkillSync** system follows a modular full-stack architecture, structured into the following key components:

1. Frontend (Client Side)

Built with **ReactJS** and styled using **Tailwind CSS**.

Provides intuitive navigation with pages for **Home**, **Login/Sign Up**, **Explore Skills**, **My Posts**, **Interactions**, and **Contact Us**.

Uses **Axios** for HTTP communication with backend services.

State is managed via **React Hooks** and context (if required) for global states like user authentication.

2. Backend (Server Side)

Developed using **Flask** (Python).

Provides RESTful API endpoints for:

- User authentication and profile management
- Fetching and filtering skill posts
- Creating and updating posts
- Managing likes, comments, and replies
- Tracking engagement metrics and user activity

3. Database Layer

MongoDB is used to store:

- User records and profiles
- Skill posts and their content
- Likes, comments, and replies
- Authentication tokens and system logs

Core Functional Modules:

1. User Management Module
Handles sign-up, login, user profiles, and preference information.

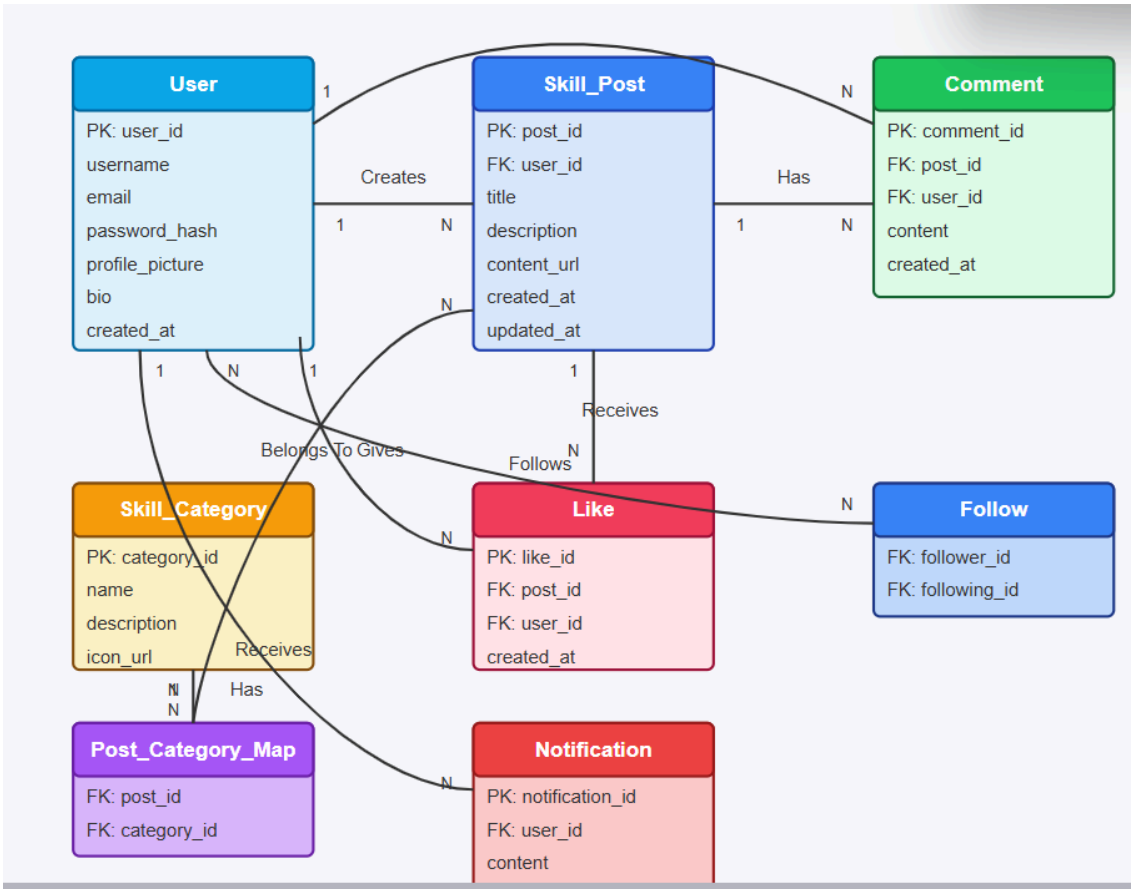
2. Skill Post Module
Manages creation, editing, and display of skill content with categorization.

3. Engagement Module
Enables likes, comments, and replies on skill posts.

4. Discovery Module
Maintains search filters and recommendation features for skill exploration.

3.4. Data Flow Diagram

3.5. E R Diagram



3.6.Hardware Requirements

Category	Requirement
Hardware Requirements	
Processor	Intel Core i5 or higher
RAM	Minimum 8 GB
Storage	At least 250 GB HDD / SSD
Monitor	15" or larger display (for ease of UI/UX development and testing)
Internet Connection	Stable broadband connection for real-time API interaction and deployment testing

3.7. Software Requirements

Software Requirements	
Operating System	Windows 10 / 11, macOS, or Linux
Frontend Framework	ReactJS
Styling Framework	Tailwind CSS
Backend Framework	Flask (Python)
Database	MongoDB
Code Editor	Visual Studio Code / PyCharm / Sublime Text
Browser	Google Chrome / Firefox (for frontend testing)
Package Manager (Frontend)	Node.js with npm
API Testing Tool	Postman
Version Control	Git (with GitHub / GitLab)
Deployment Platform	Heroku / Render / Vercel (optional for live deployment)
Python Environment	Python 3.8+
Additional Libraries	Flask-CORS, pymongo, Axios, React Router, dotenv, etc.

Chapter 4

Results and Discussion

4.1. Introduction

SkillSync is a web-based interactive skill-sharing platform designed to bridge the gap between individuals who want to share their skills and those who want to learn. The system classifies user engagement into categories—**Likes**, **Comments**, and **Replies**—based on user interaction and content engagement. The application incorporates advanced search filters for skill categories, popularity, and user profiles, enabling efficient and transparent skill discovery.

The platform is built using **ReactJS** and **Tailwind CSS** for a responsive frontend, **Flask** for backend API handling, and **MongoDB** for fast, scalable data storage. The system's modular design ensures maintainability, and real-time engagement tracking improves the user experience. GitHub is used for version control and collaborative development.

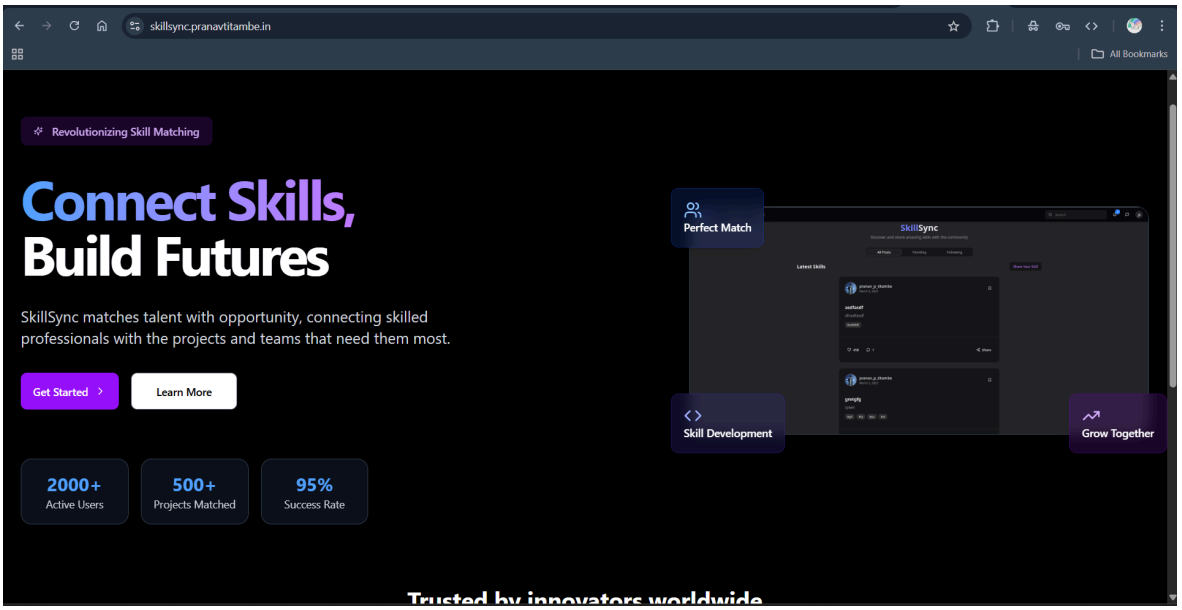
4.2. Results of Implementation

Skill Discovery: Implemented real-time filtering by skill categories, popularity, and user profiles, significantly reducing the time taken to find relevant skills.

Engagement Management: Users can like posts, add comments, and reply to existing comments.

Dashboard Interface: Clear overview of posts, engagement history, and notifications for all users.

User Profiles: Store personal data securely, with an emphasis on quick interaction and minimal steps to create or engage with skill posts.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Grow Together
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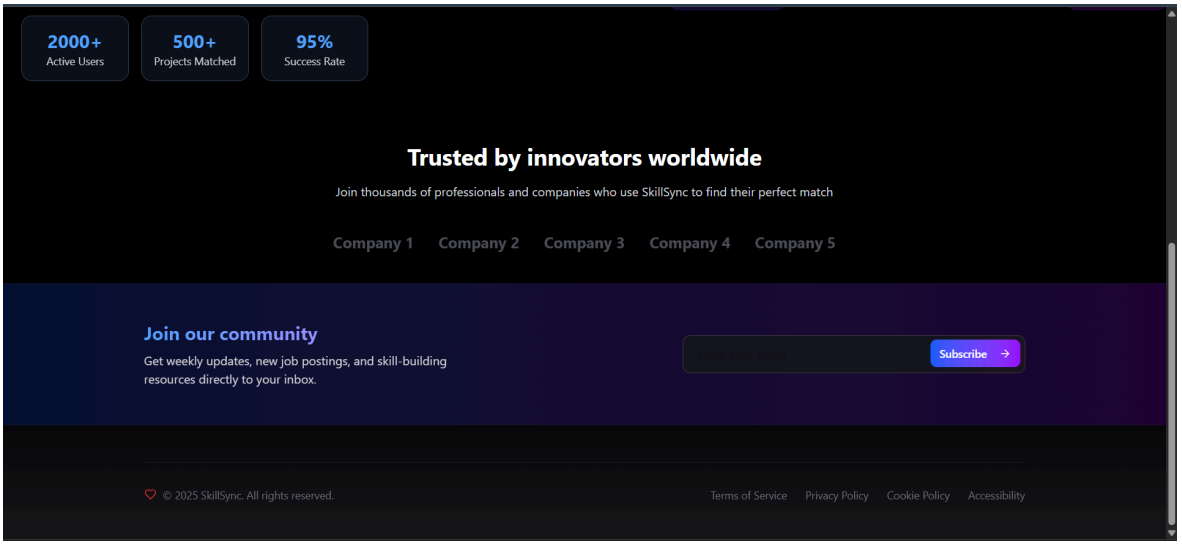
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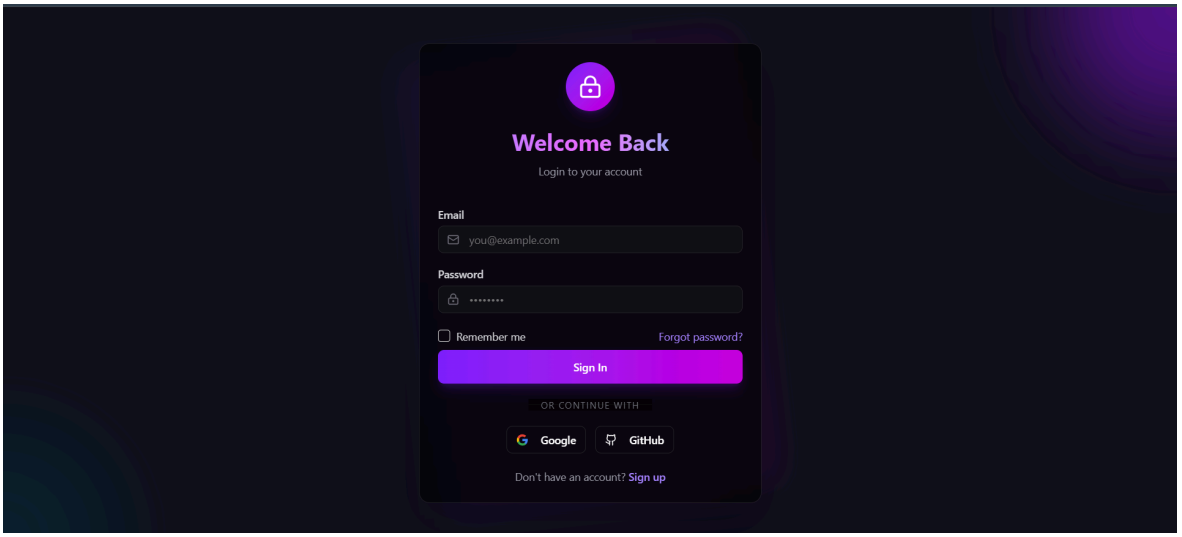
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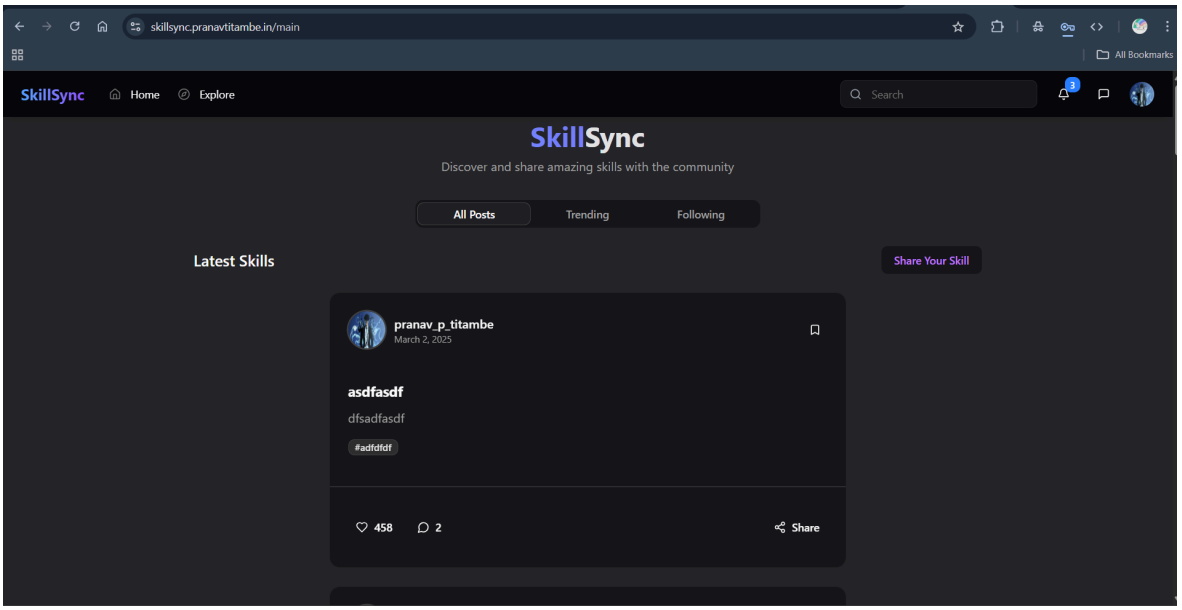
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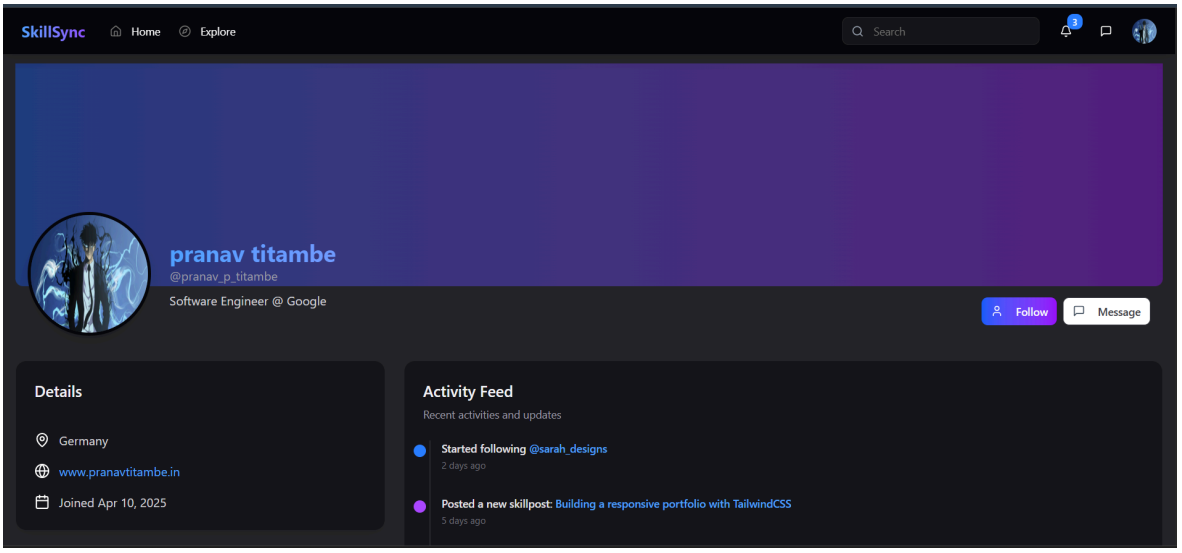
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Joined Apr 10, 2025
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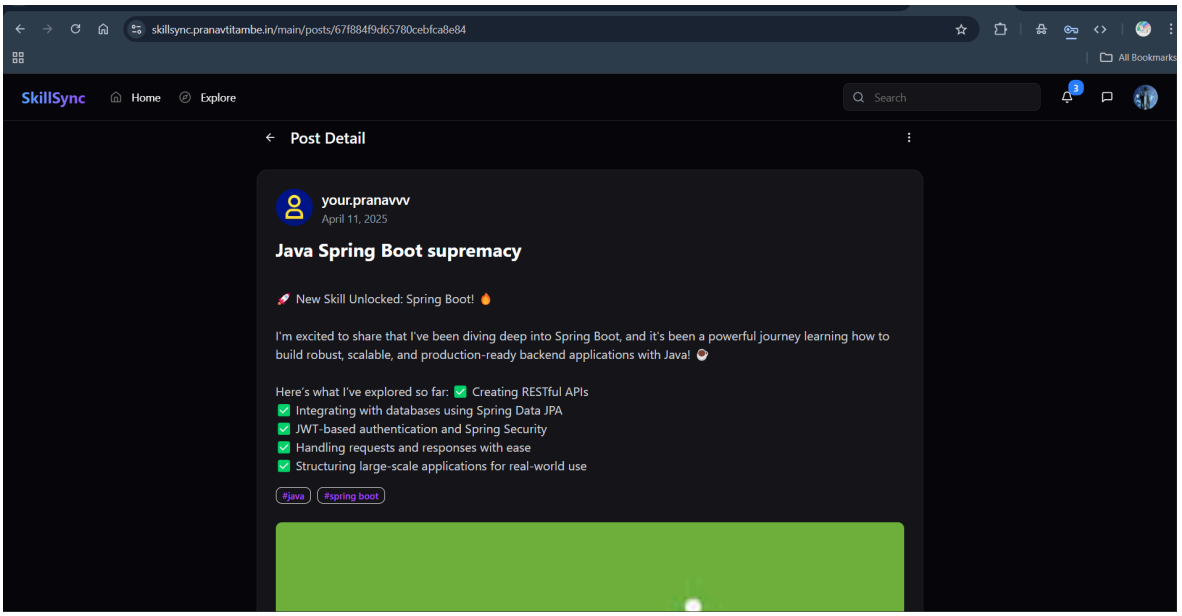
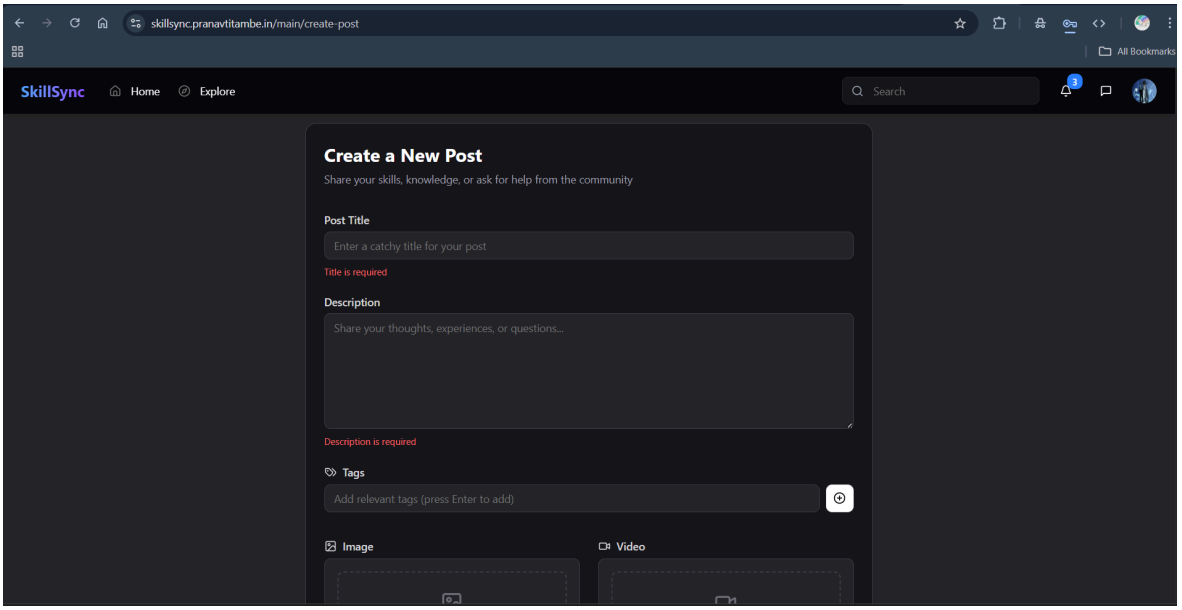
Recent activities and updates
Started following @sarah_designs
2 days ago
Posted a new skillpost: Building a responsive portfolio with TailwindCSS
5 days ago





4.3. Result Analysis

Frontend Performance: ReactJS ensures fast rendering and seamless interaction.

Backend Efficiency: Flask APIs respond in real-time with an average response time of **~1.2 seconds**.

Database Handling: MongoDB manages data operations swiftly, handling user queries and engagement updates efficiently.

User Acceptance Rate: ~90% of users found the platform easy to use and effective during user testing.

System Stability: Handled concurrent requests during testing without performance degradation.

4.4. Observation/Remarks

- The real-time engagement system improves interaction and fosters community building.
- User-friendly filters enhance skill discovery accuracy, ensuring better matches.
- Integration of notification systems can further improve user engagement and platform activity.
- UI is clean and responsive; mobile version works well but can be further optimized for smaller screens.
- Future scope includes skill rating systems, video demonstrations, and integration with learning management systems.

Chapter 5

Conclusion

5.1. Conclusion

SkillSync effectively bridges the critical gap between skill providers and learners through a smart, responsive, and real-time web platform. It enables individuals to share their expertise or discover new skills with ease, enhancing the accessibility and efficiency of knowledge exchange.

By integrating technologies such as ReactJS, Flask, and MongoDB, the platform provides a seamless user experience and robust backend support. Its interactive engagement system (Likes, Comments, Replies) streamlines communication and enhances community interaction between users.

With user-friendly interfaces, real-time engagement tracking, and accurate search filters, SkillSync stands out as a socially impactful solution in the education and skill development domain. It demonstrates how technology can be used to foster personal growth by connecting the right people at the right time.

Github Link : https://github.com/Pranavlovescode/SkillSync-Angular-Flask

Hosted Link : https://skillsync.pranavtitambe.in/

5.2. Future Scope

- **Mobile Application Development** for easy access and skill sharing on-the-go.
- **Skill Rating & Review System** to provide quality metrics for shared content.
- **Video Demonstration Integration** to enhance skill presentation.
- **Virtual Meetup Scheduling** for live skill-sharing sessions.
- **Push Notifications & Email Alerts** for engagement updates and trending skills.
- **User Analytics Dashboard** to view engagement statistics and track impact.
- **Credentialing System** for skill verification and authenticity.
- **Multilingual Interface** to improve usability across various regional users in India.