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Online Integrated Platform for Project Management

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Abstract

The Integrated Platform for University Projects (IPUP) aims to streamline student project management across academic disciplines. Utilizing web technologies and project management principles, IPUP provides a centralized hub for collaboration, communication, and progress tracking. Additionally, IPUP utilizes a plagiarism checking API as a method to ensure academic integrity. Project documentation submitted on the platform is analysed using the SmallSEO Tools Plagiarism checking API. This API employs algorithms defined by SmallSEO Tools to detect any plagiarized content within the documentation. The API returns a response indicating the percentage of content identified as copied. A predetermined threshold is set for this percentage; if the value exceeds this threshold, the submission is rejected by the website. IPUP serves as a driving force for academic innovation, enabling cross-disciplinary learning and excellence in project-based education, while also integrating communication tools and prioritizing data security.

Keywords: Integrated Platform, University Projects, Collaboration, Project Management, Communication, Transparency, Plagiarism, Efficiency, Data Security, Privacy.

1. Introduction

In today's rapidly changing educational landscape, it is essential to encourage students to work together as team and be creative to enhance their learning and academic achievements. To address this need, a platform is designed to overcome the challenges faced

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by students in Indian universities and colleges in project collaboration and knowledge sharing. Current systems suffer from poor visibility, insufficient collaboration and information management, which negatively impacts teamwork and knowledge sharing [1].

To address the challenges, we introduce an online hub that connects students from different fields. Through this platform, students can work together on projects, share materials, and conduct multidisciplinary research. The platform aims to create a collaborative workspace that makes it easy to communicate and manage projects [2]. Using modern technology and ideas from existing collaboration tools [3], the platform allows students to develop fresh and inventive project concepts.

Through aggregating project works from various universities and colleges, the platform will serve as a repository of knowledge, enhancing peer learning and cross-disciplinary collaboration [6].Additionally, features such as real-time progress tracking [5] and virtual meeting systems [4] will enhance project management efficiency and effectiveness [7] The proposed system promises to address the pressing need for inter-university collaboration and resource sharing in the educational landscape [8].

The platform uses advanced technology and a set of tools to create a user-friendly and secure space for students to work together. These tools include HTML, CSS, JavaScript, NodeJS, Express JS, MongoDB, and Mongoose. The platform also uses plagiarism detection to protect the quality and originality of the knowledge shared. By doing this, the platform changes how students learn through projects. It breaks down the barriers between students and schools, makes it easier for them to work together and learn from each other, and could change how education is done in the future using block chain Technology [9]. People from different location can connect in one room using cross-platform tools to make their work easier in this type forum [10].

The platform is constantly being improved and tested to ensure its effectiveness. Its goal is to serve as a central hub for collaborative learning and interdisciplinary research across universities and colleges in India.

2. Related Work

Designing or implementation of collaborative platform can be challenging as it must address multiple complexities. To improve the efficiency of the platform the project management software is used. This software offers sufficient features, supports web access across platforms and can also serve as an open-source alternatives [11]. The adoption of cloud technology is utilized to enhance the IT project management practices in an outsourced environment. This cloud-based resources reduced the physical movement of the humans and improves the project management practices [12] Demetrios, in his research on project planning and control, employs a heuristic approach integrating the dynamic enterprise principles and the goal orientation. This enables a possible design alternatives and facilitate communication and collaboration among the users to jointly identify the needs and the requirements of the project [13]. Kakderi suggest that web-based tools and collaborative platforms can enhance interaction and engagement, lead to innovative and effective solutions, and enable a more informed decisions [14]. Cooke introduces the concept of "fit" to explore the alignment between the project management and strategic drivers. It examines the impacts of the organization's strategy in managing the projects and states that the degree of the alignment affects the value derived from the project management [15] The authors explore the application of cloud-based project management, collaborative solutions, methodologies and tools. The study presents an analysis based on the real-world case study to emphasize the current trends, advantages, and limitation of the cloud-based project management [16, 17].

The proposed method aims to develop a wed based platform to address the challenges faced by the students during the project phase. The tools is designed to enable the students from different university to work together and also check plagiarism level of the projects. The plagiarism is significant issue in academics, as it affects the students' performance and the quality of the education. There are many plagiarism tools available and are categorized based on the mode of detection type of application, mode of services etc. [18].

The proposed online platform is designed to upload and check the plagiarism of the project developed by the students using a SmallSeoTools (https://searchenginereports net/ plagiarism-checker), a free API and determine the accepted level of plagiarism by comparing the plagiarism percentage obtained with the predefined threshold. This platform aims to help

students to improve the quality of their work, avoid repetition, and enhance the academic achievements.

3. Proposed Work

The proposed system is an online platform designed specifically for students from different universities and colleges. Its primary objective is to facilitate collaboration between students, regardless of their educational backgrounds. This platform helps students to easily connect with each other, share their project ideas, and work together as a team. It allows students to find project partners from various institutions, broadening their network and enriching their learning experiences. Additionally, the platform provides access to a wide range of shared resources, including notes, tools, and materials, which students can utilize to enrich their projects. In essence, this platform serves as a virtual meeting place where students can support one another, exchange knowledge, and work together towards academic success. By promoting collaboration and resource sharing, the platform is designed to help students to achieve their academic goals effectively while enhancing a sense of community among learners from diverse educational backgrounds.

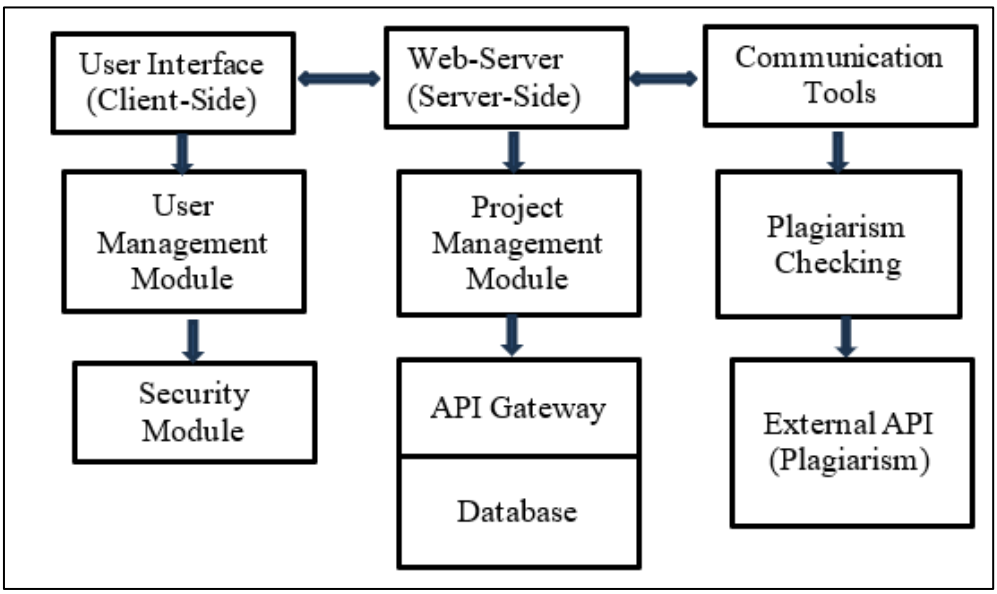

Figure 1. System Architecture

Figure 1 depicts the system architecture, that includes several key modules to ensure functionality and security. The user management module handles essential tasks like user

registration, login, profile management, and OTP verification. The project management module manages the creating, listing, editing etc. allowing users to manage their work efficiently. The plagiarism checking module integrates the plagiarism checking API to complete the plagiarism check. The communication tools offer a real-time team work between students from different institutions. The database is used for storage purposes. Web-server handles client request and manages database interaction. An API gateway is implemented to manage API calls, specifically to perform plagiarism check. The security module ensures that the transactions are secure through OTP verification.

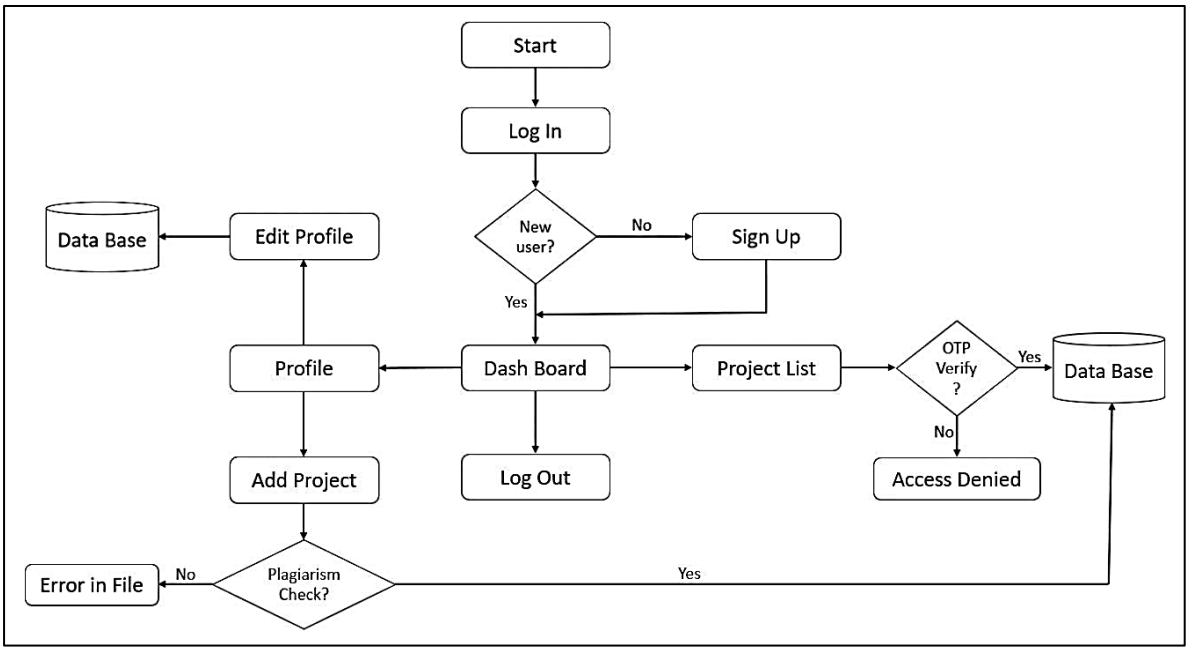

Figure 2. Working Design

Figure 2 illustrates the working design of the website. The proposed system is an online integrated platform that aims to simplify project management processes for students from various educational institutions. It includes several key components to ensure a thorough and user-friendly experience. Starting with the homepage, users are greeted with a simple interface that serves as the platform's entry point. When users first visit the platform, they are given the option of logging in if they already have an account or signing up for the first time. Once logged in, users are taken to their personalized dashboard, which serves as a command center for accessing various features and functionalities. Users can edit their profiles on the dashboard to ensure that the information is accurate and up to date. They can also start new

projects by clicking the "Start" button, which will prompt them to enter project details and objectives. Users can also browse through a comprehensive project list, which includes projects completed by students from various colleges and universities. To improve security and verify user identities, the platform includes a One-Time Password (OTP) verification process. This ensures that only authorized users can access the platform's features and functionalities. In the event of an error or confusion users are notified through the platform's error handling mechanism, which aids in the prompt resolution of issues. Furthermore, the platform includes a plagiarism check feature to ensure academic integrity and ethical standards. If plagiarized content is discovered, users are denied access to ensure the authenticity of project submissions. Overall, the proposed system provides a strong and efficient solution for project management in an online collaborative setting. The platform's goal is to improve the team work experience and enhance collaboration among students from various educational backgrounds by providing security.

4. Experimental Results

The user interface for the online collaborative platform, designed to facilitates user interaction such as registration, project management, and real-time communication, is developed using HTML, CSS and JavaScript. The front-end include essential pages like homepage, signup/login, dashboard, project submission and project list with CSS ensuring a consistent and visually appealing layout, and JavaScript adding interactivity.

The server options in the back-end, such as the authentication, project management, and API integration for checking plagiarism through SmallSEO Tool, are handled by NodeJS with ExpressJS. The information, project details, and the session data are stored in MongoDB, managed with Mongoose. The user transaction in the application is secured using an OTP verification.

The platform integrates the SmallSEO tools, to automatically analyse the submitted projects for plagiarism check and provide feedback. The entire system is deployed on the Google Cloud Platform for accessibility.

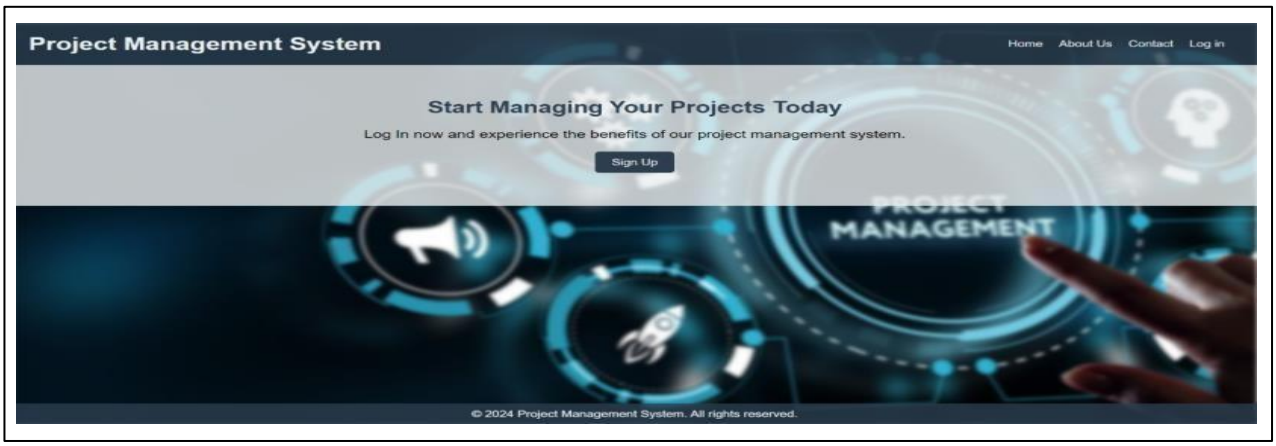

Figure 3. Home Page

Figure 3 shows the Home page. The dashboard page serves as the central hub for accessing project resources and collaboration opportunities within the proposed platform. Users can sign up or Login to explore projects, engage with potential collaborators, and access shared resources. The user-friendly interface ensures seamless navigation, facilitating connections between students from various institutions.

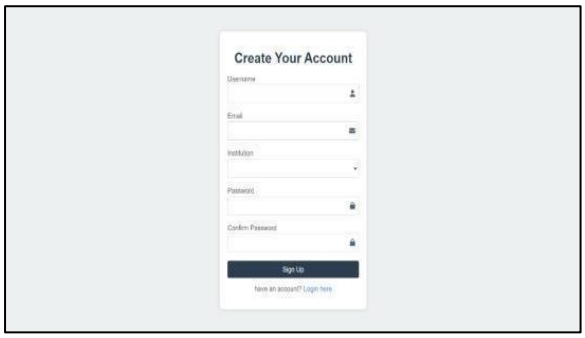

Figure 4.1. Signup Page

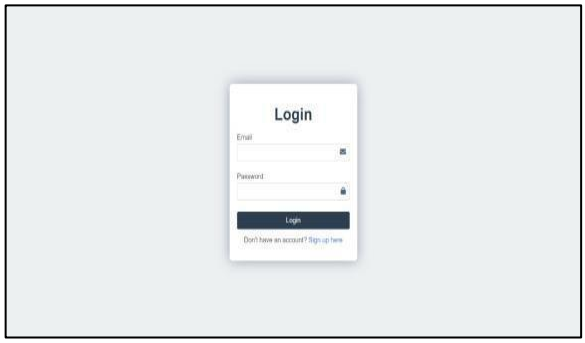

Figure 4.2. Login Page

Figure 4.1 shows the Signup page. The signup page allows new users to register and already registered users to log in. New users complete a registration form with their name, email, institution, and password. After submission, they verify their email to complete registration. Returning users log in with their email and password which is shown in Figure 4.2.

Figure 5. Dashboard

Figure 5 shows the Dashboard page. The dashboard page features navigation options for user profiles and logout in the navigation bar. Users can explore departmental project lists with a "Project List" button for each department, ensuring easy access to relevant project resources.

Figure 6.1. Profile Page

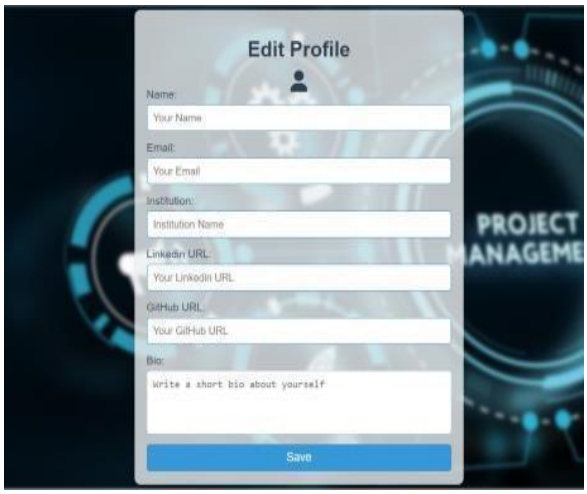

Figure 6.2. Edit Profile Page

Figure 6.1 shows the Profile page. The profile page enables users to view and edit their profile details, with options to update personal information and manage projects. Users can click the "Edit Profile" button to modify their details (which is shown in Figure 6.2) and the "Manage Projects" button to add or edit projects on the platform.

Figure 7. Project List Page

Figure 7 shows the Project list page. The project list page displays uploaded projects relevant to the selected department. Users can easily browse, click for details, or access project files

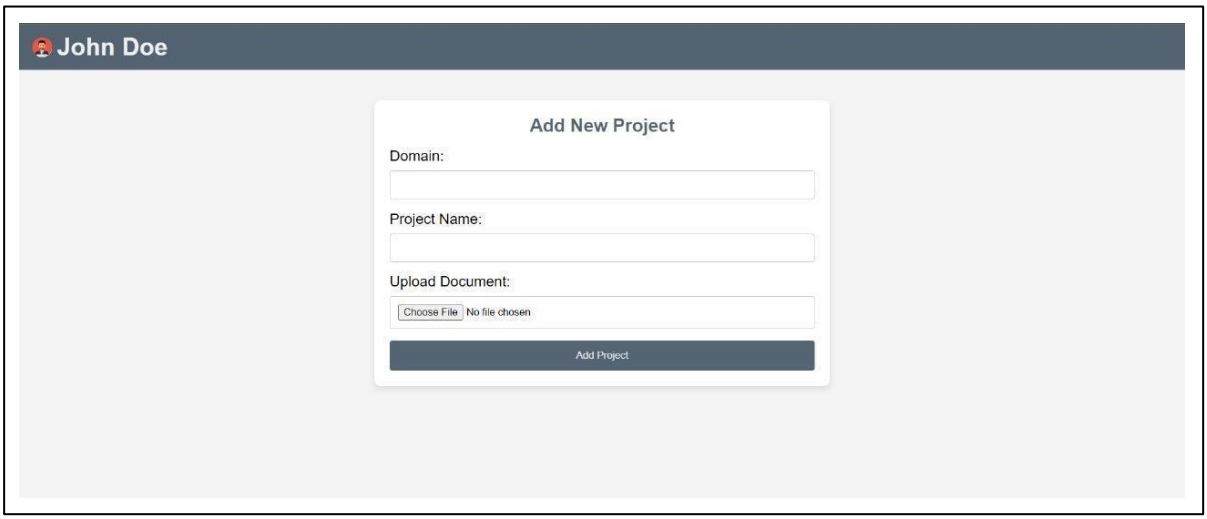

Figure 8. Add Project Page

Figure 8 shows the Add Project page. The Add Project page allows users to submit new projects, providing project details such as domain name, project name, and uploading the project document. Upon submission, the platform processes the information, validates the document, and adds the project to the Project List. The documentation of the submitted project work in the website is passed on as the input to the SmallSEO Tools Plagiarism checking API which then checks for any plagiarized content in the documentation using the algorithms defined by the SmallSEO Tools organization and gives us the response for the percentage of content that are found to be copied. We had set a threshold value for the percentage of content

that is copied and if the percentage value falls above the threshold value, the work gets rejected by the website. JavaScript is used within NodeJS processes the API response and determine whether the submitted work can be accepted or rejected based on the plagiarism threshold.

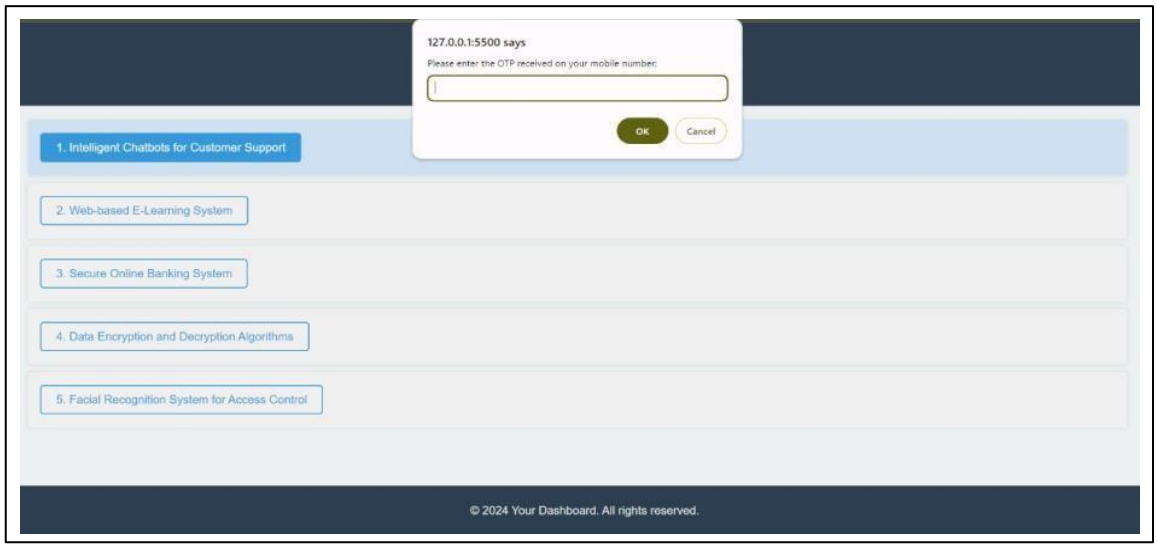

Figure 9. Confirmation of Access to Project

Figure 9 shows the confirmation to access the project through a popup message. The project access feature utilizes OTP authentication for users to access specific projects. Upon selecting a project, users receive a prompt to enter an OTP sent to their registered email or phone. After entering the correct OTP, users gain permission to view project details, enhancing platform security.

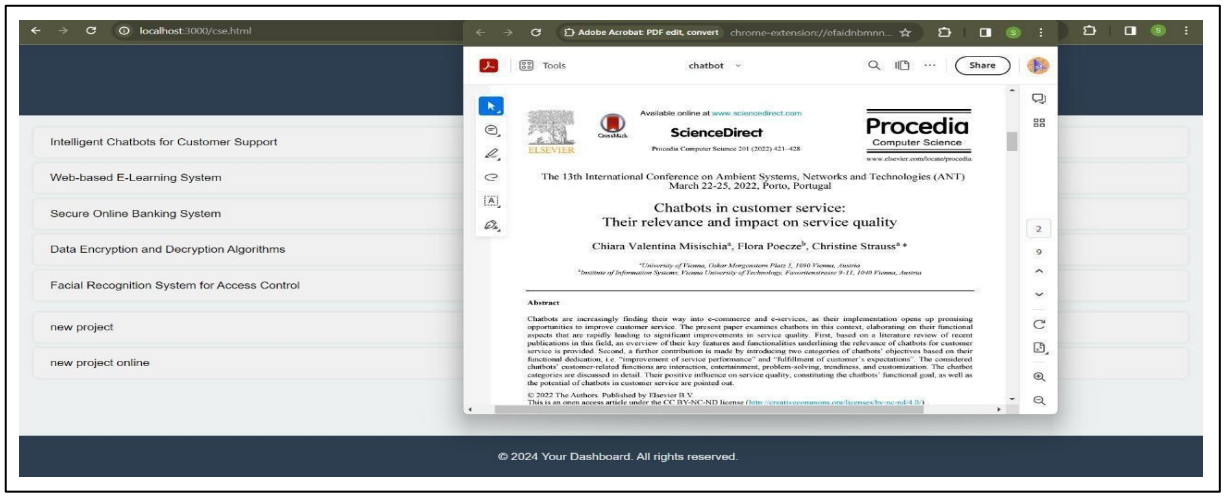

Figure 10. Project Report Page

Figure 10 shows the Project Report page. The project report page displays comprehensive project details, including scope, objectives, methodologies, and outcomes. Users can access sections like abstract, introduction, literature review, methodology, results, discussion, and conclusion. Additionally, accompanying project documents are available for further exploration. The user-friendly interface facilitates seamless navigation, enabling efficient access to valuable project insights and promoting collaborative learning.

5. Conclusion and Future Work

The proposed virtual platform is designed to transform how students in India collaborate and learn together. It addresses the existing issues such as limited awareness about each other's work, restricted opportunities for joint project work, and inadequate access shared resources. It seeks to build a dynamic community where students from various universities can easily communicate, share resources, and manage projects effectively. By breaking down barriers between universities, the platform enables interdisciplinary teamwork, promoting innovation through the exchange of ideas and the development of original solutions. Future plan includes enhancing collaboration features, integrating AI for plagiarism detection and project management, expanding the platform globally. Ultimately, the platform aims to help students to learn and work together effectively, regardless of their academic backgrounds or geographical differences, thereby cultivating a culture of innovation and collaboration in education.

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