



Empowering Businesses and Individuals with Expert Insights

Sakshi Ashtekar^{*1}, Preeti Mehta^{*2}, Aditya Pawar^{*3}, Jash Sureja^{*4},
Prof. Priyanka Khalate^{*5}

^{*1,2,3,4}Student, Department of Comp. Eng. SKNCOE, Pune, India.

^{*5}Asst. Prof., Department of Comp. Eng. SKNCOE, Pune, India.

Abstract : This paper outlines the development and implementation of ExpertEase, an innovative Android application created to connect and unite students with domain-specific experts for resolving doubts and providing tailored learning experiences. This platform bridges the rift in conventional doubt-solving and educational systems by delivering personalized expert assistance within a cohesive and secure online learning atmosphere. By using React native for the front-end interface, PostgreSQL for database, Python and Flask for integrating AI chatbot, ExpertEase implements an extensive system for user authentication, profile creation, doubt posting, meeting scheduling, and secure payment processing. This application highlights how modern technologies and tools can be aligned and incorporated to develop a seamless educational and doubt-resolution platform that is favourable and advantageous to both, knowledge seekers and domain experts. This paper provides an overview of the architectural design, implementation details, and potential future improvements for the ExpertEase platform, playing a part in the ongoing development of personalized digital learning solutions.

I. INTRODUCTION

Personalized and tailored learning, along with expert mentorship and guidance, has become crucial for students as well as individuals in the early stages of their careers, facing academic and professional setbacks, in today's rapidly evolving and ever-changing educational and industrial landscape. Traditional learning platforms and educational systems are often inadequate in providing dedicated attention to learners, leaving many with unresolved doubts and queries. This lack of tailored educational systems for learners has created a need for solutions that connect them directly with industry experts having expertise in domains that learners have doubts about. ExpertEase turns up as a one-stop solution to handle this need. The platform is designed as a mobile application that enables smooth and seamless connections between students and experts, allowing personalized doubt resolution via scheduled online sessions. ExpertEase aims to change the way specialized knowledge is acquired, shared, and applied in real-life contexts. By utilizing technologies like React Native for mobile app development across platforms and using Supabase with PostgreSQL for secure and efficient database handling, ExpertEase offers a reliable and user-friendly platform for learning and interaction. ExpertEase stands apart from other e-learning and doubt-solving platforms by offering a combination of one-on-one expert sessions, AI-assisted support, and a community-based approach to knowledge sharing. What sets ExpertEase apart is its flexibility in meeting the needs of both students and experts. Students can submit questions along with their preferred timing and budget, while experts can choose to address these queries during their available hours. This setup ensures personalized support for students while providing professionals with an opportunity to earn by sharing their expertise. This paper is a detailed elaboration of implementation aspects of ExpertEase, focusing on the technical architecture, database design, user authentication mechanisms, doubt management system, meeting scheduling functionalities, payment processing, and notification systems. We also discuss the challenges encountered during implementation, testing methodologies, and potential future enhancements to the platform.

II. BACKGROUND

ExpertEase is an application which is built to bridge the gap between industry experts and individuals. Accessing qualified specialists from various fields is a challenging task. Whether for business strategies, legal advice, technical problems, hiring a professional or a consultant, ExpertEase aims to simplify the process and bring experts just a click away. ExpertEase helps discovery, communication and collaboration with experts seamless. ExpertEase aimed to build a knowledge sharing platform by connecting those offering the knowledge and those seeking it. Through ExpertEase, we aim to build a platform that creates opportunities for experts to monetize their knowledge and also earn from it. The addition of Chatbot support enhances user guidance and quick query solving.

III. LITERATURE SURVEY

In this paper by Fuad Mehraliyev, et al we observed [1] how two things — how focused a platform is (specialization) and how much experience it has — affect the way users trust expert online review platforms. It also explores how a user's own confidence (feeling powerful or not) changes how they see these platforms. Through an online experiment, the study found that both specialization and experience help users feel that the platform's information is good and relevant. But the user's confidence matters too: confident users are more influenced by how specialized the platform is, while less confident users are more influenced by the platform's experience. These insights can help platform managers make their platforms seem more trustworthy and useful for different types of users.

This paper by Rahaf Aljundi, et al [2] introduces a model for lifelong learning based on a network of experts. It presents a system where new tasks and experts are sequentially added, building upon prior knowledge. The model employs gating autoencoders to determine the relevant expert for a given task, facilitating efficient knowledge sharing without the need to store data from previous tasks.

This research by Gautam Kishore Shahi, Oliver Hummel [3] addresses the challenge of identifying domain experts within large research organizations. It proposes an automated approach that analyzes publications and teaching materials to pinpoint experts, thereby facilitating knowledge sharing and collaboration. The system is designed to be scalable, allowing for integration across various institutions.

This paper by Risang Baskara [4] is based on a theoretical model, by revising prior content from esteemed databases like Scopus and World of Science. The core principle of the flipped learning model is to transform conventional classroom learning by allowing students to study lecture materials in an independent environment and using the classroom time for enhanced collaborative learning through discussions and analytical thinking. This can be further enriched by chatbots, which lead to tailored assistance, encouraged cooperation, and on-the-spot critique. This helps learners administer their autonomous learning and engage in peer discussions. Nevertheless, there are very few experimental studies that provide evidence for the favourable influence of chatbots on learning consequences and their abilities to fit diverse needs.

This paper by Aman Hasan [5] explores how AI-powered chatbots can improve student engagement and learning outcomes by offering personalized support. Chatbots provide instant feedback, answer questions, and guide students through lessons, helping them stay engaged and learn at their own pace. While there are challenges like data privacy and potential bias, the paper highlights that AI chatbots can make learning more interactive and effective.

We observed that this research by Ovilash Jalui [6] focuses on creating a safer and more efficient way for developers to test payment gateways without the risks and complexities of using real-world systems. Traditional payment gateways can be tricky to work with due to regulations, financial risks, and difficult integration processes. The new model allows developers to simulate real-world payment scenarios in a secure environment, using features like encryption, tokenization, and AI-driven fraud detection. It also includes tools for testing webhooks, managing transaction states, and tracking logs, making it easier to debug and integrate payment systems. The results show that this approach improves security, speeds up debugging, and ensures more accurate transactions. This method offers a cost-effective, risk-free alternative to live payment gateways and can help build more secure e-commerce platforms. Future updates may include blockchain integration, automated compliance checks, and even better fraud detection.

This article by Nikita Shevtsiv, et al [7] explores the best methods and tools for cross-platform mobile app development, focusing on speeding up the coding process. It analyses different technologies used for mobile app development, discussing their pros and cons. The article specifically highlights the React Native framework, explaining how it works and its benefits for developers. It also looks at developer interest in React Native, including search trends and the number of downloads of its installation package. React Native is compared to other frameworks for building mobile apps on both Android and iOS.

This paper by Allamy, et al [8] surveys the development of expert systems from 2005 to 2015, focusing on methodologies and applications. It emphasizes the need for integrating diverse methodologies to enhance expert system development and suggests that future advancements should consider interdisciplinary approaches.

IV. TOOLS AND TECHNOLOGIES

1. UI/UX Design:

- i. **Figma:** Figma was used to design the entire UI of the application.
- ii. **Canva:** Canva was used for designing logos and diagrams.

2. Frontend Development:

React Native: React Native was used as the primary frontend development framework for building the ExpertEase mobile application for Android.

3. Backend Development:

- i. **Python:** Python powered the chatbot service integrated into the app.
- ii. **Database: Supabase:** PostgreSQL was used as the main relational database connected to the application via Supabase.

- iii. **Node.js:** Used for Server-side JavaScript runtime.
4. **Authentication:** Google Authentication
5. **Third-party Integrations:**
 - i. **Payments:** Stripe
 - ii. **Google Meet API:** Google Meet was used to generate video meeting links.
 - iii. **Gmail API:** Gmail API was used to send automated email notifications
6. **Development Tools:**
 - i. **Version control system:** GitHub
 - ii. **Expo Go:** For Development and building.
7. **Hardware:** Android device with internet connection.

V. MATHEMATICAL MODEL

The mathematical model behind the ExpertEase platform is composed of various entities, each representing important components of the system. These entities interact through specific operations, and the system is guided by constraints that assure its working and performance match with defined requirements.

Let S represent the ExpertEase system, and $S = \{I, O, F, \text{Success}, \text{Failure}\}$, where

- I = input set for the system
- O = output set from the system
- F = set of functions or operations
- Success = set of success states
- Failure = set of failure states

The Input Set (I) can be depicted as: $I = \{U, D, E, M, P\}$

- U = set of user credentials {username, password, student/expert}
- D = doubt information {title, description, domain, attachments}
- E = expert profile {name, domain, availability, company, designation, experience}
- M = Meeting details {scheduled_by, scheduled_time, duration}
- P = Payment information {amount, payment_method, transaction_id}

Similarly, the Output Set (O) can be represented by: $O = \{UR, DR, ER, MR, PR\}$

- UR = User registration/login response {status, user_id}
- DR = Doubt registration response {doubt_id, status, timestamp}
- ER = Expert result {matched_experts[], selection_status}
- MR = Meeting scheduling confirmation {meeting_id, join_link, calendar_event}
- PR = Payment confirmation {receipt, transaction_status}

Also, the Function Set (F): $F = \{f1, f2, f3, f4, f5, f6\}$

- $f1$: User Authentication = $U \rightarrow UR$
- $f2$: Doubt Registration = $D \rightarrow DR$
- $f3$: Doubt Selection = $(ER, E) \rightarrow \{\text{selected_doubt}\}$
- $f4$: Meeting Scheduling = $(E, D, M) \rightarrow MR$
- $f5$: Doubt Resolution = $(D, E, M) \rightarrow \{\text{resolution_status}\}$
- $f6$: Payment Processing = $(P, D, E) \rightarrow PR$

Success States: Success = {authenticated_user, posted_doubt, matched_expert, scheduled_meeting, resolved_doubt, completed_payment}

Failure States: Failure = {authentication_failure, doubt_posting_error, scheduling_conflict, resolution_failure, payment_failure}

VI. COMPARATIVE STUDY

Rigid scheduling systems, a lack of real-time expert participation, and a lack of customisation have frequently been the limitations of existing doubt-resolution technologies. Many mostly rely on public forums or broad AI support, which fall short in meeting the needs of individual learners. Additionally, issues including convoluted payment procedures, inconsistent meeting arrangements, and inadequate feedback systems have persisted in compromising consumer happiness and confidence. These shortcomings in security, adaptability, and user experience have kept previous solutions from completely satisfying the needs of students looking for specialized academic help.

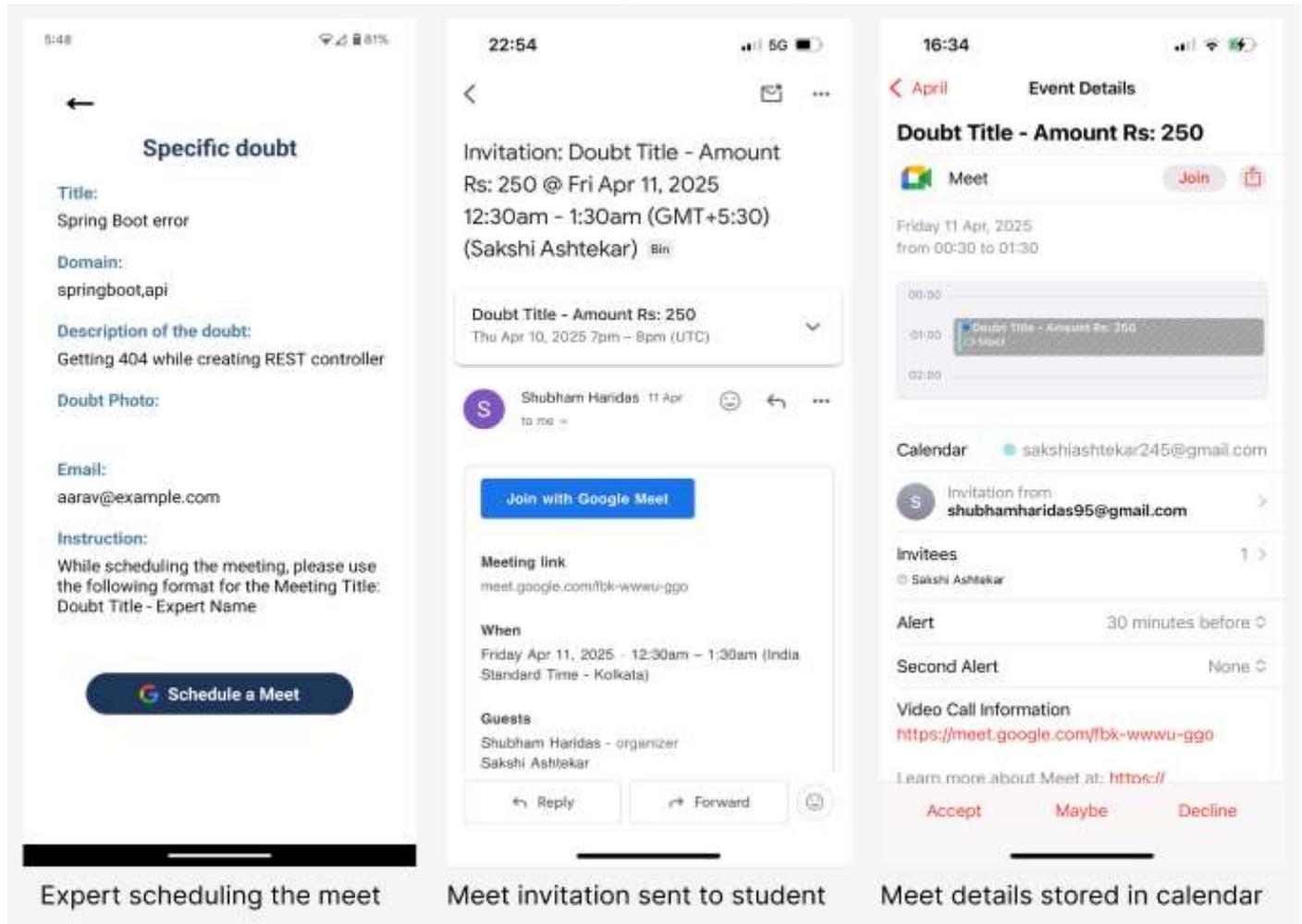
ExpertEase successfully gets beyond these restrictions by giving students and subject-matter specialists a direct, adaptable, and safe link. The software guarantees accessibility and customization by enabling users to plan sessions according to their desired

time and financial constraints. ExpertEase builds a complete ecosystem centred on dependability and customer convenience by integrating real-time meeting settings through Google Meet, secure payment processing via Stripe, and structured doubt management with Supabase. It differs from traditional apps by combining expert-driven learning with AI-assisted chatbot support, providing a smooth and result-driven learning environment.

VII. IMPLEMENTATION AND RESULTS

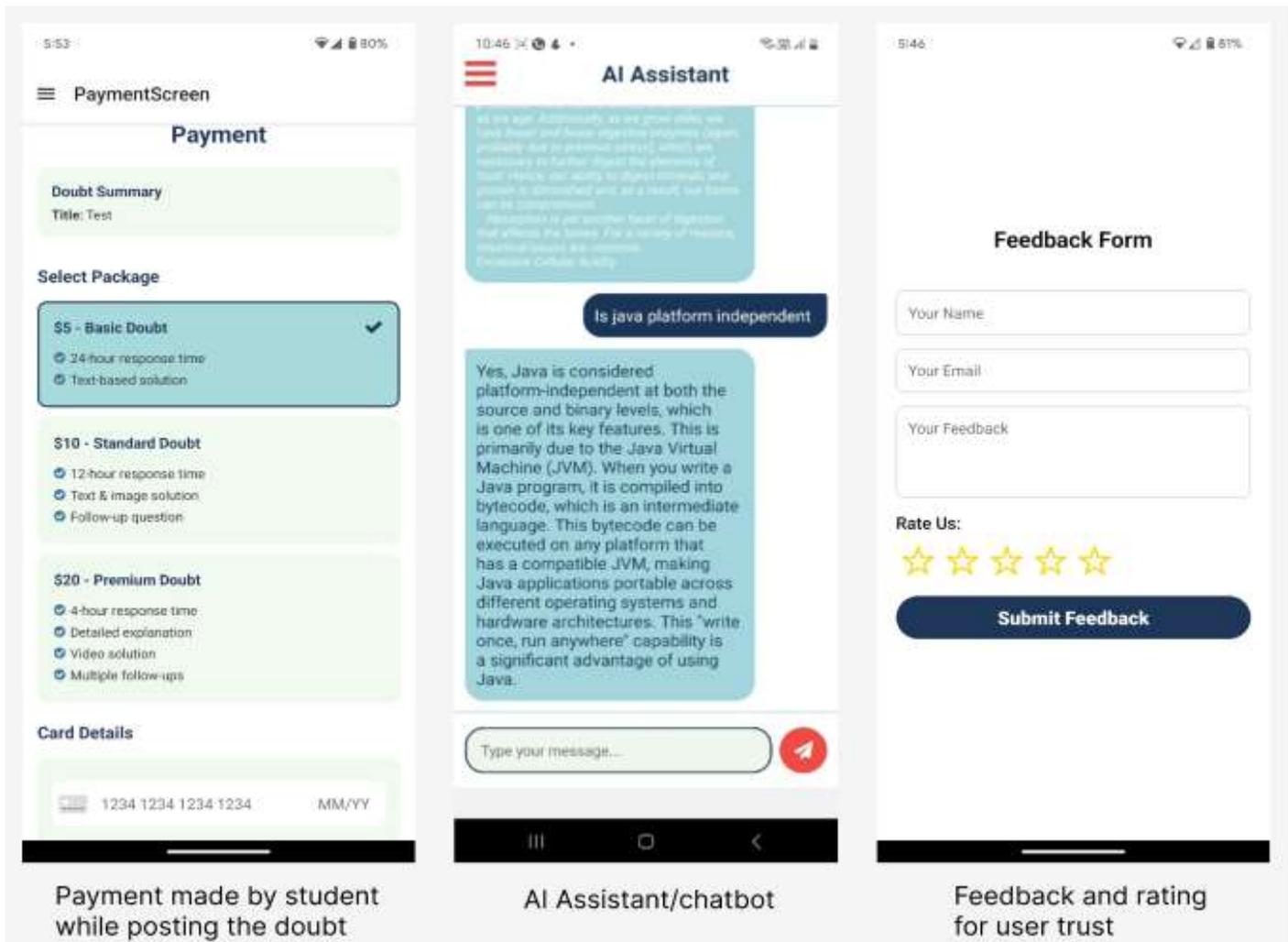
As part of the implementation of ExpertEase, we noticed that most existing platforms help people by showing reviews written by other users. But users on those platforms usually don't get direct help—they just read what others have experienced and try to figure things out on their own. This approach may work for generalized recommendations, but it falls short when users require specific, expert-led solutions tailored to unique problems.

To solve this, we designed and built ExpertEase as a platform where users can directly connect with real experts in different fields. The development began with user role differentiation (experts and students), expert onboarding with verification, and a simple approach for scheduling meetings. Real-time features were prioritized, including chatbot and notification systems to ensure smooth and timely communication. Trust is built through a feedback loop after each session.



A key part of the system is the payment which is integrated in the app itself. While posting the doubt, students pay for the expert session which goes into the app wallet first and later is paid to the expert on successful doubt solving which is tracked through feedback. This system ensures experts are paid fairly and users know what to expect in terms of pricing before they book.

During testing, we saw that users appreciated the ability to talk to real experts instead of relying on random advice or search from the internet. Most users said they got clearer and more personalized answers. The real-time interaction model also reduced the time spent searching for information. They also liked that everything—scheduling, chatbot, payment, and follow-up happened in one place.



With ExpertEase, the answers are personal, direct, and professional which makes the whole experience smoother, faster, and more useful.

VIII. FUTURE ENHANCEMENTS

Based on feedbacks and current technological trends, several potential enhancements can be identified for future iterations of ExpertEase:

- 1. AI-Powered Classification-** Machine Learning algorithms can be implemented for automatic categorizing and tagging of doubts based on domains, so that it would be easier for experts to filter out the doubts that they have expertise in. Use of NLP can make it more effective to analyse doubt descriptions in order to extract key tags and identify suitable experts, even when students select imprecise domain categories.
- 2. Native Video Conferencing Implementation-** Integration of in-app video conferencing for meeting would create a seamless and hassle-free user experience. This additional enhancement would also support session recordings, document sharing, etc. within the application environment, this would reduce friction in the entire process.
- 3. Expert Recommendation System-** Development of an expert rating system based on resolution time, satisfaction rating by students, and communication clarity would improve the efficiency of expert selection and their reliability for students. A recommendation engine using filtering techniques could suggest experts based on a student's previous interactions, learning patterns, and other specific requirements.
- 4. Personalized Learning Paths-** By analysing common themes in students' doubts, the platform would be able to generate personalized suggestions and learning paths, addressing key areas of foundational gaps. It would let the platform identify related topics by evaluating past question trends, using advanced algorithms to improve the overall effectiveness of the experience.
- 5. Multi-Platform Availability-** Expanding beyond Android to include iOS support and browser-based access would broaden user reach. Implementing a web application with multi-browser support, while preserving essential features would provide expanded accessibility.

IX. CONCLUSION

The ExpertEase platform effectively bridges several important voids in online learning and query resolution platforms by establishing direct links between learners facing domain-specific issues and specialists in those domains. Throughout the implementation, we overcame several hurdles including synchronized data updates, device display variations, and transaction security, etc. These technical solutions paved the way for laying groundwork for upcoming enhancements and growth potential. With education shifting towards customized and immediate learning experiences, ExpertEase stands ready for expansion through upcoming capabilities, including but not limited to matching technology, built-in communication features, and authenticated skill verification, etc. This approach showcases how mobile technology effectively demonstrates its capacity to create valuable educational assistance systems tailored to meet specific learner needs and preferences.

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