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Coral Reef -Where Knowledge Unites

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ABSTRACT—

In a world where internet is at the fingertips of every fortunate person, knowledge isn't. We created a website platform which is free for each of us to gain knowledge and create strong communities from within. "CORAL REEF" is a website platform for skill sharing or skill exchanging through one-on-one interaction from the comfort of your own home. This website allows users to learn plus share particular skills with other users that are interested. We created this platform using Python, CSS, HTML, JavaScript and tested it among a particular number of students, which resulted in success. The reviews we got from them were heartfelt and made us realize that our site serves the purpose of learning and bringing people together.

Keywords— skill exchange, skill share, learning, community, growth.

Introduction

In this day and age technology will always be a part of our lives. Technology is becoming global day by day, but knowledge and learning through community interactions are becoming scarce. Monetization of knowledge, AI becoming our only source of high to basic information and social media platforms becoming our only interaction ground to catch up on what others are living are a few reasons that contribute to lesser community bonds and learnings.

To step into a new era of strong mindsets, we require strong bonded and empathy learning communities.

People all around the world have a lot of experience and skills to offer that is unable to reach people who can't afford monetized resources.

Resources like "YouTube", "Instagram", "Udemy" and more such interactive platforms do not have one-on-one skill sharing and learning interaction, which creates a wall of one sided teaching and learning. Our website allows users to interact with one another, which also serves our purpose to creating strong, deep-rooted and bold community groups among us humans.

It has been proven that learning through interaction creates stronger human connection and makes learning easier.

We named our website "Coral Reef" as a symbolism towards community growth and our tagline "Where Knowledge Unites", serving purpose that unites us all through learning.

Corals contribute to less than 0.1% of the ocean world yet are home to 25% of all marine species, just like our website uniting us all globally to learn and interact with one another to contribute to creating stronger communities through sharing of knowledge.

The remaining part ahead in this paper are as follows - Section II reviews existing platforms and identifies the limitations. Section III describes the system design following Section IV with implementation and Section V with results and future work.

Literature Review

A few of our literature research led us to these paper reports:

- Skill-Swap Platform: Peer-to-Peer Skill Exchange System: Rashi Suneriya Research Project, 2026
- Skill Swap- Micro Skill Exchange Platform Bobby Thoke, Ajay Patidar (IJCOPE), 2026

These two research papers gave us an idea and a result that what we think of creating could be possible.

Another set of research papers that confirmed our idea to create a platform where users can share learning and knowledge that'll led to creating trust, collaboration and knowledge improving were these:

- Knowledge Sharing on Online Platforms within Organisations: Katsuhiko Yoshikawa, Chia-Huei Wu, Hyun-Jung Lee Applied Psychology, Vol. 72, No. 4, 2023
- Knowledge Sharing in Platform Ecosystems through Sponsored Online Communities :Martin Kauschinger Proceedings of the 31st (ECIS), 2023
- Knowledge-Sharing :Fatma Gizem Karaoglan Yilmaz, Ramazan Yilmaz Psychology in the Schools, 2023

A. Existing Platforms:

Coral Reef was inspired by already existing online platforms, such as – YouTube, an online video sharing platform, Instagram- a social app where users can catch up with each other through messages, post's and reels.

Omegle - global online website where users were matched to strangers to get to know each other even if they were in different parts of the earth, and other online learning platforms that exist like Udemy or teaching lessons on YouTube.

These well-known websites and apps inspired us to create an interesting design, a website where people are matched with their skill interested partner, may it be for learning or teaching them.

The users can come together, have a partner and start their interactive learning journey.

B. Limitations in Existing Platforms and what Coral Reef Offers:

Even though there are hundreds of such platforms that share learning, skills, knowledge and collaboration, but none provide what "Coral Reef" does.

First, "Coral Reef" has a very interesting start to users learning journey.

It match-makes users to their partner with the same interested skill each would love to learn or share, just like when a user uses a match-making app, like "Shadi.com".

This feature peaks the interest of the user as to who would be a match for their skill and make them eager to start their journey with our website.

For example: User A, writes in their bio that they're looking for someone who can teach them how to make excellent Grandma's Cookie Recipe. While, User D knows exactly how to make them and are willing to share the recipe to whosoever is interested in learning and get the taste and warmth of the cookies when they had them whenever they went to their grandmother's house.

Therefore, User A gets a suggestion of User D's profile, accepts it and gets a match to become skill learning and sharing partners.

Both the users start their learning journey through chat and a video call session and share and learn through interaction.

Second, unlike other websites where users can not add or mention all their other profiles such as, Instagram ID or LinkedIn ID and other such profiles. Coral Reef provides a platform where users can add all of their ID's or profiles in their bio so it becomes easier for other user's to find them and their work on different platforms.

Third, Coral Reef let's user's have an interactive learning. User's are able to have one-on-one session's with one another which eliminates the wall of one-sided learning and sharing.

Interactive learning has resulted in more success than one-sided learning. And, as humans we all thrive and grow on interaction, trust, experience, learning, and "Coral Reef" is willing to provide all of it.

System Design

Coral Reef design system follows a three-tier architecture : Frontend, Backend and Database system.

A. Frontend:

The frontend is the Presentation Layer, it is built using HTML5, CSS3 and JavaScript.

HTML5, provides a structured foundation of every page- User profile, search bars, chat box, video call interfaces.

CSS3, controls the visual design and responsiveness. It ensures that the platform works smoothly in desktops, tablets and mobile phones.

JavaScript, adds interactivity – Search suggestion's, notifications for matches and messages, for making video calls. It also enables asynchronous communication with backend so the pages stay updated even without a full reload.

B. Backend:

Backend is the Logic Layer that processes user request and communication with the database.

Python, is the core programming language. It handles matching algorithm, compares what the user wants to learn with what another user can teach.

Django, a high-level python web framework that provides structure for the backend. It handles URL routing, user authentication, session management and database communication. It has built-in security features, such as CSRF protection, password hashing, keeps user data safe, it also manages integration with video calling APIs and external profile links from Instagram, GitHub and LinkedIn.

C. Database:

Database is the Data Layer that stores all the information in “Coral Reef”.

It uses MySQL, a database management system known for it’s speed, reliability and ability to handle large volumes of data.

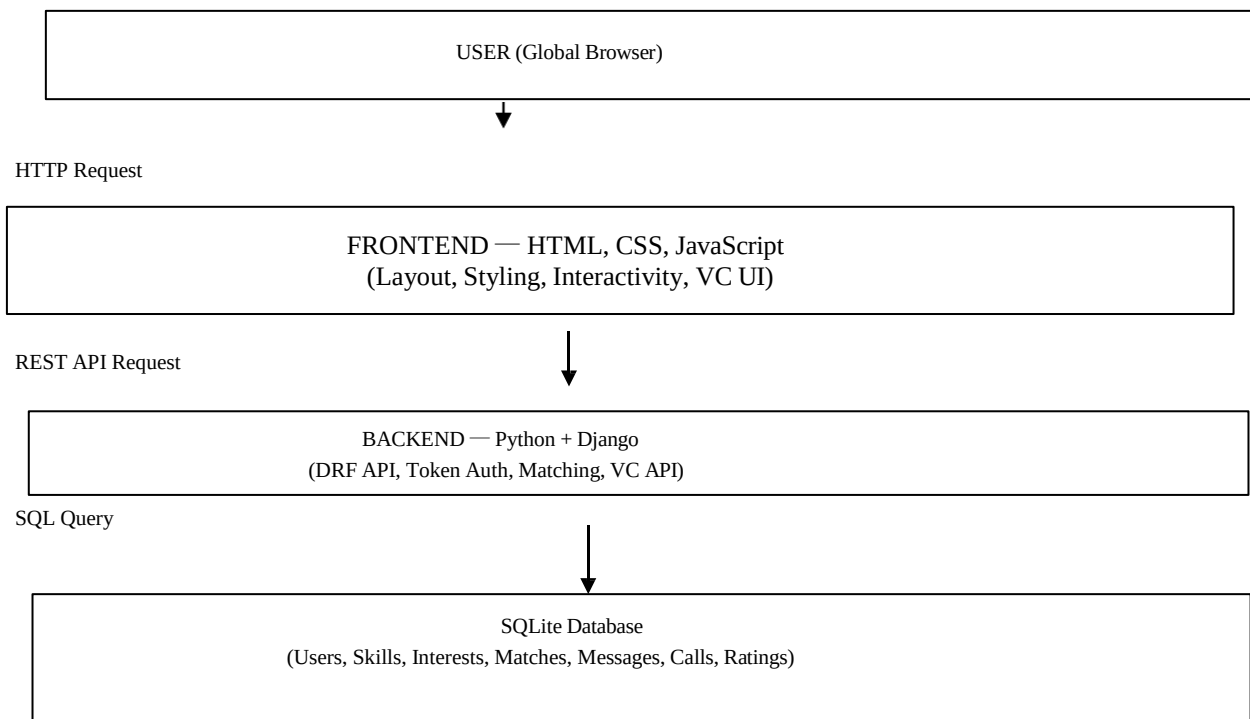
It stores:

- Users – username, email, password, bio, country , links to external apps.
- Skills – skill name, category, description.
- Interests – skills users want to learn, used by matching algorithm.
- Matches – records of matched users, matched skills.
- Calls – records of video call sessions.

D. Working of all the Layers Together:

- User interacts with the frontend built using HTML5, CSS3 and JavaScript.
- Actions like registering or searching sends request to backend, handled by python and Django.
- The backend processes the request and updates the database – MySQL.
- The database returns the data which is formatted by backend and returned.
- The frontend layer shows the results such as – matches, messages or an incoming video call.

E. Architecture Design :



Implementation

A. Tools and Technology:

TABLE I

Layer	Technologies
Frontend	HTML5, CSS3, JavaScript
Backend	Python, Django
API	Django REST Framework
Database	SQLite
Authentic ation	Django REST Framework Token Authentication
Version Control	Git
Repositor y	GitHub
Developm ent	VS Code / Terminal / Browser

B. Key Features Implemented:

- Skill listing – Users can add skills they can teach or want to learn, with a short description.
- Search and Filter – Learners can search for skills by name, or category.
- Request system – Learners can send requests to skill teachers, who can accept or decline.
- Messaging – Once a request is accepted, both parties can chat or have a video call session.
- User registration – Users can register with unique usernames, email and password.

C. Work Implemented:



Fig1: Home Page of our website

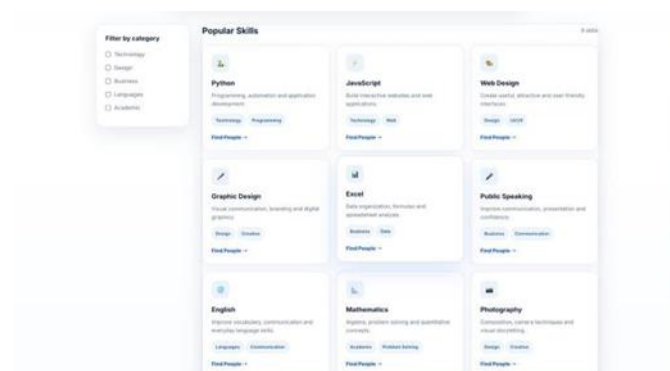


Fig2: Skill listing page

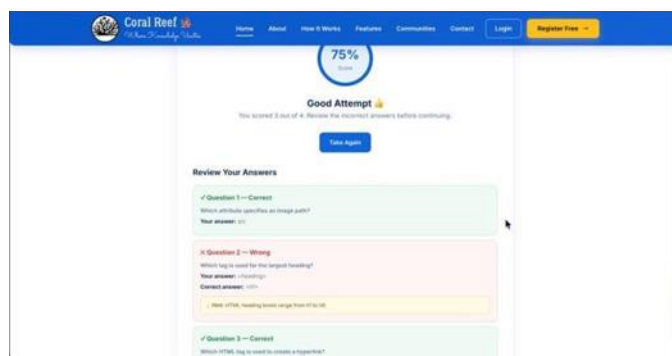


Fig3: Skill testing results

Results and Discussion

A. Testing :

We tested our website with 10 students from our university for two weeks. The users were asked to create profiles, teach and learn a skill and try to connect with at least one or two user.

The results we got proved our website successful, and the reviews were great as the students enjoyed the user match- making concept and were also enjoying having one-on-one video call sessions to learn and teach the particular skill they wanted to one another.

B. Limitations:

The platform lacks gamification features such as points, badges, streaks, or leaderboards, which are known to increase user engagement and retention. Unlike gaming applications or social media platforms, Coral Reef does not provide immediate dopamine- driven rewards, which may reduce the frequency of return visits, especially among young users.

Conclusion

This paper presents Coral Reef, a web- based platform for skill sharing and learning among students and adults. The paper addresses the idea behind the development of the website, the reasons that inspired the idea behind the project, its design and what was used to develop the architecture, the role it will play in the users life and the gaps, limitations and what it offers differently from other existing platforms.

Coral Reef was developed using Python, Django, HTML5, CSS3, Javascript and MySQL for database.

Even though a lot of such platforms exist, Coral Reef adds a unique view towards learning and trying to bring people together to create growth in our community, make them stronger, build trust towards one another, share whatever knowledge you can and mostly explore and experience different kinds of learning through one-on-one interactions that make life interesting and fun.

The platform lacks features that could increase users engagement and retention rate, which could result in low chances of revisits.

Future work will be focused on making the platform more engaging and fun for learning and add new features that can make it easier for users globally.

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