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Project Tracker Management Tool.

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Abstract
In the existing Under Graduation Education system, Projects has the important role to develop the practical experience and implementation as per the industrial standard to their theoretical knowledge attained in their curriculum. But in order to monitor the same we are now considering the various predefined template based paper work for monitoring the projects. Parallelly, in the industry we are utilizing the various project management tracking tools such as JIRA, Rally and Salesforce etc. for handling the projects. Our primary goal is to implement the industrial project management tool methods and develop an ecosystem to manage the project evaluations in the colleges using the Project Management tracker tool. In this Project Tracker Management Tool for College is an all-encompassing software solution for tracking of academic projects. This tool has been created to meet the requirements of students, lecturers, and administrators by offering a delineated platform for division of batches, project track, due dates for the projects. It tracks for different phases that are included under whole development work like analysis, system design, coding, testing and maintenance work etc. Through the utilization of this tool, colleges may raise a more structured and cooperative environment, thereby eventually enhancing the quality and efficiency of academic project management.

Keywords: Project Management, Milestone Tracking, Academic Projects, Portals, Faculty Monitoring, Deadline Management.

1. Introduction

Proper management of final-year students' projects is essential for maximizing educational performance and preparing students for professional challenges. Traditional tracking mechanisms are generally ineffective and prone to errors, making computer-based tools with real-time tracking capability of projects, collaboration, and feedback essential. A Project Tracker Management Tool (PTMT) supports the whole project life cycle, step-by-step document uploading by students while guides monitor progress and provide timely feedback. By enabling integration of student, guide, coordinator, and administrator functions, the PTMT maximizes communication, clarity, and project completion. The PTMT offers a low-cost, scalable means of managing academic projects, simplifying supervision, and ensuring successful completion. This article outlines the PTMT design, implementation, and implications for students and academics [1] [2].

Project Tracker Management Tool (PTMT) is indispensable in today's education, a solution to the increased complexity and magnitude of student projects. The PTMT integrates project management,

giving precise, real-time data and enhancing communication between teachers and students. The PTMT enables project guides to track progress, detect problems early, and provide timely feedback, enhancing successful project delivery. The PTMT makes students responsible by making it easier to meet deadlines and guidelines. To administrators, the tool simplifies oversight, resource management, and performance measurement. In the end, the PTMT enhances project quality, minimizes administrative workload, and builds core skills such as time management and collaboration, leading to enhanced learning outcomes [3] [4].

The Project Tracker Management Tool (PTMT) supports communication, collaboration, and information sharing amongst students, guides, and coordinators by gathering document submission, feedback, and tracking of work progress. PTMT automates routine administrative chores by allowing the administrator to follow up on the progress, schedule reports, and fix bottlenecks in real-time. PTMT standardizes project management between departments, enabling uniform tracking, assessment, and reporting. Additionally, PTMT collects valuable student performance and schedule data for use in performance assessments and ongoing improvements. PTMT also provides storage for documentation and allows for easier compliance with regulations and institutional compliance. Finally, the PTMT increases the efficacy, effectiveness, and transparency in academic project administration [5] [6].

The Project Tracker Management Tool (PTMT) has a number of advantages, including improved communication and collaboration between students, guides, and administrators. The tool facilitates real-time tracking of project progress, which enhances transparency and reduces miscommunication. The tool makes administrative work easier, allowing easy tracking of numerous projects and early identification of issues. The tool enhances consistent practice of project management across all departments, ensuring uniformity. Since data collection is centralized, it is easy to measure performance and improve continuously. The PTMT also facilitates safe storage of documents, ensuring regulatory compliance, resulting in improved project quality and administrative workload reduction [7] [8].

Current project tracking systems are typically based on manual processes, resulting in inefficiencies and inaccuracies. The systems can lack real-time updates, resulting in delayed feedback and tracking of progress. Communication among students, guides, and administrators can be fragmented, resulting in delays and miscommunication. The processes can also not be scalable, and it can be difficult to handle large numbers of projects. Current systems also lack a centralized data storage, and thus, performance measurement and reporting become more complex. The systems can also not keep up with changing institutional and regulatory requirements, and thus, be less effective and responsive [9] [10].

To offset the shortcomings of existing project monitoring systems, there ought to be an automated, real-time updated system, reducing room for errors and improving monitoring precision. A single platform can compile communication and feedback from students, guides, and administrators, reducing miscommunication and delays. The system must be scalable to accommodate high volumes of projects as institution demands rise. Grouping projects at a single point facilitates easy assessment of their performance, reporting, and viewing past trends for future enhancement. Ongoing system enhancement keeps it current with institutions and regulatory requirements. Additionally, providing the users with training and support eases their adoption and, in the process, enhances the overall effectiveness of the tool [11] [12].

Stephanie et al. [13] designed and deployed a tailored Excel-based visual management tool to facilitate program planning, monitor progress, and measure performance in a pediatric healthcare environment, applying the ADKAR change management model and LEADS leadership framework. The tool was developed in collaboration with a graded training approach, personal responsibility for data entry, and team accountability. The team was extremely satisfied with the effectiveness and efficiency of the tool in meeting its objectives. They concluded that its success was the result of collaborative design, team responsibility, and continuous administrative backing, making it sustainable and flexible to changing demands.

Parth and Anushree [14] examined the influence of construction defects and scheduling mistakes on time and cost overruns with the help of project planning software for a G+11 building in Pune, Maharashtra. They carried out scheduling and estimation by utilizing Microsoft Project (MSP2010) and Wrike software. By using these project planning tools for detailed scheduling, planning, and estimating costs, they discovered and eliminated inefficiencies. They determined that using MSP and Wrike caused great declines in both cost of construction and time required to finish projects. From their conclusion, proper scheduling and planning by methods such as using MSP and Wrike could really cut time and cost overruns for construction projects.

Alexandra [15] introduced a new agile framework specifically designed to oversee biotechnology technology transfer projects (TTPs) in translational settings. The framework segments project plans into work-packages, handling deliverables in phases through a "three-gear" system to match project timelines and complexity. This other agile option blends flexibility with stage-based management to counter risks and respond to the uncertainty of TTPs. Current methods such as PRINCE2, Scrum, and Kanban were too inflexible for biotechnology TTPs, and the need for a more flexible project management tool was indicated. The suggested framework is flexible and de-risks projects step by step, and it is worth it for technology transfer offices and the biotechnology sector.

Mouna et al. [16] developed a framework to compare and select project management software tools by specifying an exhaustive list of functionalities, designing a scoring system, and applying a prototype for testing. They employed a systematic procedure of functionality specification, scoring, and prototypical test validation. The framework suits decision-making well by offering a systematic comparison and selection procedure specific to project situations and stakeholder needs. The authors concluded that the framework is realistic and holistic, assisting project managers in choosing the most appropriate project management software tools.

Areeba et al. [17] created and tested a 1-month elective for fourth-year medical students to introduce AI and ML in healthcare using a project-based learning experience. The elective employed web-based materials and was designed as a modular, specialty-independent curriculum for fourth-year students. In two years, the success of the curriculum was tested using self-reported confidence scores in AI and ML. The method enabled the students to carry out innovation in their fields through a holistic learning experience. Results indicated that the elective greatly raised the self-confidence of the students in comprehending and working with AI and ML, proving it to be highly effective. Authors concluded that

the elective effectively disenchanted medical students about AI and ML so that even nontechnical students could have discussions and assist in the developments in healthcare technology.

The objective of this research study is to track and monitor final-year projects submitted by students. It aims to facilitate oversight by various stakeholders, including guides, coordinators, HODs, principals, and directors, using full-stack web development in college settings.

1. Methodology

The Project Tracker Management System is a systematic, step-by-step process for effectively tracking and managing academic projects. It simplifies the whole project life cycle, starting from user authentication (login) and ending with the final submission, which indicates the completion of a batch of projects. The system ensures that each stage of a project analysis, system design, coding, testing, and maintenance is methodically finished, giving students, faculty, and administrators a clear and systematic workflow.

A. Database Design

Database design is important in managing data duplication and providing a complete data model for the Project Tracker Management Tool. This model contains conceptual, logical, and physical storage parameters required to design a database using Data Definition Language (DDL). A fully attributed data model consists of all attributes for every entity. The database design process has several steps carried out by database designers, as described below.

The aim of the conceptual design phase is to develop a conceptual model from the previously identified requirements being nearer to the end physical model. A conceptual diagram is an excellent visual tool to assist in presenting and solidifying the fundamental concepts of the design. These drawings are not detailed technical illustrations; rather, they represent the overall concept abstractly, spatial relationships, circulation patterns, or functional zoning of a design. Due to this, they contribute greatly to the comprehension of a design proposal with clear, simple-to-understand images. One of the most widely utilized conceptual models is the Entity-Relationship (ER) model.

The Entity-Relationship Diagram (ERD) is one of the common high-level conceptual data models with a total, logical representation of data within the system. The ER model plays an essential role in describing mappings and relationships of real-world entities to a conceptual schema. The ERD gives all data which is input to the system, stored, manipulated, and generated. It addresses data objects, attributes, and relations between distinct data objects. For the Project Tracker Management Tool, the ERD consists of entities like:

- Batch Allocations, which hold student allocation information, such as batch number, student name, student CGPA, guide name, and branch.
- Project Submissions, which hold data on student project submissions, such as submission type, file name, submission date, batch number, project title, and branch.
- Project Reviews, which hold review information like review text, batch number, reviewer name, reviewer role, review date, reviewer branch, and review type.

- Review Submissions, which hold review feedback submitted by reviewers.

Through structured data organization, the Project Tracker Management Tool facilitates smooth project tracking, milestone management, and faculty-student coordination.

B. Architecture Design

The stage of designing computer architecture and software architecture is referred to as high-level design. The architecture model of the Project Tracker Management Tool must contain a list of modules, short functionalities of each module, interface relationships, dependencies, database tables, an architecture diagram, and information about the technology stack utilized.

The primary aim of architecture design is to convey ideas, concepts, and technical details about the Project Tracker Management Tool concisely, clearly, and effectively.

Writing for architecture design targets clear, unambiguous, and effective communication of ideas, concepts, and technical information about architectural projects. The design for assimilation testing takes place in a specific stage where the system runs as anticipated so that it could be implemented thoroughly. After determining the system requirements, the specifications required for hardware, software, data resources, and information products are set to meet the functional requirements of the intended system. Through a systematic database and architecture design, the Project Tracker Management Tool provides an organized and effective project tracking system to the benefit of students, faculty, and administrators.

Tools And Technologies: We are using a mix of front-end and back-end technologies to create a smooth and interactive experience to build this system:

C. Front-End Development:

- HTML: Employed to design the web pages in a way that is intuitive and user-friendly.
- CSS: Used to style and design the user interface, making the system visually responsive and pleasing.
- JavaScript: Adds interactivity, allowing dynamic content updates and seamless user interactions without page reloads.

D. Back-End Development:

- PHP: Used as the primary scripting language to manage server-side activities, data processing, and database interactions.
- SQL: Applied for managing the database, for safe storage and retrieval of project information, user information, assignment of tasks, milestones, and submissions.

The whole process begins with the "Login" step, which provides safe access to the system. For students, this may be the initial point of contact, where they log in before moving on to any other activity. Once logged in successfully, students reach the "Project Batches" hub, a central location where project management begins. This Project Batches section is especially helpful because it allows different projects to be grouped into batches. Students are placed in a batch by their "Project Guide" who provides

preliminary consultation and allocates particular guidelines for the project according to each batch's specific focus.

Once the student is within their assigned project batch, step-by-step manner becomes important. The student has to follow a well-defined sequence of submission, starting with the Title and Abstract. These are normally the initial stages of project planning, where the student presents a brief summary and definition of the project they are going to work on. This allows students to work on their projects early, and it gives faculty a clear vision of the direction of the project.

After the abstract, students proceed to developing the PowerPoint Presentation, which is a graphic depiction of their thoughts. This step is important for the development of the student's communication skills and presentation skills in condensing their project into a precise and effective presentation. The system mandates that this step should be fulfilled prior to proceeding to the ultimate submission of the Full Document. This last document submission is a culmination of the life cycle of the project, literally putting an end to the academic project process.

This linear, step-by-step method allows students to concentrate on each segment of the project before advancing to the next, avoiding hurried decisions or partial submissions. Each of the steps - Title, Abstract, PowerPoint, and Final Document is a building block towards the final submission. This approach guarantees the project is well-planned, coherent, and aligned with the academic objectives outlined by the institution.

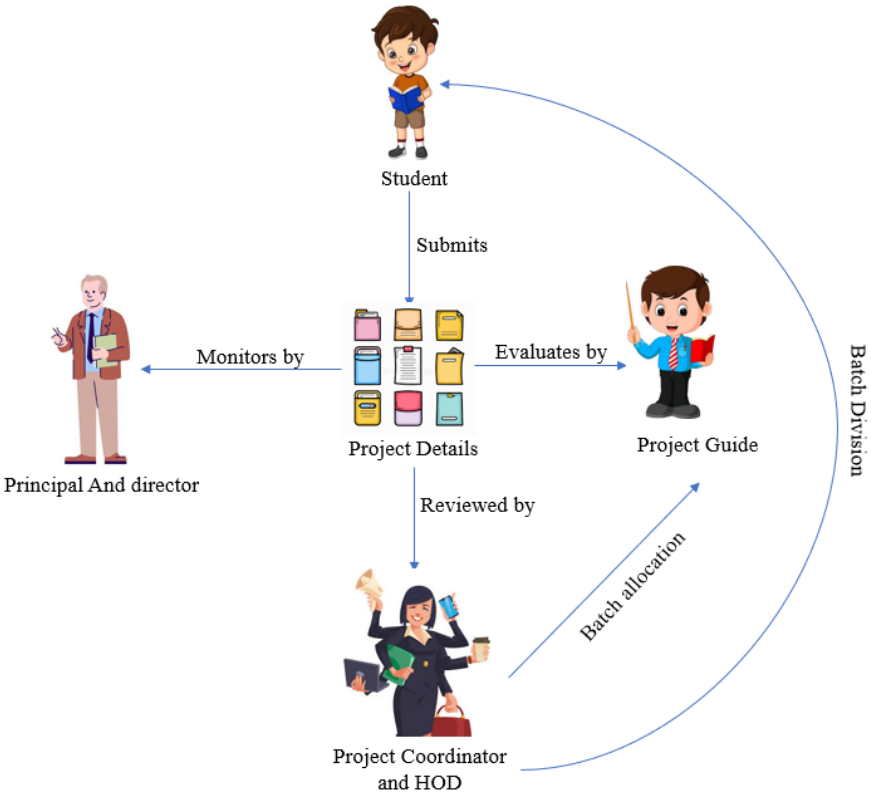

Fig 1: Flow Chart of Project Management Tool

Alongside the process of submission is a focus on the daily activities that students participate in throughout the life of the project. "Day-to-Day Attendance" and "Day-to-Day Monitoring" are centered on monitoring the participation level and activity of students in each batch of projects. These features keep students involved with their work and finish the required tasks to reach their objectives.

Regular attendance is monitored so that every student is contributing to the development of the project. Monitoring records the work done by the student, indicating the extent of his or her participation, points of improvement, and problems encountered. Tracking the daily participation enables administrators, educators, and project mentors to step in, where needed, give feedback, and assist students who need extra help.

A core element of the system is "Milestone Tracking". This process enables both the students and teachers to track the progress achieved against predetermined objectives. The milestones are usually associated with certain academic or project goals that keep the student focused. With each step that the students accomplish, these milestones are updated to show their achievements.

Milestone tracking is not merely a means for students to measure their own progress, but also a means for professors to see if the student is in line with their goals. This facilitates early detection of any problems, ensuring the project stays on track and of quality. Professors can utilize these milestones as a vehicle to provide constructive criticism and modify the project plan accordingly.

Another very important part of the process is "Review Forms". They are a critical component of the student feedback process. While progressing through their project, these forms allow faculty members to offer their assessment on the basis of the milestones and everyday work. The review forms may be completed from time to time, giving more detailed information on the student's progress. The assessment can include content, presentation, research approach, or any other parameters that are in line with the goals of the project.

Through the Review Forms, students get constructive feedback from their Project Guide, classmates, or administrators that assists them to improve on their work and ready their final submission. Through ongoing assessment, students are in a better position to enhance their projects and satisfy the institution's set expectations.

The process ends in the end stage, which is the culmination of the student's project cycle. This is where the final submission takes place, and the project batch gets closed. It is the completion of all tasks, ranging from the first consultation to the monitoring on a day-to-day basis, milestone tracking, and final submission of the report. The End stage indicates the end of the academic project cycle, with the student having fulfilled all requirements and having received proper feedback.

The "Project Co-Ordinator and HOD" are responsible for ensuring the project's success and are involved at every stage in the process after the students' login. Faculty starts the process by accessing Project Batches and tracking various activities related to the project, which include Batch Division and Batch Allocation. These functions are critical for dividing the task and allocating to each student or group

particular responsibilities within the batch. At a broader level, the "Principal and Director" look after the entire academic workflow. The process starts from the Login and moves on to the branches step, with an emphasis on department, location, or project choice. Next, faculty and administrators take care of activities such as Project Monitoring and Milestone Tracking to track that projects are on course.

The Director and Principal make sure the entire system operates smoothly by coordinating all these activities and exerting strategic control. Their action is critical in making the whole academic project management system operate effectively and generate high-quality outputs. The system of project management described here is intended to provide a systematic, organized process for academic projects. By means of systematic steps of submission, continuous monitoring, continuous feedback, and systematic evaluations, the system ensures that students, faculty, and administrators work together towards the success of the project with well-established milestones and tracking systems in place.

The process ensures that each project receives the attention it needs and that students are properly guided throughout their course of study.

3. Results and Discussions

The Project Tracker Management Tool offers a smooth login and registration process for all the stakeholders in academic project management. New users are required to sign up first by entering the necessary details, and after registering, they can sign in to use the tool. The users of this system are students, who upload projects and monitor progress; guides (staff members), who guide students and check uploads; coordinators, who assign projects and monitor progress; heads of departments (HODs), who supervise department-level project activities; the principal and the director, who keeps a watchful eye on total project management and studies project performance institution-wise. The system promotes hassle-free communication and effective monitoring of projects across all users.

Fig2: Main Page of the Project Management Tool

The Student Portal within the Project Tracker Management Tool offers a specialized interface for students to track their project submissions and review feedback. When they log in, students are able to view their information, such as batch number, name, roll number, and email. The portal enables students to upload main project-related documents like the title of the project, abstract, literature review papers, presentation (PPT), and final documentation by choosing the correct files and batch details. The students can also view the Review Details section, wherein they can see reviews given by their guide, coordinator, and HOD. This provision makes the project evaluation transparent and enables students to enhance their work according to the reviews provided.

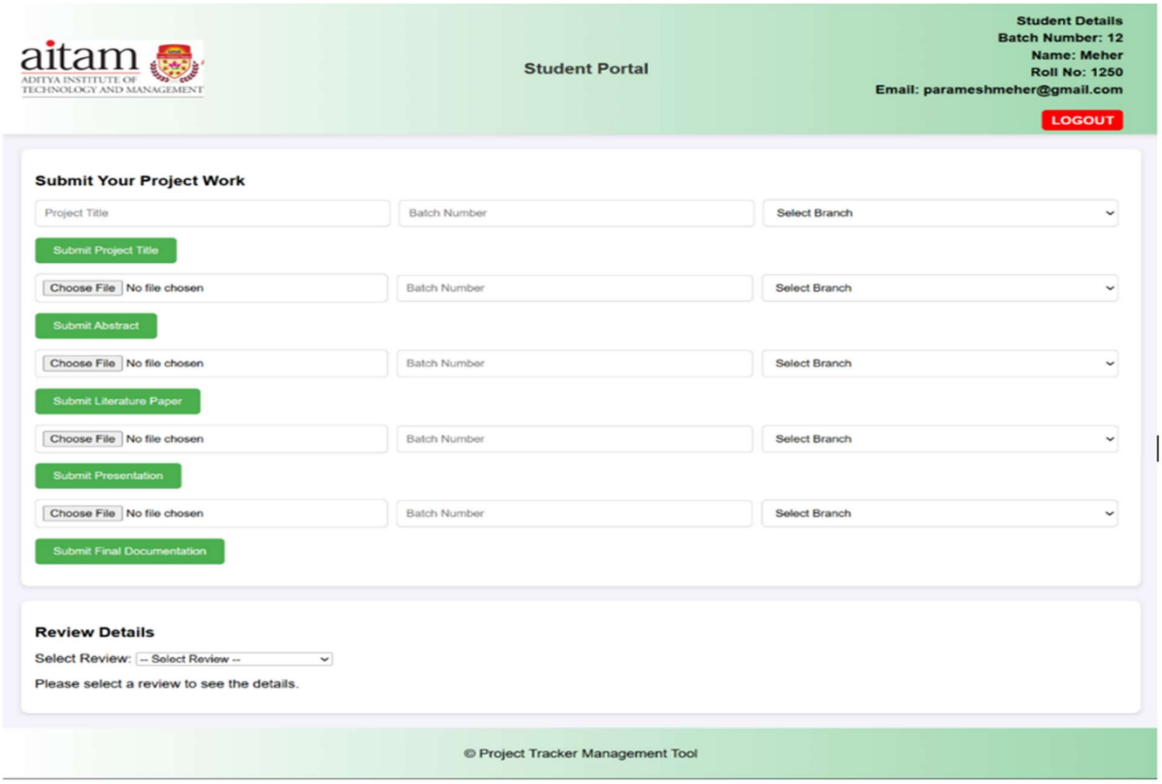

Fig3: Student Dashboard

The Guide Portal in the Project Tracker Management Tool offers an organized interface to guide student projects and monitor them efficiently. The guides can log in and view their name, ID, branch, and email details. Guides can take attendance for the batches allocated to them by indicating students present or absent through the portal. Also, guides are able to track the project progress through access to submitted project reports like the title of the project, abstract, literature review, PPT, and final documentation for their own batches. Moreover, guides can return review feedback to students during the evaluation stages so that the project can be guided to improvement in a constructive manner. This portal facilitates ease in project supervision and student-mentor collaboration.

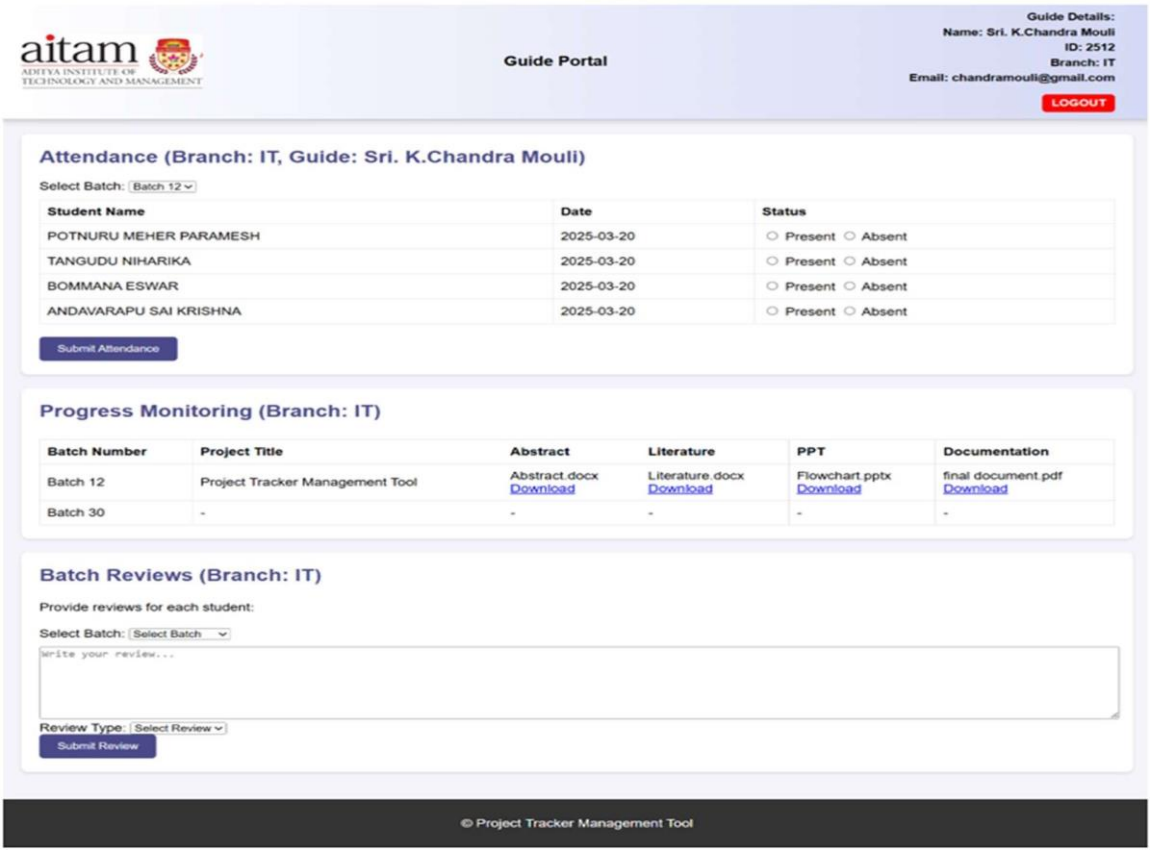

Fig4: Guide Dashboard

The Coordinator Portal within the Project Tracker Management Tool an organized interface to student projects and monitor them efficiently. The Co-ordinator can log in and view their name, ID, branch, and email details. The Co-ordinators key functionalities for handling student project batches. Coordinators can split batches by students' CGPA by uploading an Excel sheet, facilitating an orderly allocation process. They also have the capability to allocate guides to individual batches, simplifying project supervision. The portal enables coordinators to track project development for all batches in the branch by checking submitted abstracts, literature reviews, PPTs, and final reports. Additionally, coordinators can give useful feedback to students by submitting feedback during project evaluation, which helps to improve the overall quality of project development.

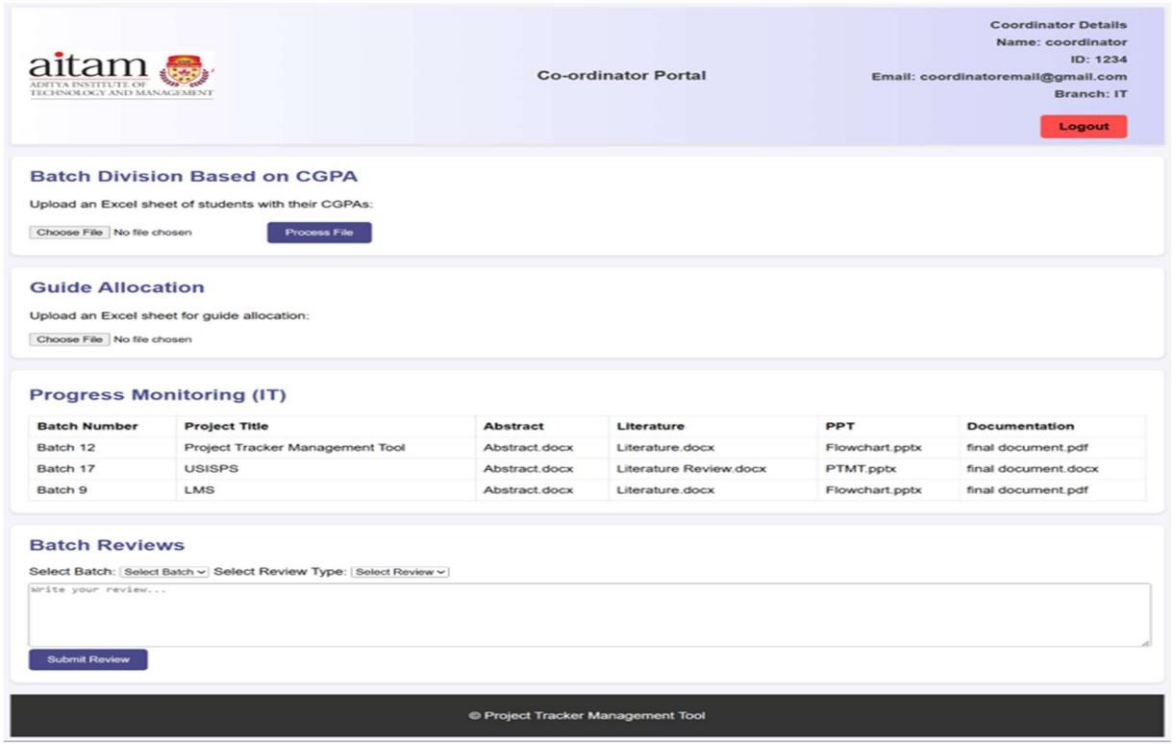

Fig5: Coordinator Dashboard

The HOD Portal within the Project Tracker Management Tool aims to give the Head of Department (HOD) a bird's eye view of project operations in their department. The portal shows the details of the HOD, name, ID, email, and branch, thus making it easier to identify them. One of the main features of this portal is Progress Monitoring, in which the HOD is able to see project information of all batches belonging to their department. The portal provides the HOD with access and download facilities for submitted project reports, including abstracts, literature surveys, PowerPoint presentation, and final reports, thus helping them keep themselves posted about students' progress. Moreover, the Batch Reviews section empowers the HOD to offer feedback on student projects by choosing a particular batch and review type prior to posting comments. The portal simplifies project monitoring, improves academic supervision, and ensures that all project activities are being carried out efficiently in the department.

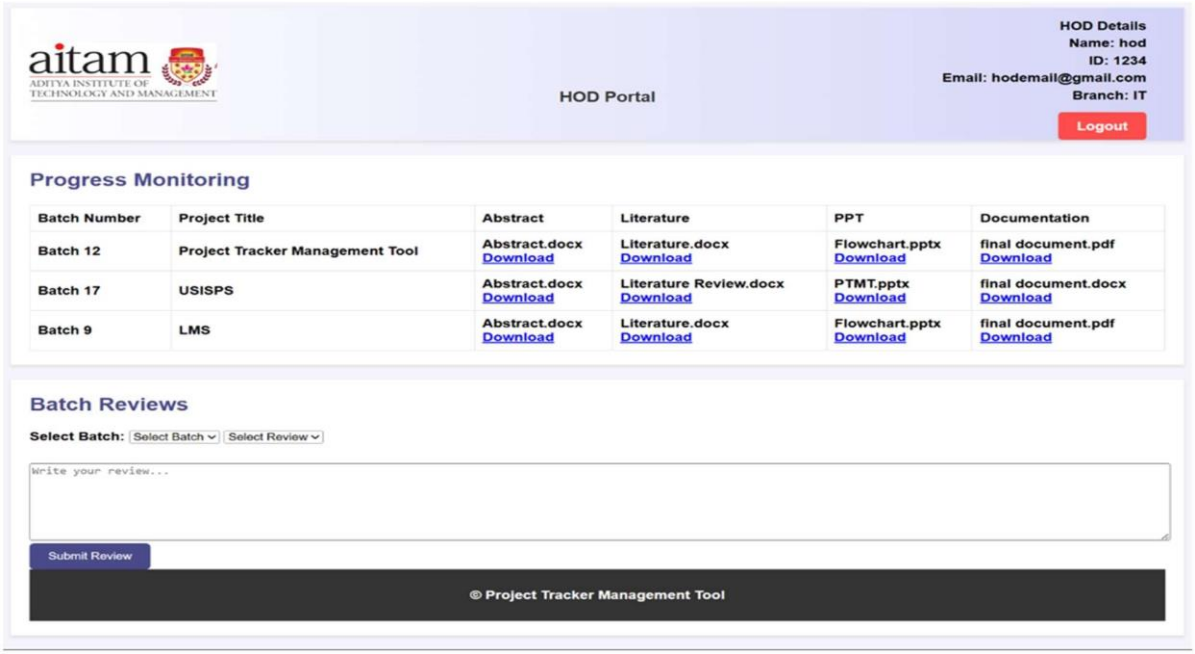

Fig6: HOD Portal

The Principal and Director Portal within the Project Tracker Management Tool offers a comprehensive view of all student project submissions by departments and batches. While logging in, the Principal and Director can view their individual information such as name, ID, email, and branch allotted. The portal enables them to track project submissions from all batches without any departmental distinction for a centralized view of the academic process.

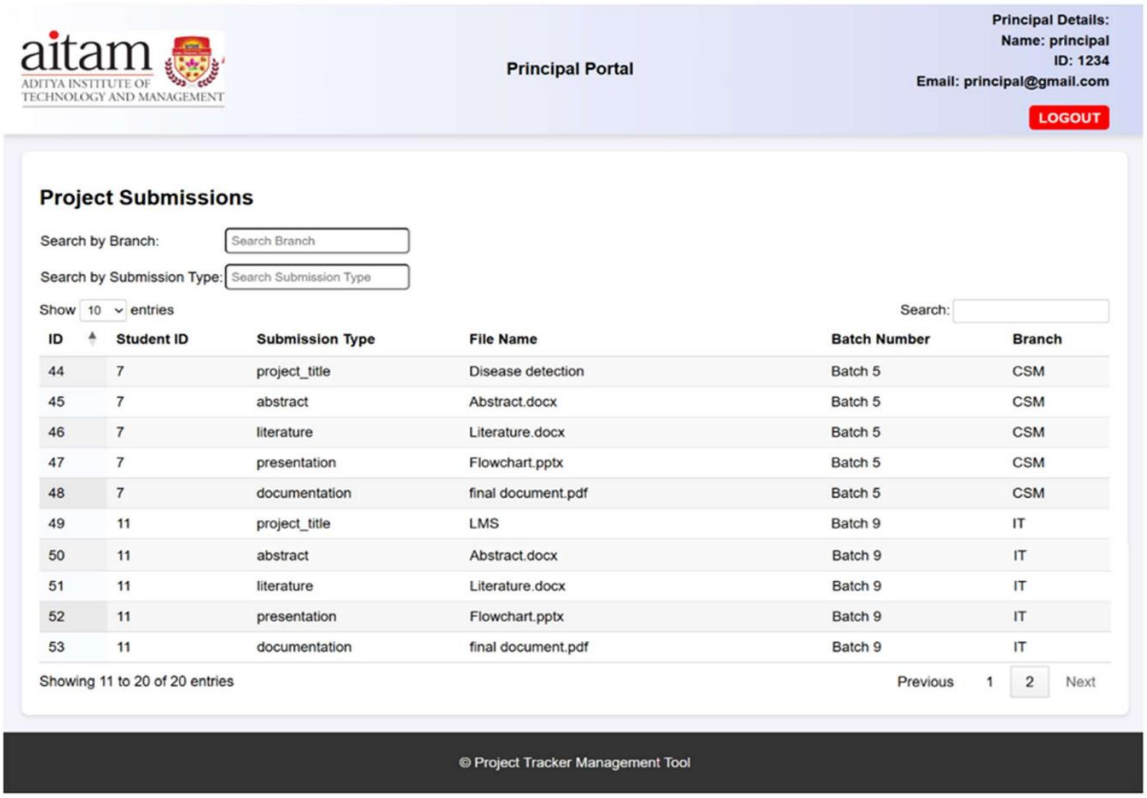

Fig7: Principal Dashboard

Result:

The study investigated independent strategies for accurate text summarization, exploring both extractive and abstractive methods. It highlighted the importance of natural language processing (NLP) techniques and modern approaches such as Google's PEGASUS model in efficiently managing vast amounts of information.

The PEGASUS model was analysed in detail, showcasing its architecture and sequence-to-sequence learning approach. The results demonstrated the model's ability to generate accurate and human-like summaries across various dimensions. The study concluded that these summarization methods are crucial for preserving the original meaning while condensing it into concise yet comprehensive summaries.

Extractive text summarization involves selecting specific phrases or sentences from the original text, whereas abstractive summarization generates new text based on the input. The PEGASUS model falls under the category of abstractive summarization, utilizing NLP techniques to understand the context and generate human-like summaries.

The study's findings suggest that these independent strategies for accurate text summarization can be effective in managing vast amounts of information online.

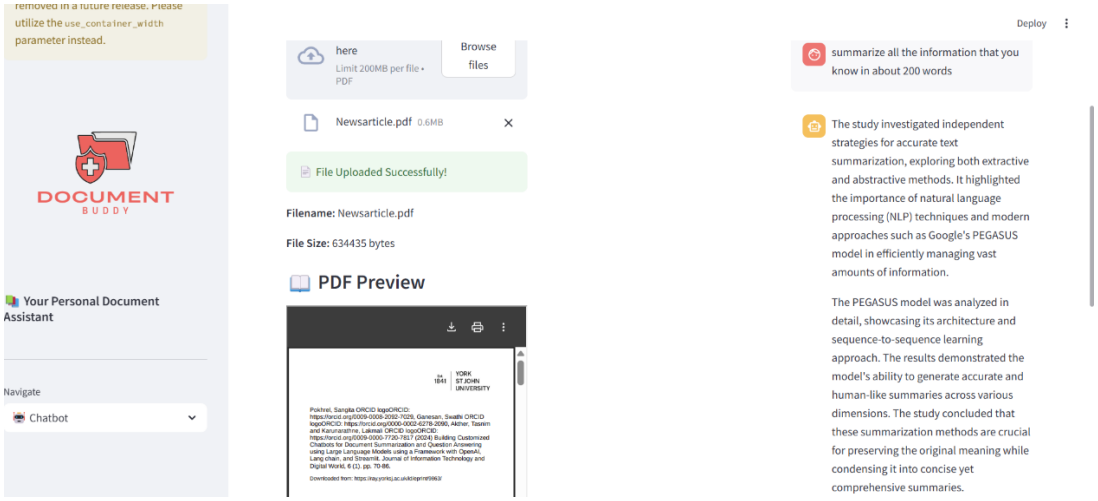

Figure 8: Results for prompt1

4. Conclusions

The proposed locally deployed NLP system successfully addresses the growing demand for secure, intelligent document processing in privacy-sensitive environments. By eliminating reliance on external APIs and cloud-based services, the framework ensures complete data confidentiality while delivering advanced capabilities for document summarization and question answering. The integration of large language models, vector databases, and semantic search techniques enables users to interact with unstructured documents in a meaningful and efficient manner. This system demonstrates that it is possible to achieve high-performance natural language understanding without compromising data security. Its modular design and use of open-source tools like LangChain, Hugging Face, Qdrant, and Streamlit make it flexible, scalable, and suitable for deployment across a variety of domains including law, healthcare, education, and enterprise knowledge management. The approach not only enhances document comprehension but also streamlines workflows by automating information retrieval and reducing manual

effort. Future work may include expanding language support, improving summarization accuracy for domain-specific content, and incorporating reinforcement learning to enhance response quality over time. Overall, the system sets a strong foundation for privacy-preserving AI applications in document intelligence.

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