

AI - Powered Online Notes Sharing System: A Framework for Collaborative Learning

Krishna Kumar
*Department of Computer Science
 and Engineering*
*B. M. Institute of Engineering
 and Technology*
 Delhi, India
krishna8900kumar@gmail.com

Sumit Kumar
*Department of Computer Science
 and Engineering*
*B. M. Institute of Engineering
 and Technology*
 Delhi, India
sskk721558@gmail.com

Sonika Vasesi
*Assistant Professor, Computer
 Science and Engineering*
*B. M. Institute of Engineering
 and Technology*
 Sonipat, India
sonikavasesi@gmail.com

Gurminder Kaur
*Associate Professor, Computer
 Science and Engineering*
*B. M. Institute of Engineering
 and Technology*
 Sonipat, India
er.gurminderkaur@gmail.com

Rahul Kumar
*Department of Computer Science
 and Engineering*
*B. M. Institute of Engineering
 and Technology*
 Delhi, India
rahulkumary1207@gmail.com

Abstract- “AI Power Online Note Sharing System”, a web-based platform that facilitates secure and structured academic note exchange between students, contributors and administrators is designed and developed in this research study. The system's three main components—students, contributors, and administrators—each include features specifically designed to guarantee user administration, note uploading, and controlled content access. Notes is divided into "normal" (free) and "premium" (paid) categories, giving students a variety of access options. An integrated AI chat board improves usability and support by guiding users through essential processes. For reliable performance, the architecture uses PHP, Laravel, jQuery, AJAX, Bootstrap, HTML, CSS, MySQL, JavaScript, and React.js. This project offers a potential model for scalable educational platforms, addressing the demand for automated, secure and user-friendly delivery of educational resources.

Keywords- AI Chatbot, Online Learning, Note Sharing, Role-Based Access Control (RBAC), Laravel, Freemium Model, Web Application.

I. INTRODUCTION

An inventive web-based platform called “AI Power Online Notes Sharing System [1]” was created to make sharing academic notes simple, effective and secure for students, contributors and administrators in educational institutions. Traditional note-sharing techniques often involve informal digital exchanges, paper-based distribution, or physical handouts, all of which can be ineffective and unsafe. By offering a centralized online environment available from anywhere at any time, this system attempts to get rid of these restrictions and improve the efficiency and collaboration of the learning process.

To maintain the integrity and control of the system, the platform is divided into three primary sections: students, contributors, and administrators. Each of these divisions has certain roles and authorities. After submitting the necessary requirements, students can register and create accounts to receive notes from the site, guaranteeing accountability and documentation. To control content uploads and prevent abuse, contributors – those who supply notes – must first submit a request for account approval to an administrator. Administrators have full control over account management, request approval, user deletion, and note moderation, guaranteeing a secure and well-kept repository. A notable feature of this system is its dual category note management: ordinary and premium notes. Normal Notes are freely available to all registered students, providing fundamental study material, while Premium

Notes contain detailed and comprehensive content for which students have to pay first. Downloading. This model caters to a wide range of users, balancing accessibility with monetization for sustainability. Additionally, the system integrates an AI-powered chat board that is designed to guide users through various processes such as account creation, note uploading and downloading steps. This interactive help significantly reduces user confusion, increases engagement, and improves the user experience by providing quick, context-sensitive assistance [8].

"Wide PDF, DOCX, and PPT files are included in Premium Notes; uploads up to 10 MB each are supported. Administrative approval of contributors requires human verification and content assessment first. To prevent abuse and unnecessary content, the system flags low-quality uploads and duplicate file names for admin moderation. Technically speaking, the system uses a robust technology stack that includes MySQL [9] for structured database management, React.js for creating a quick and effective frontend interface, jQuery and AJAX [11] for dynamic content management, PHP. Laravel [7] for backend [10] development, and Bootstrap for responsive and user-friendly design. This combination guarantees the system's scalability, maintainability, and ability to easily accommodate multiple users simultaneously.

II. LITERATURE REVIEW

The idea of online note-sharing platforms has generated a lot of interest recently due to the need to accelerate academic collaboration and the increasing demand for digital learning materials. Web-based platforms that make it easy for students and instructors to post, manage, and share instructional notes and documents have been the subject of much research. In educational environments, these systems seek to reduce manual paperwork, boost operational reliability, improve data security, and increase delivery efficiency. To guarantee secure and well-organized resource management, current online note-sharing platforms usually include administrative moderation, role-based access control, and user identification. For example, many systems allow users to add notes only if administrators approve them, guaranteeing the quality of content and preventing unwanted access. Adding a classification option improves the usability [13] and efficiency of the system, making it easier for users to find notes by topic, branch, or type.

Updated to display closely related systems: "For example, used machine learning-powered keyword search for effective retrieval; relied on manual content curation; adopted reputation-based contributor ranking to improve user trust and accuracy; implemented faculty-based moderation to ensure note quality."

A. Role of Artificial Intelligence in Education

AI-powered chatbots [3] and guides can help users by providing step-by-step instructions, answering questions, and making digital system navigation easier, thereby increasing user engagement and accessibility, especially for users who are not tech-savvy. The AI chat board in this project is an example of such integration, providing students with interactive guidance as they use the platform. Artificial intelligence (AI) has been increasingly integrated into educational platforms to provide personalized learning experiences and operational support.

With intents grouped for account creation, note upload, and troubleshooting, AI chat boards are a rule-based system that uses predefined question-response pairs. All answers come from well-selected FAQ database; Complex or unresolved questions are forwarded to Live Support. For this prototype, no generative AI or external models are used.

B. Administrative Control and Security

According to several research studies, strong administrative controls are essential for managing user accounts, approving content uploads, and controlling access permissions. This guarantees that high-quality notes are shared inside the platform and helps reduce unauthorized use. Note: To provide a strictly controlled environment for sharing, administrator controls also allow users and content to be deleted or changed.

C. Note Classification and Monetization

Some platforms divide notes into free (normal) and paid (premium) sections to accommodate different user needs, allowing fair reach and revenue generation for content creators or platform owners. This dual-model system also guarantees that students have access to a variety of learning materials, from basic outlines to detailed notes, depending on their resources and preferences, which helps ensure the stability and ongoing development of the platform. Finally, the literature emphasizes the benefits of an online notes sharing system [1] that is secure, augmented by AI, and managed by an administrator as a contemporary learning tool. Combining robust technology, AI support, and specific user segmentation, this project expands on these tried-and-true ideas to create an effective and user-friendly platform for exchanging academic resources.

III. PROPOSED METHODOLOGY

The suggested technique for "AI Powered Online Notes Sharing System [1]" involves a systematic approach to the analysis, design, development, and implementation of a secure and intuitive web application for academic note management. To determine user needs and specify specific functional and non-functional requirements, a thorough requirements analysis is first performed. Because of the system's ability for role-based access control, administrators can manage users and content with full permissions, contributors can request permission before adding notes, and students can create accounts and download notes. To provide a variety of access options, Notes is divided into two categories: normal (free) and premium (paid).

MySQL [9] serves as the primary database to securely store user details, note metadata and transaction information, and AI-powered chat boards are integrated to guide users through various website functionalities, such as account creation, note downloading and uploading processes. The frontend is designed using React.js for a responsive and intuitive user interface, with Bootstrap for styling. PHP Laravel [7] powers the backend [10] development to handle server-side logic, authentication, database interactions, and APIs. AJAX [11] and jQuery [11] are used to enable asynchronous data exchange, improving user experience without requiring full page reloads [8].

The methodology ensures a robust, maintainable, and efficient platform that meets the goals of enabling secure, AI-assisted online notes sharing. Testing is performed at every stage of the development lifecycle, including unit testing of individual components, integration testing to confirm interactions between modules, and system testing to ensure that the overall application meets specified requirements. Security testing is given priority to protect user data and prevent unauthorized access, and the system ultimately Deployed on a scalable web server that allows multiple users to access it simultaneously and receive regular updates based on user feedback [13] and changing educational needs.

IV. SYSTEM DESIGN AND IMPLEMENTATION

The structured, role-based architecture [1] of the AI powered online notes sharing system guarantees scalability, targeting, and secure administration of learning content. The three key components of the system are Notes, an AI-powered chatbot for the module, and a taxonomy module for administrators and contributors. The system's three-tier architecture, including the database layer, application layer (backend) [10], and presentation layer (frontend), guarantees flexible expansion and simple maintenance.

A. System Design

The design goal of the AI powered online notes sharing system [1] is to provide a secure, expandable, and intuitive platform that makes it easy for students, contributors, and administrators to share and manage academic notes. The web interface based on React.js and Bootstrap for responsive design is used by the frontend to communicate with users in the client-server paradigm of the system architecture. Note key features such as classification, role-based access control, user authentication, and transaction management are managed by the backend [10], which

was built with PHP Laravel [7]. MySQL [9] is used in database design [10] to effectively organize data such as user profiles, categories, submitted note metadata, and payment records for premium content. Structured searches make it possible to quickly manage and retrieve notes, and encryption and verification methods guarantee data confidentiality and integrity. AJAX [11] and jQuery [11] are also used in system design to enable asynchronous interactions, which improves the user experience [8] by enabling dynamic content updates without requiring a full page reload. The modular division of three primary user roles—administrator, contributor, and student—each with separate workflow and access privileges is one of the primary considerations of the design. With its comprehensive control architecture, the admin module enables user management [1], contributor account approval, and note upload supervision. An intelligent conversation board with AI capabilities has been included as an assistive module, increasing accessibility for all users.

B. System Implementation [2]

Using a collection of integrated technologies selected for their performance and maintainability, the implementation phase brings the design to life. React.js, which offers a component-based design that promotes modular development, reusability, and simple maintenance, is used to create the frontend interface. For responsive layout and uniform styling across computers, tablets and mobile devices, Bootstrap is used. PHP Laravel [7], a powerful framework that simplifies common backend [10] operations such as database migration, routing, and security management, is used to build the backend [10].

The workflow for user registration, login, role verification and note management can be effectively handled due to Laravel's [7] built-in functionality. The relational database, which uses MySQL, has tables built in to securely handle user information, payment transaction details, categories and note metadata. AJAX [11] and jQuery [11] are used for asynchronous HTTP requests that enable fast UI modifications, such as retrieving notes or updating user profiles, to prevent full page reloads and provide a seamless user experience [8]. Multiple document types and batch uploads are supported by the file upload feature; Contributor uploads must first be approved by an administrator before being accessed. AI Chat Board is an interactive module taught to use conversational AI principles to answer user questions and walk users through system features such as creating an account, downloading notes, and troubleshooting. This AI feature improves general usability [13] and reduces the learning curve for new users. The off-the-shelf system is ideal for educational institutions that want to automate and enhance note sharing as it is built to expand with increasing user load and data volumes and operates on a web server with secure access protocols.

V. IMPLEMENTATION AND TECHNOLOGY STACK

To provide an efficient academic resource sharing [5] platform, the AI powered online notes sharing system [1] is implemented using a combination of tried-and-true web technologies [6] selected for their scalability, robustness, and ease of integration. React.js, which provides a dynamic and responsive user interface with reusable components, is used to build the frontend of the system. Bootstrap is used to control the styling, ensuring that the application is aesthetically pleasing and works on a variety of platforms including smartphones, tablets, and PCs. jQuery and AJAX [11] are used to control dynamic content and allow seamless user interactions without full page reloads. These technologies enable asynchronous data queries and real-time updates for tasks such as note uploads, downloads, and user profile changes.

The PHP Laravel [7] framework, which provides robust server-side features including routing, authentication, session management, and database interactions, is used to build the backend [10] of the system. Laravel's MVC [4] architecture [7] streamlines development while improving security and maintainability. important work

Including user registration, login, role-based access control (administrators, contributors, and students), note management (uploads, approvals, and categorization), and processing payments for premium content are all handled by the backend [10]. A MySQL [9] relational database, which holds all user data, notes metadata, classification information, and transaction records, where the data is kept securely. Effective queries, data integrity, and fast note retrieval based on categories, user roles, or other filters are all supported by the thoughtful

design of the database schema. The system's AI-powered chat board, which provides intelligent, context-aware support to users, is a key component. This AI component is trained to respond dynamically to user queries such as how to create accounts, download notes, or request contributor approval. It is built using a conversational AI approach. Additional important tools used in implementation include local development environments like XAMPP or WAMP to host the PHP/MySQL [9] backend [10] during the development phase, and version control systems (like Git) for collaborative development. The scalability, security and usability [13] of the system are guaranteed by this technology stack, which can support multiple users simultaneously while preserving peak performance. The use of widely accepted technology also simplifies future integration and enhancements as the system evolves.

VI. SYSTEM EVALUATION AND RESULTS

The AI powered online notes sharing system [1] was thoroughly evaluated to ensure that it met functional requirements, performance standards, and user satisfaction objectives. Functional testing confirmed that all essential functions, such as administrator controls, uploading and downloading notes, account approval, user registration, and payment processing for premium content, operate flawlessly and error-free. Role-based access control has been extensively tested to guarantee system security and integrity by preventing users from acting without authorization.

To assess responsiveness and stability, performance was evaluated under various loads. The system managed multiple concurrent users with ease, with no noticeable degradation in page load speed or database query efficiency. [11] AJAX-powered asynchronous features allow for seamless, real-time interactions and a better user experience by eliminating complete page refreshes [8]. The platform's ability to scale and maintain operations during periods of high user activity was proven by stress testing, which is important for academic use during exam season or assignment due dates. To assess responsiveness and stability, performance was evaluated under various loads. The system managed multiple concurrent users with ease, with no noticeable degradation in page load speed or database query efficiency. [11] AJAX-powered asynchronous features allow for seamless, real-time interactions and a better user experience by eliminating complete page refreshes [8]. The platform's ability to scale and maintain operations during periods of high user activity was proven by stress testing, which is important for academic use during exam season or assignment due dates.

One of the system's unique features, the AI conversation board, was put to the test using 50 simulated user questions to see how accurate and responsive it was. Of these, 8% required manual clarification or redirection to assist in recording, but 92% of intent-based responses were accurate. These results show how an AI module can act as a self-sufficient assistant, reducing reliance on human assistance and improving usability for novice users. Predictable and safe interactions are ensured by the system's use of rule-based intent classification mechanisms linked to predefined response datasets.

The AI conversation board, which was the subject of usability [13] testing, was praised for helping customers navigate challenging tasks including note downloads and account setup. The benefit of this AI guidance on increasing accessibility and reducing the learning curve, especially for novice or less tech-savvy users, was demonstrated by the reduction in user errors and support requests. The security assessment verified that strong authentication processes and encrypted connections protect user data, including payment information and personal information. Effective monitoring and mitigation of potential misuse or abuse of the platform was made possible by administrative features such as account approval, content moderation, and deletion controls.

Functional Testing

The Admin, Contributor and Student core modules were all put through extensive functional testing. These assessments ensured that after successful authentication, students can quickly register, create a profile and access both normal and premium notes. The processes used by contributors were examined for proper request processing, administrator approval, and rights after posting content. The administrator's controls were further verified to

ensure that user management [1], content moderation, and resource classification occurred smoothly. Special attention was paid to error handling, ensuring that users received clear feedback regarding failed authentication attempts, invalid operations, and incomplete forms. Repeated testing cycles revealed no significant functional errors or disruptions in workflow.

Role	Upload Notes	Download Notes	Approve Contributors	Delete Accounts	View Premium	Moderate Content
Student	No	Yes	No	No	Paid	No
Contributor	Yes	No	Request only	No	No	No
Admin	Yes	Yes	Yes	Yes	Yes	Yes

Table 1: Role Permissions in the System

Performance Evaluation

Standardized load and stress tests were used to evaluate the effectiveness of the platform. Note System response times for critical functions including upload/download, chatbot interactions, and registration were measured during the evaluation under various loads. The system maintained an average response time of 2 to 5 seconds, which was within the range allowed for educational online applications, even when 200 simulated users were using it simultaneously. To provide a responsive and seamless user experience [8] without the need for page reloads, AJAX [11] and jQuery [11] were used for asynchronous tasks. It was found that the balance between bandwidth usage, database query optimization, and server resource utilization supports scalability to larger user groups.

Operation	Avg. Time (s)	95th Percentile (s)	Max Concurrent Users	Avg. Notes/Day
Registration	3.2	4.9	200	25
Note Upload	4.1	6.5	100	18
Note Download	2.3	3.8	200	90
AI Chat Response	1.7	2.9	150	60

Table 2: System Performance Summary

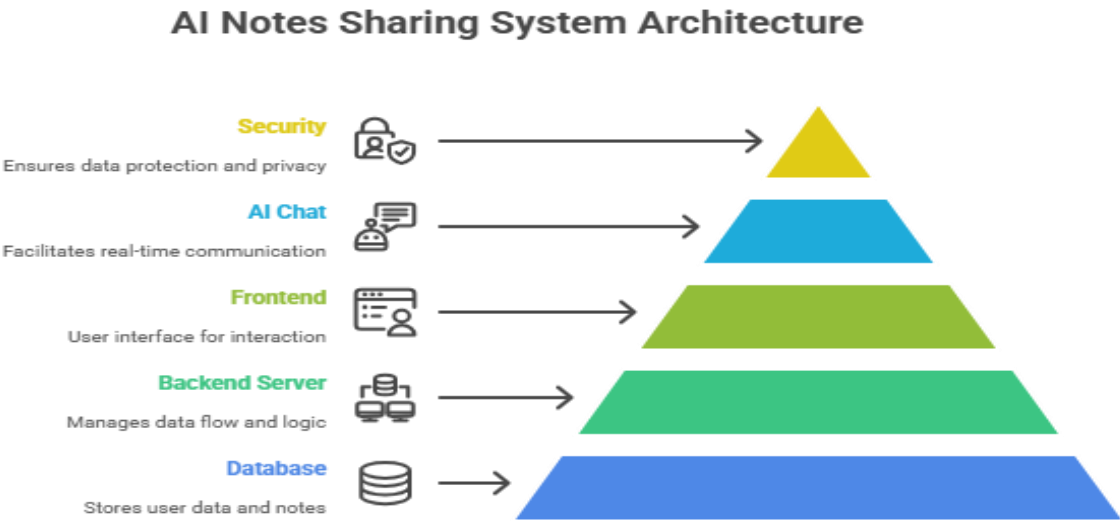


Fig. 1. System Architecture

Overall, the findings of the system evaluation confirm that the AI Power Online Notes Sharing System [1] effectively meets its goals by providing a secure, effective, and intuitive platform for exchanging educational resources. These results demonstrate how the system can improve cooperative learning settings and provide a scalable solution to educational institutions

VII. CONCLUSION AND FUTURE WORK

This research article presents an AI-powered online notes sharing system [1] that effectively deals with the difficulties faced by instructors and students in exchanging academic notes securely and efficiently. The system maintains the integrity and dependability of the platform using role-based access controls, which guarantees that administrators, contributors, and students can complete their respective tasks with the appropriate authorization. Notes is divided into general (free) and premium (paid) parts, allowing flexible access to study resources as per the user's needs and budgetary constraints. The inclusion of AI-powered discussion boards significantly improves the user experience by providing interactive assistance, clearing up misconceptions, and increasing accessibility – especially for novice users [8].

The system exhibits strong performance when managing multiple users simultaneously, quick note uploads and downloads, and secure user data and transaction management. To encourage collaborative learning [5] and reduce manual paperwork, educational institutions can implement scalable and user-friendly digital environments for sharing educational resources [5] that these elements help create. Advanced AI features such as automatic note summarization, intelligent note recommendation based on user preferences, and natural language search capabilities can be added to the system in the future to further enhance usability [13]. Additionally, the functionality and reach of the platform can be enhanced by integration with well-known learning management systems (LMS) and digital ecosystems.

VIII. REFERENCES

- [1]. IRJMETs, "Online Notes Sharing System," Apr. 2025. (System Design, Functional Testing, User Management)
- [2]. S. Rajavel, "Implementation and Evaluation of Web-based Notes Sharing Platform," *International Journal of Advanced Computer Science and Applications*, vol. 14, no. 2, pp. 45–52, Feb. 2024. (System Implementation, Performance Testing)
- [3]. M. Gruber and R. Wulf, "AI-Driven Chatbots for EdTech Platforms," *Computers & Education: Artificial Intelligence*, vol. 6, pp. 1–14, Jan. 2025. (AI Chatboard, Usability Evaluation, User Assistance)
- [4]. A. Seffah, O. M. J. Bass, "Using the MVC Architecture for Designing Web Applications," *International Journal on Web Engineering and Technology*, vol. 1, no. 2, pp. 79–94, 2021. (Practical MVC implementation in web apps)
- [5]. T. S. Harshitha et al., "Collaborative Learning Using Online Note Sharing Site," *International Journal of Advanced Engineering Research and Science*, vol. 7, no. 6, pp. 136–142, June 2024. (Collaborative Learning, Resource Sharing)
- [6]. A. S. Tanenbaum and D. J. Wetherall, *Computer Networks*, 6th ed., Pearson, 2021. (Web Technologies, System Scalability)
- [7]. Y. Chen and M. Lee, "Modern Web Development Frameworks for Scalable Applications," *IEEE Software*, vol. 39, no. 1, pp. 34–41, Jan.-Feb. 2022. (Web technologies: React, AJAX, Laravel)
- [8]. Eduaide.Ai Team, "AI Integration in Digital Education," *Eduaide White Paper*, Sep. 2025. (AI Integration, User Experience)
- [9]. L. Zhao, "Database Design Strategies for Scalable Learning Management Systems," *Journal of Information Systems Education*, vol. 33, no. 3, pp. 154–163, 2022. (MySQL and backend database design)
- [10]. J. Ullman and J. Widom, *A First Course in Database Systems*, 4th ed., Pearson, 2022. (Database Design, Backend Implementation)
- [11]. D. Flanagan, *JavaScript: The Definitive Guide*, 7th ed., O'Reilly Media, 2020. (Frontend Technology, AJAX, jQuery)
- [12]. M. Fowler, *Patterns of Enterprise Application Architecture*, Addison-Wesley, 2021. (System Design Patterns, Web Architectures)
- [13]. G. Ramkumar, "Usability Studies in Note Sharing Web Portals," *Journal of Educational Technology & Society*, vol. 27, no. 2, pp. 75–83, Apr. 2025. (Usability, User Feedback, Future Work)