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Intelligent recruitment process for industries by using graduate students project based 100 points evaluations

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Abstract

In the academic world, effective project manage- mentis essential for the success of numerous initiatives, especially in contexts of colleges and universities. This paper proposes an Intelligent project management system that is suited to the unique needs and problems of educational institutions. The system encompasses a robust set of tools designed to effectively manage, plan, and monitor all project phases within college environments. In addition, Intelligent system provides a plagiarism checking facility and grants students access to previous projects, empowering them to gain insights into the current project landscape and enhance their own projects accordingly. The Intelligent System helps in bringing together graduate people from reputed college to the Industrialist by using 100 points- based evaluation of projects and also gives response time of 200ms which is better than the existing project management systems. The Intelligent system is developed in the Python Django framework which has increased Scalability by70%. This study also presents a comprehensive analysis of the design, development, and implementation of the website, highlighting the key features and functionalities. Additionally, the paper discusses the potential benefits of using Django for Intelligent System.

Keywords: Authentication; Integrity; Intelligent project management system; Plagiarism; Response time; Scalability

1. Introduction

Hiring students who possess the required skills has become a complex process for recruiters. The Intelligent system aims to address the growing challenge faced by recruiters in hiring students based on their skills. This idea revolves around the creation of an integrated online web platform, designed to streamline project management in colleges, while also serving as a platform for students to showcase their projects and discover hiring opportunities. Key features of this Intelligent System include a centralized system that enables mentors and project coordinators to track the progress of every student and access information on current and past projects. The systemwill automate the process of sending reminders to students, reducing manual workload for project coordinators [6]. Additionally, students will have the opportunity to explore previous projects, drawing inspiration from them to develop new and innovative projects. The coordinator has complete control over the addition, deletion, and editing of tasks and reviews [7] also the coordinator can manage, track and keep record of all the projects thanks to this system [15] . The platform will facilitate the hiring process by allowing companies to evaluate students based on the practical skills they have applied in their projects, moving beyond traditional resume-based assessments. The Intelligent system provides a platform for colleges, project coordinators, mentors, and students, creating a collaborative ecosystem.

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2. Related Work

2.1. Maintaining the Integrity of the Specifications

Researching on various existing systems we have discovered useful insights such as in [1] the author has developed an online integrated platform for projects taken up by students of various colleges, which has developed the plagiarism checker service using a vector-based approach to detect the percentage of plagiarism in any document. It works on the concept of Jaccard Similarity to determine how similar two documents are in which it first calculates the Jaccard index and based on the score calculated which is not that efficient for calculating plagiarism. Hence, we had added an API based plagiarism detection in Intelligent project management system which gives more accuracy than this existing system and rather than comparing files which are present only in system's Database, Plagiarism is compared with all data on world wide web.

In [2] the author has developed the Project Management System (PMS) which uses different phases of WBS (work breakdown structure) for grading of the particular group of stu- dents , and in [10] they have used WBS to automatically assign marks only based on progress of the project, however WBS can't be the only criteria for calculating the grades of each student hence in Intelligent project management system we had used various categories on which a student get evaluated such as Innovation score, Communication and Presentation score, Domain knowledge score, Fulfilment of Societal needs score, National Representation score.

Moreover in [3] the author has developed a similar system which provides benefits like up-to- date status monitoring, email notification, convenience of use, backups etc. This ap- plication eliminates the additional time and resources needed to plan and track the projects in institutions for the final year. However, in this system all students must register using the registration form which doesn't authenticate the students as anyone can register themself whereas in the proposed Intelligent system coordinator registers the students.

And in [4] the author has developed a similar system which makes the management efficient and restricts unauthorized users from accessing the data in the site. However, this system doesn't provide plagiarism checks for the paperwork uploaded on the system. while, in theproposed intelligent system compulsory plagiarism check- ing is done for all the projects. In [19] research outlines a design concept for an integrated project management docu- ment system that takes into consideration the essential need to guarantee reliable and excellent project management doc- umentation. The static model of entities relevant to project management forms the basis of the model, which is based on structured documents.

In [23] Through the provision of apps to help with planning, manage project budgets, track activities, and keep an eye on schedules, PMS aims to make the job of a project manager simpler and more effective. Finding technological solutions that enable productivity increases is becoming more and more crucial as more public works agencies deal with the reality of growing workloads and dwindling resources. Across all industries, the usage of project management software as a tool for organising and managing work has increased and is still growing quickly. This study examines its present implementation in Minnesota's transport project delivery and offers a tool to help select the best application to suit the requirements of a particular county or city.

By researching all the papers, we can observe that none of them provided hiring functionality, while proposed Intel- ligent System gives the hiring opportunities for students by showcasing their talent in their projects which will be listed to companies based on the 100 grade points.

This research paper will discuss the development of Intelli- gent Project management System using Django. The paper will cover the following topics: Architecture, Use of Django in Implementation, Result and Discussion, Workflow of Intelligent System with GUI, Conclusion, Conflict of Interest, References

3. Materials and methods

3.1. Architecture

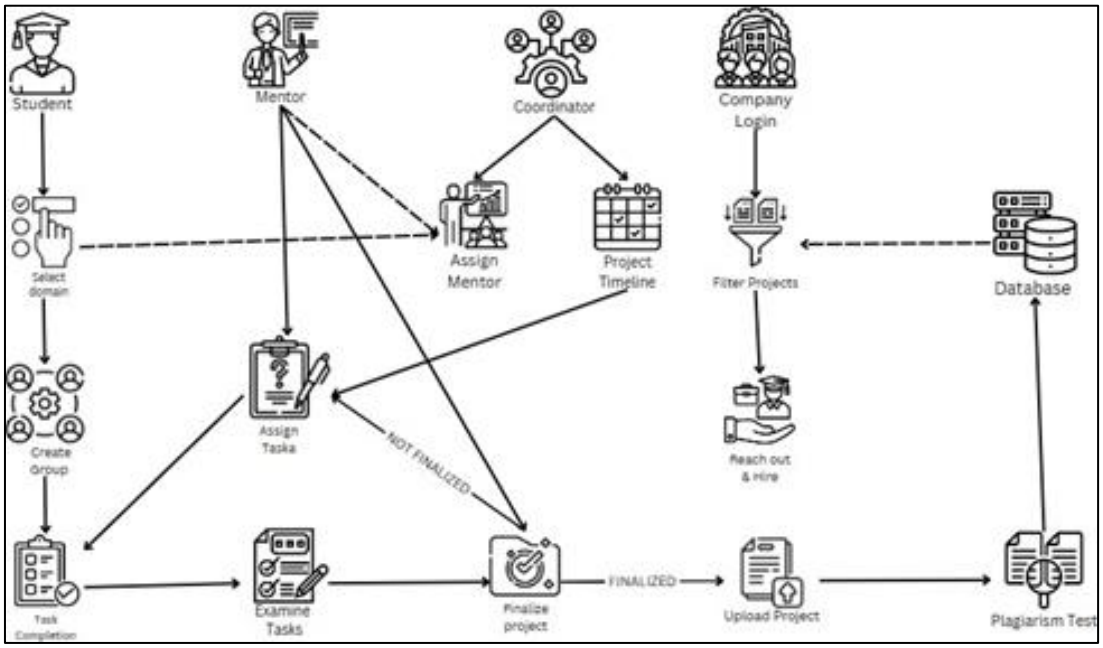

Figure 1 Architecture

Intelligent system's architecture is structured around a scal- able and modular design, offering flexibility and adaptability to meet evolving project management needs. The flow of System goes as below, at first student selects domain, create group to add new project in the System. After this Coordinator assign the mentors to each group based on the domains of the projects. Simultaneously, creating timelines for tasks to be performed by the students during the project year and schedule review for the project. Here, Intelligent system will send notification for every task, review, etc. to increase the automation of the system. Then students can start completing all the project tasks and complete reviews based on the timeline, while also getting checked by the mentor here mentor can either verify the task or can reassign the task based on students' performance of assigned tasks.

After completion of all tasks mentor will finalize the project by checking the plagiarism of the project and filling Rubrics form for every project, this Rubrics form consist of Innova- tion score, Communication and Presentation score, Domain knowledge score, Fulfilment of Societal needs score, National Representation score. Companies after logging in can view all the amazing projects present on the System and view them to hire students. Here, recruiters can filter out projects based on Colleges, Domains, Technology Stack. Also, sort the projects based on the Rubrics of the projects or 100 grade points.

3.2. Use of Django in Implementation

We have designed a GUI by using Django, HTML, CSS, JavaScript. We have used Django because of its best perfor- mance and optimization, it provides improved speed, reduced memory consumption and minimized database and network demands. Django's caching framework or the cached property decorator, has significantly improved performance by storing frequently used data for quick access [5].

In our Intelligent system, we have harnessed Django's powerful database layer to optimize database usage effectively. By default, Django's approach of opening and closing a newdatabase connection for each request may introduce overhead, especially under high-traffic scenarios [18]. However, through the use of middleware components, we have been able to preprocess requests and responses globally, ensuring efficient request handling within our system. Furthermore, our utiliza- tion of Django templates has greatly enhanced the performance and maintainability of our graphical user interface (GUI). For instance, adopting{% block %} over {% include %} has enabled us to define content blocks in templates, thereby facilitating easier overrides in child templates. This approach not only improves processing time but also enhances modularity. Additionally, Django's framework has significantly simplified database de- sign and query operations, reducing complexity and stream- lining data access within our system.

4. Results and discussion

Web performance from the client point of view is measured as the page load time. This is the lapsed time between the moment a user requests a new page and the moment the page is fully rendered by the browser. The average web page takes up 320KB on the wire [17].

4.1. Response time vs Number of Clients Line chart

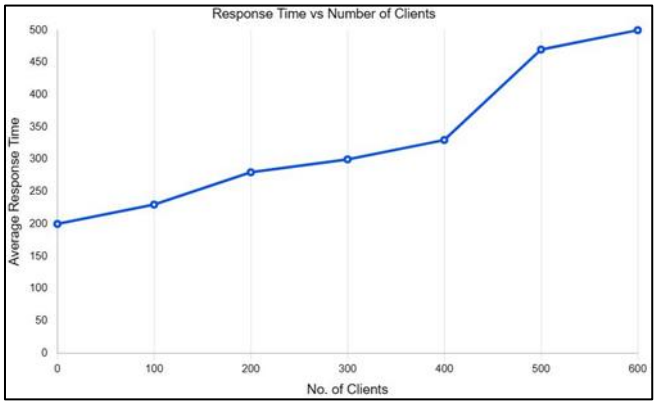

Figure 2 Response time vs Number of Clients Line chart

The graph depicting the average response time vs the number of customers shows how efficient Intelligent system is under high user demand. It illustrates that even with a large number of users accessing the system simultaneously, the response time remains consistently low. This signifies that Intelligent system is capable of handling large user traffic while maintaining performance. In essence, the graph demon- strates the system's capacity to maintain ideal response times regardless of the number of customers using it simultaneously.

4.2. Average Response time for various Systems Histogram

The chart comparing the average response times of different systems reveals a notable performance superiority of the Intel- ligent system, which consistently provides responses within a remarkable 200ms timeframe. In contrast to other systems, theIntelligent project management system stands out as the most efficient, offering swift and reliable responses even in the face of varying workloads.

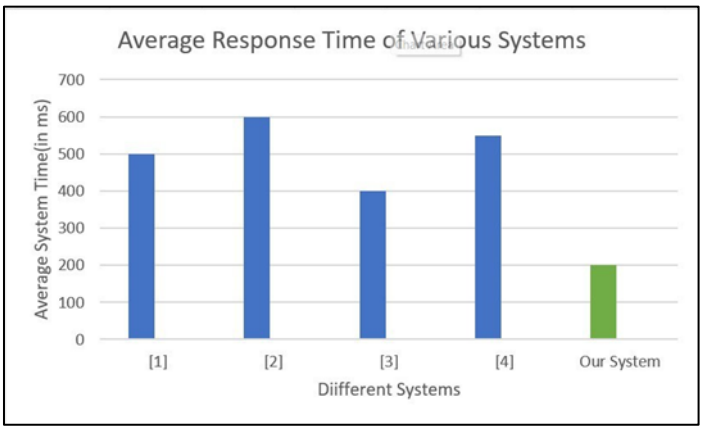

Figure 3 Response time vs Different System Graph

5. Workflow of intelligent system with GUI

The Intelligent project management system provides four types of users Coordinator, Company, Student, Mentor which are having their own features and functionalities as mentioned below. At first the coordinator gets registered on Intelligent system, then the coordinator can view various functionalities as shown in the below snapshot.

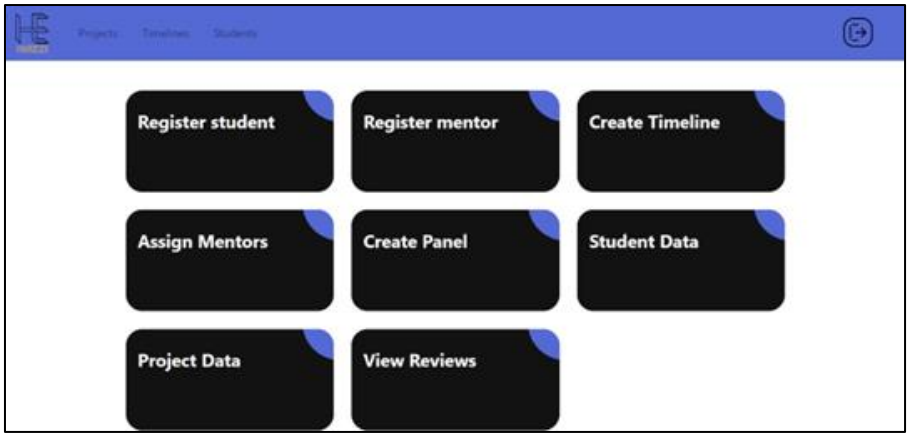

Figure 4 Coordinator Homepage

Then the coordinator will register students and mentors manually, however registering each and every student of college can become a tedious task hence in the Intelligent system there is an option to upload excel of student data to reduce the workload of the coordinator.

Moving on, students after being registered can login to the Intelligent system and see various existing projects empower- ing them to gain insights into the existing project landscape and enhance their own projects accordingly. Then students can register their new projects in the system where they have the option to add various project details and add their fellow project members using the college unique ID. After filling the form each student gets a request in their login that there is a request to join a project group [9]. If all the members accept, projects successfully get stored in the Database. This allowsproject materials submission right from the convenience and comfort of student's location [8]. Hence is convenient to use, save time and resources, and reduce both stationery and labour costs [14].

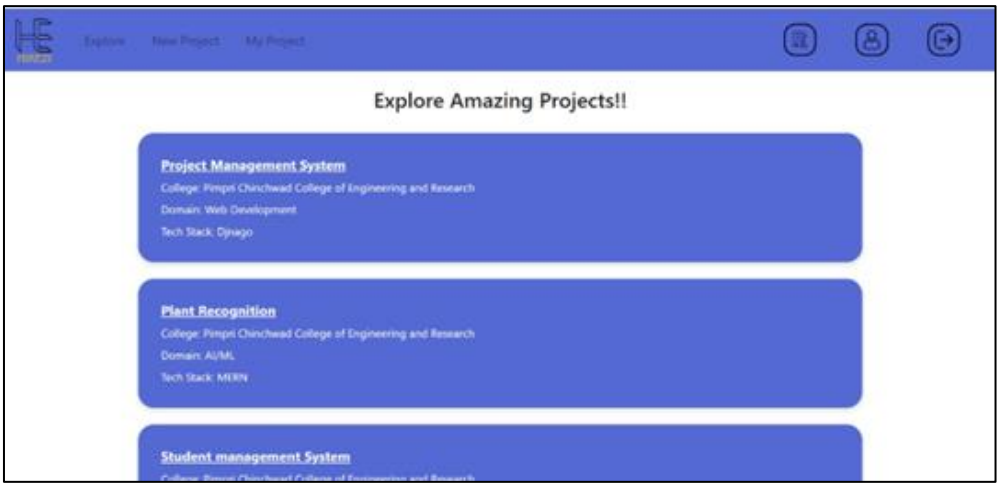

Figure 5 Student's Explore Page

Simultaneously, the coordinator can create a timeline con- sisting of various tasks which are to be performed by the students where mentors will give feedback [11] and score during the whole project year, also they can assign mentors to each student project group based on the project domain and can create a panel of mentors. Once the project starts, the coordinator can schedule reviews for projects where panels can give marks to students for the projects under them and evaluate based on the goal of the review decided by the coordinator.

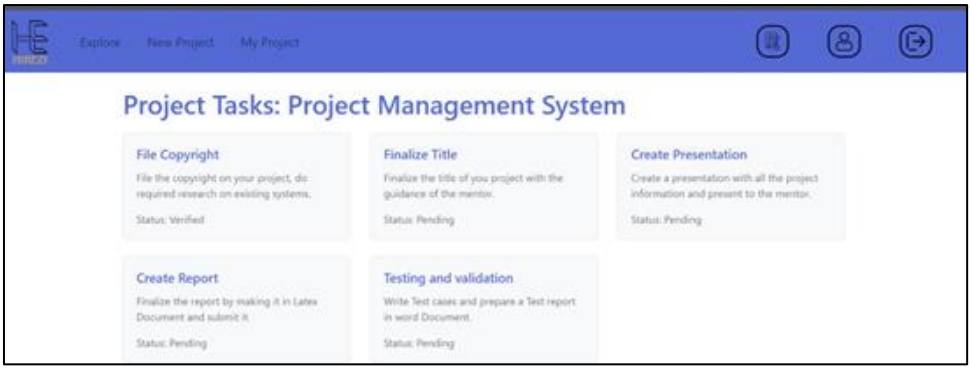

Figure 6 Project tasks for students

Also, Intelligent System provides an automated notification on email for every task, reviews, Plagiarism result etc. hence, automating the work of coordinator. Coordinator can view every aspect of the project and have full freedom to change anything at any point of time [12].

After a certain point of time when the coordinator starts the rubric form for projects, then mentors can fill the rubrics form for every project [13]. These rubrics consist of Inno- vation score, Communication and Presentation score, Domain knowledge score, Fulfilment of Societal needs score, National Representation score.

Now In the Intelligent project management system, after successful registration of a company, the company can view all the top projects enlisted on Intelligent System [16]. The Intelligent system provides companies the option to filter outprojects based on Colleges, Domains, Technology Stack with various sorting options like different Rubrics of the project or the 100 grade point. This 100 grade point score consists of the rubrics score added up with the score achieved at every task and review, making it an all-rounder score for the company to analyse the projects.

Score	Total marks	Contribution in 100 grade points
Innovation Score	10	10%
Communication and Presentation Score	10	10%
Domain Knowledge Score	10	10%
Fulfilments of Societal needs Score	10	10%
National Representation Score	10	10%
Task Score	Variable based on the task scored assigned by Coordinator	25%
Review Score	Variable based on the task scored assigned by Coordinator	25%
Total		100%

Figure 7 Distribution of 100 grade point of Projects

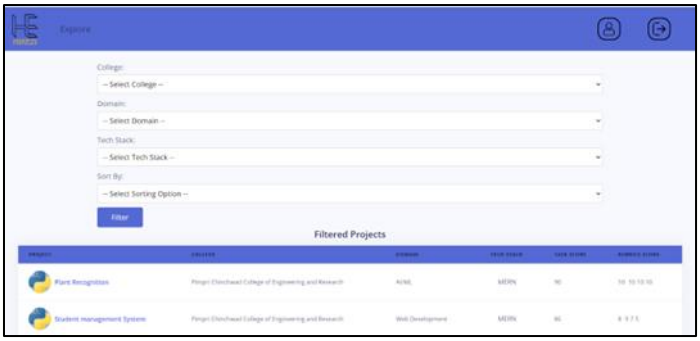

Figure 8 Company Project Explore Page

After company likes a project and wants to hire the students, they can simply click the contact button then an automated mail is sent to college and the students of the project, stating that company is interested in taking these students to their further hiring process.

6. Conclusion

The Intelligent Project Management System brings together graduate people from reputed college to the Industrialist by using 100 points based evaluation of projects and also gives re- sponse time of 200ms which is better than the existing project management systems. Intelligent system is developed in the Python Django framework which has increased Scalability by 70%. To conclude we have Successfully created Intelligent system with high user needs, Good Response time and high Flexibility to fulfil the needs of users.

Compliance with ethical standards

Disclosure of conflict of interest

We the authors of this paper declare that there are no conflicts of interest related to this project. However, it is important to note that in this project management system the authors are not involved in any direct funding from any company.

Financial Relationships

No direct or indirect support was received from any com- pany for this research. However, all the companies that will register themselves to this project could indirectly benefit from positive outcomes of the project as it will directly recruit the talent.

Personal Relationships

The project is founded on innovation, and the author's involvement is not motivated by personal gain.

Impartiality and objectivity

To ensure objectivity and impartiality, the research was transparent and unbiased in its evaluation of the "Intelligent Student Project Management System" with Hiring Op portuni- ties based on 100 points distribution."

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