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Web-Based Multi-Service Marketplace Platform

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Abstract: *The discovery and delivery of services has evolved because of the growth of digital platforms rapidly. However, the service providers and consumers have issues, that they still struggle with, which are due to the fragmentation of the platform, the absence of trust and ineffective communication. The current paper provides the design and development of a full-stack web application, called SocialMarket, which combines both the social networking setup and a structured services marketplace into one integrated platform. The suggested system will allow users to make personal profiles, post content, subscribe to others and add professional services all in the same account. The main technical contributions are real time bi-ways messaging with Socket.io, JWT based stateless authentication, password hashing with bcrypt, storing images in Base64 format in MongoDB documents and role-based administrative panel. The platform is based on Vercel, Render and MongoDB Atlas and has a continuous deployment pipeline as fully automated deployment.*

Keywords: Full-Stack Web Application, Social Networking, Services Marketplace, React.js, Node.js, MongoDB, Socket.io, JWT Authentication, REST API, Cloud Deployment.

1. INTRODUCTION

Social interaction, service discovery is a primary use of the internet today, yet it operates on other platforms, which require that the freelancers and small businesses maintain multiple accounts, such as LinkedIn, Fiverr, Instagram and WhatsApp. Such fragmentation decreases efficiency and increases the problem of trust since social platforms do not offer lists of services in order, whereas service marketplaces offer little personal context. SocialMarket fulfills this gap by combining social networking and services marketplace together within one platform. It allows users to display their posts, interactions, followers and service listing on a single united profile and lets clients consider both professional services and social credibility of social presence to make a decision about it. The platform targets freelancers, students, and small business owners, making the provision of online presence simple and enhancing faith in online dealings. It is also developed based on React.js on the front, and Node.js and express.js on the back, MongoDB Atlas on the store and Socket.io on real-time messaging and is hosted on free cloud infrastructure to guarantee it is globally available at no cost.

2. LITERATURE SURVEY

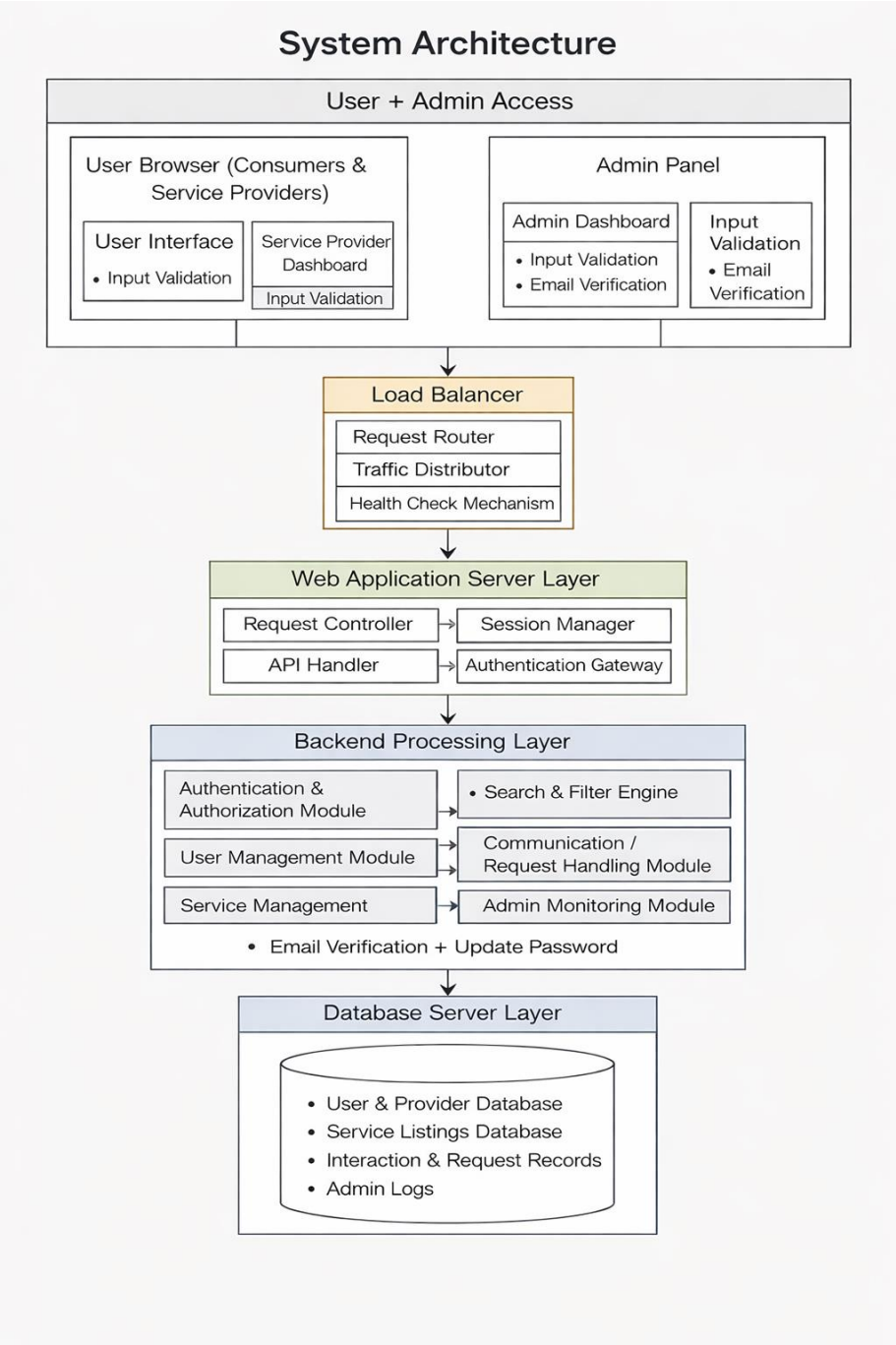
A number of platforms partially correspond with the objectives of SocialMarket and are not fully integrated. Facebook Marketplace does not have structured services and even stifles the organic reach. Fiverr is designed to have a structured listing and reviews but does not have a social layer, imposes a 20 percent commission and limits pre-order communication. LinkedIn specializes in formal employment and does not price its extended gig services with the help of filters and reviews.

Social networks such as OLX do not offer profiles, ratings and privacy policies, whereas Instagram provides promotion and does not have any structured listing, booking or trusted visibility. The fact that gaps exist points to the lack of a single solution.

The project is based on the newest technologies: React.js is used as a tool that allows creating a reusable UI, Express.js is an API used as a REST, MongoDB is used as a flexibly designed data storage system, Socket.io is an API that uses messages in real time, and JWT is a scalable authentication tool within the cloud-reliant architecture.

3. PROPOSED SYSTEM

SocialMarket combines social networking and service markets under a single roof, thus eliminating the need to have different applications. It is free of algorithmic interference, is a simple and chronological feed that allows users to post, react, comment and share and follow others. Discovery section allows users to discover new people and a global explore feed provides the opportunity to make interactions and visibility more organic and transparent.



System Architecture

At the marketplace level, the users are allowed to add orderlies service listing in categories, pricing and reviews connected to real accounts, enhance trust. It is easy to search for services with the help of filters, and it is also possible to communicate in real-time with the help of Socket.io to avoid sharing personal information. All activities are notified in real time, and all these make the whole experience connected and smooth.

4. METHODOLOGY

The development of SocialMarket was through the application of the Agile methodology where planning, analysis, design, implementation, testing, deployment, and maintenance occurred in iterative sprints. The four sprints of the development went as follows: database design, authentication, JWT and password hashing, social features, posts, reactions, comments, sharing and following, services marketplace, reviews, search and administration tools, real-time messaging, and notifications using Socket.io. Frontend and backend were built in tandem with APIs being integrated once they were finished.

The security was implemented at several stages, including password hashing using bcrypt, route protection using JWT, role access control, and limited CORS. Communication is all via HTTPS, and such functions as email verification and password reset are provided to verify the authenticity of an account. There was checking on the level of module, integration test across frontend and backend, and real time messaging validation and authentication test, and finally real user acceptance test will be done in order to ensure the reliability of the system.

5. Proposed System Software Implementation & Results

The implemented SocialMarket system was put to the test on all functionality and non-functionality requirements and worked as desired in production on Vercel and Render. All of the essential features performed correctly, and API responses like feed loading, profile retrieving and service listing took up to 500 ms, which makes real-time communication saved and ensnured. Socket.io real-time messaging appeared to be low-latency (less than 100 ms), which guaranteed smooth communication. Base64 image storage merely cost the system 33 percent in terms of data storage size but made it easier as it did not need external storage. Altogether, the platform was a stable, responsive and fit to real world.

Key Observations

- Authentication (registration, login, email validation, JWT validation, and password reset) functionality was functioning well.
- There was no algorithm that interfered with the display of posts on the feed which was in a proper chronological order of the followed user.
- Live chatting was also working well with real-time delivery and typing indications.
- Service listings were easily searchable and properly sorted in accordance and by price, rating, category and location.
- The admins dashboard also facilitated a positive monitoring of the platform where people could be banned and posts can be removed and promoted in the service.
- Things worked out well with CORS security which prevented an unauthorized access in production.

System Modules

- **Authentication Module**: Deals with email verification, password reset, registration and login.
- **Social Feed Module**: It is displayed as a list of chronological posts pertaining to the individual.
- **Post Management Module**: Copes with the post creation, reactions, comments and post shares.
- **People Module**: Underpins system and user discovery made by user.
- **Services Module**: Services Module manages listing that has choice of filtering and sorting.
- **Messaging Module**: This allows real time private messaging.
- **Notification Module**: Sends real-time notification of the user activities.
- **Admin Module**: the module assists in controlling the platform.

Home Page of the Social Market

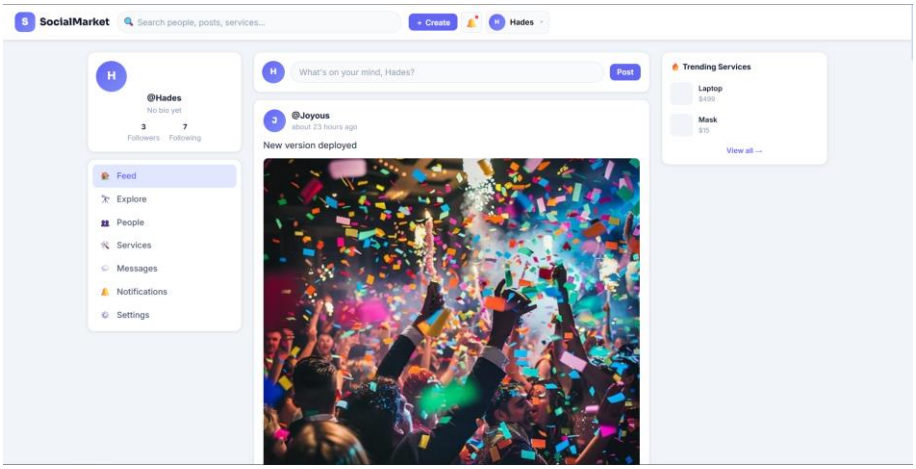


Fig 1: Home Page of the Social Market

Fig 1 shows the system consists of several modules that help in managing user access and system functionality. The User Registration Module allows new users to create an account by providing a username and password. The Login Module enables registered users to access the system securely by entering their credentials. The Authentication Module verifies the entered username and password to ensure that only authorized users can log in. After successful login, the Navigation Module redirects the user to the main application where they can access other features of the system. These modules help in maintaining security and providing controlled access to the Social Market.

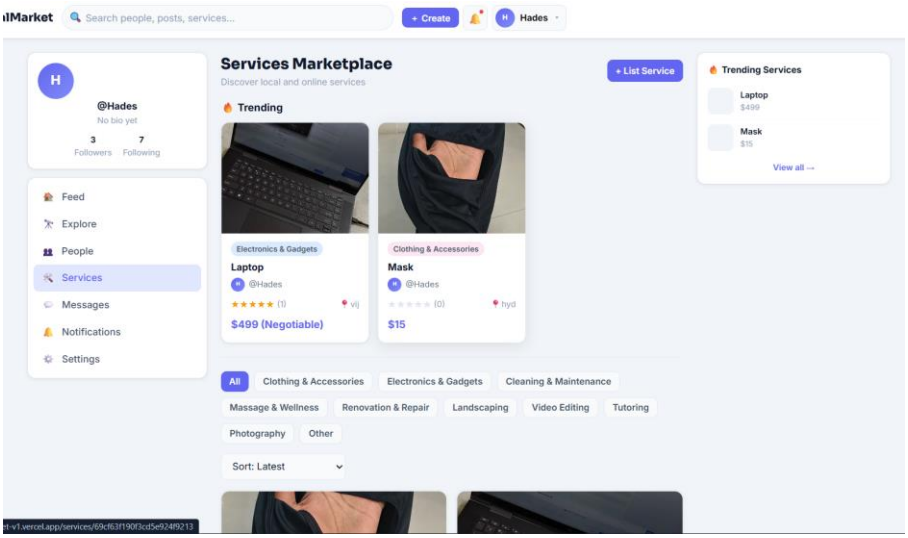


Fig 2: Various Service listings of the application.

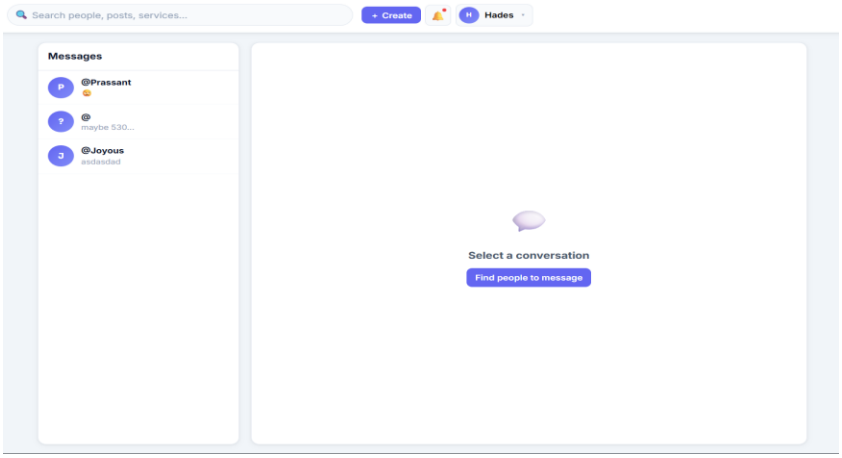


Fig 3: Messaging between sellers and buyers.

6. CONCLUSION

This paper presented SocialMarket, a full web app, which integrates social networking and a market place of services into a single platform. It addresses the general issue of freelancers and small businesses having to use several applications to be seen, post on service lists and talk by having all of it under one profile. The users are in control of their posts, followers and services and this makes interactions easier and more trustworthy.

The system was created based on React.js, Node.js, Express.js, MongoDB Atlas and Socket.io, and deployed on Vercel and Render with continuous deployment. All of the major features such as real-time communication, email confirmation, password reset, verification of the JWT authentication, and review based marketplace were developed and put into production. The ability to create a chronological feed and messages that are privacy-minded as well as zero commission make it stand out, and the additional context of social interactions within a user can enhance trust between the users.

Added features to this in the future are enhanced image storage (Cloudinary or AWS S3), OAuth support, built-in payments (Stripe), mobile app and community-related options to make discovery more personalized.

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