

College Connect: A Unified Platform for Project Quality Enhancement and Academic Opportunity Integration

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Abstract—This paper presents a unified digital platform designed to enhance the quality of student projects through structured allocation, continuous monitoring, and outcome-based evaluation. The platform enables equitable and informed guide allocation by matching students with faculty mentors based on domain expertise and availability, ensuring transparent and well-supported project guidance. Comprehensive student profiles, which document academic performance, project involvement, and individual achievements, enable mentors to provide targeted guidance and track progress effectively. Integrated course analytics further strengthen the evaluation process by classifying projects according to domain areas and mapping them to course and program outcomes (COs and POs), offering section-wise graphical insights that assist departments in assessing the quality, relevance, and effectiveness of student projects. In addition to streamlining project-related processes, the platform serves as a centralized system for opportunity management, allowing faculty to post and manage research positions, internships, and job openings. These opportunities can also be integrated from external sources such as LinkedIn, enabling students to discover relevant openings based on their interests and qualifications. By consolidating these academic and professional elements into a single, secure, and role-based system, the platform replaces fragmented tools, fosters collaboration, and aligns with the quality expectations outlined in Criterion 2 of the National Board of Accreditation, ultimately promoting a more connected and outcome-driven academic environment.

Index Terms—Student-faculty collaboration, centralized web platform, project management, guide allocation, job and internship postings, course analytics, academic evaluation, task collaboration, project-phase grading, faculty-assigned projects.

I. INTRODUCTION

In the contemporary academic landscape, effective student-faculty collaboration is essential for improving the quality of student projects, strengthening classroom instruction in project-based courses and fostering a culture of innovation and collaborative learning. However, traditional systems frequently rely on fragmented communication channels, manual processes for the allocation of project guides, and limited transparency into project progress, all of which may impede engagement and adversely affect outcomes. To address these challenges, this work proposes a centralized digital platform designed to introduce structure and transparency into project management workflows. The platform enables faculty to allocate student projects according to domain expertise and mentor availability, thereby fostering improved alignment, accountability, and resource utilization to enhance the quality of project-based learning. Student profiles within the system comprehensively capture academic performance, skill sets, and prior project experience, enabling more personalized and effective mentorship. Moreover, the platform incorporates integrated analytics capable of classifying projects by domain and mapping them to course and program outcomes. These data-driven insights support continuous assessment and improvement of project quality at the departmental level, contributing to the broader goal of advancing educational excellence and student success.

In addition to improving the project workflow, the platform also supports broader academic and professional development by serving as a hub for

internships, research opportunities, and job postings. Faculty members can easily share relevant openings, including those sourced from external platforms such as LinkedIn, while students can access them based on their interests and qualifications. The use of role-based access ensures secure, targeted communication and a clear division of responsibilities. By integrating these functions into a single, cohesive system, the platform helps institutions move away from fragmented tools and toward a more efficient, connected, and student-centric academic ecosystem.

II. RELATED WORKS

Several prior studies and institutional platforms have explored different aspects of academic project management, faculty mentoring, and outcome-based evaluation. Patil et al. (2022) [1] proposed Project Hub, a centralized platform aimed at streamlining project tracking, team formation, and mentor-student interactions. The system effectively enhances collaboration and administrative efficiency; however, it lacks integration with institutional accreditation processes, particularly in terms of CO-PO mapping and program outcome assessment. Sharma and Agarwal (2021) [2] developed a mentor allocation model based on preference ranking and domain expertise, which contributes to fairness and satisfaction in guide assignment. Despite this, the model does not consider dynamic faculty workload or real-time availability, which limits its scalability in larger academic departments. Kumar et al. (2021) [3] presented an outcome-based evaluation framework for student projects that directly maps project components to course and program outcomes. While this approach supports accreditation and quality assurance, it relies heavily on manual data entry and lacks real-time analytics capabilities.

Learning Management Systems (LMS) such as Moodle [6] and Canvas provide limited capabilities for outcome-based tracking, primarily through configurable rubrics and basic analytics features. However, these systems offer minimal functionality in terms of project supervision and structured faculty mentoring. In parallel, many institutions have adopted either internally developed platforms or third-party solutions to support the discovery of research opportunities and internships, frequently integrating external sources such as LinkedIn [4] or

Internshala. While these systems facilitate access to professional opportunities, they typically operate in isolation from academic processes, lacking integration with student performance data or mentoring workflows. This fragmented ecosystem highlights the pressing need for a comprehensive digital platform that unifies project allocation, structured mentorship, outcome-based evaluation, and opportunity management within a secure, role-specific academic environment—capabilities that are central to the system proposed in this study.

III. PROPOSED APPROACH

The proposed system is a centralized web-based platform developed to enhance student-faculty collaboration by addressing existing inefficiencies in academic project management and engagement. It facilitates the structured allocation of faculty mentors for student projects, thereby promoting organized project workflows and equitable distribution of mentoring responsibilities. An integrated evaluation module streamlines the assessment process across various project phases, reducing manual workload and improving consistency in grading. In addition, the platform enables faculty to post research, internship, and job opportunities aligned with student skill sets, while also supporting the integration of external sources such as LinkedIn to broaden professional exposure. By unifying these academic and career development functions, the system fosters a more efficient, transparent, and outcome-oriented academic ecosystem. Key features of the system include:

1. Role-Based Access Control: Secure authentication mechanisms are implemented to provide differential access privileges based on user roles (e.g., students, faculty), ensuring data security and workflow integrity.
2. Integrated Opportunity Management: A dedicated module allows faculty to post job and internship opportunities while also integrating external platforms like LinkedIn, thereby enhancing student access to relevant career pathways.
3. Guide Availability and Allocation: The system enables students to view available faculty guides based on domain expertise and current mentoring capacity, while faculty can review and accept project

requests, ensuring mutually informed and transparent mentor-mentee pairing.

4. Comprehensive Student Profiles & Talent Recognition: Student profiles are dynamically maintained, highlighting academic achievements, project work, and internship experience. These profiles serve as a reference for faculty mentorship and facilitate visibility for industry engagement.

5. Course Aligned Project Analytics: Projects are categorized based on domain areas and mapped to program outcomes (POs). The system generates section-wise graphical insights into project distribution and performance, thereby aiding in curriculum analysis and accreditation reporting.

3.1 System Architecture

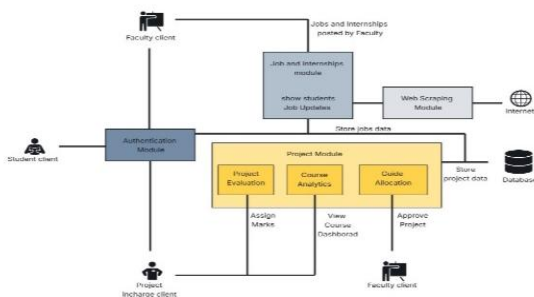


Fig 1: System Architecture

The system architecture presented in figure 1 feature multiple interconnected modules aimed at enhancing academic collaboration. The Authentication Module ensures secure logins for various user roles, such as students, faculty, and project in-charges. The Jobs and Internships Module enables faculty to post opportunities and incorporates a Web Scraping Module to gather external listings, which are stored and presented to students. At the core of the system, the Project Module consists of three sub-modules: Project Evaluation, Course Analytics, and Guide Allocation. These components manage tasks such as mentor assignment, project approvals, mark allocation and evaluation through rubrics for different courses like mini projects, summer internships and capstone project work, and the generation of visual insights into course outcomes. All information—including job listings and project data—is stored in a

centralized database, providing users with a seamless and integrated experience.

3.2 Methodology

CLG Connect implements a structured, role-based workflow encompassing three distinct tiers of users. Students interact with the platform to submit project proposals, form academic teams, and seek faculty mentorship, while maintaining comprehensive profiles that document their technical competencies and project portfolios. These portfolios serve as evidence of students' lifelong learning and self-directed learning capabilities. Faculty members play a critical role in supervising student projects through the "Become Guide" feature, enabling them to assume mentorship responsibilities based on their expertise and availability. In addition to their mentorship roles, faculty members also contribute by posting institutional job and internship opportunities on the platform, thereby bridging academic learning with career development prospects. The In-charge role holds exclusive authority over project evaluation and administrative oversight. This includes configuring course-specific assessment rubrics during the creation of courses such as mini-projects, summer internships, and capstone projects. In-charges are responsible for conducting project assessments aligned with defined course learning outcomes and ensuring the mapping of projects to program outcomes (POs). They also monitor and verify the extent to which projects explicitly address program outcomes such as PO6 (Engineer and Society) and PO7 (Environment and Sustainability) and others ensuring alignment with broader educational objectives. Furthermore, In-Charges manage domain classification of projects, track batch-wise progress, and oversee comprehensive analytics through specialized dashboards, thereby supporting data-driven decision-making and continuous improvement of project-based learning processes.

All platform interactions are governed through a permission-controlled interface, ensuring data security and role-appropriate access. Academic records are maintained with referential integrity in a PostgreSQL database, while Cloudinary securely handles the storage and management of project documentation.

IV. RESULTS

4.1 Experimental setup

The development environment for the platform is set up using Python, Django, and cloud-based services, ensuring seamless deployment. The technology stack includes Django, PostgreSQL, and Cloudinary, with tools like Docker and Git for efficient development and deployment. These technologies were chosen for their scalability, flexibility, and performance, supporting features like job and internship postings, project management, and real-time collaboration.

4.2 Results & Discussion

The platform was developed with the objective of strengthening student-faculty collaboration by streamlining project management, job postings, and academic evaluations. Sample interfaces for the student page and the comprehensive project page are as shown in fig 2, fig 3, the faculty job posting pages are illustrated in fig 4, and course creation, evaluation and analytics are presented in fig 5, fig 6 and fig 7 respectively. Although the system demonstrates strong performance, certain challenges have been identified, including the optimization of project-phase grading processes and enhancing the relevance of job recommendations. Future development efforts will prioritize improving the user experience, refining the recommendation algorithms, and further optimizing the platform's overall performance.

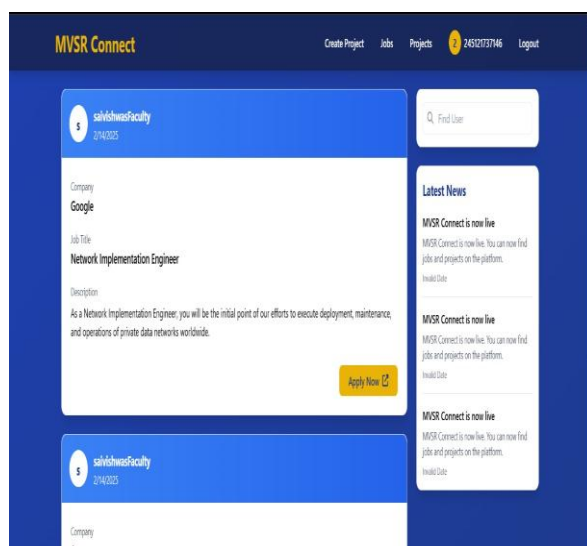


Fig 2: Student Home Page

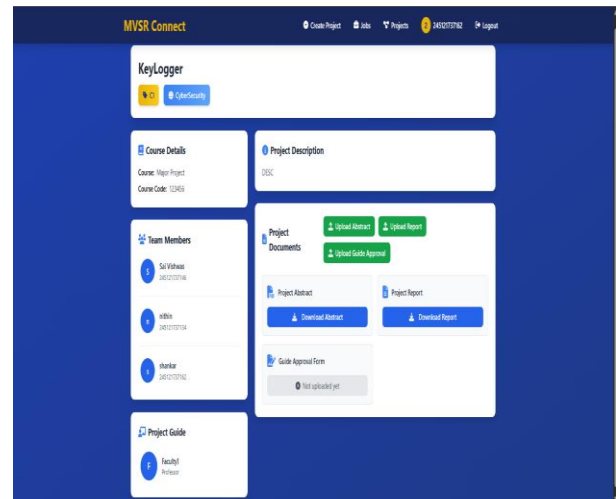


Fig 3: Project Details

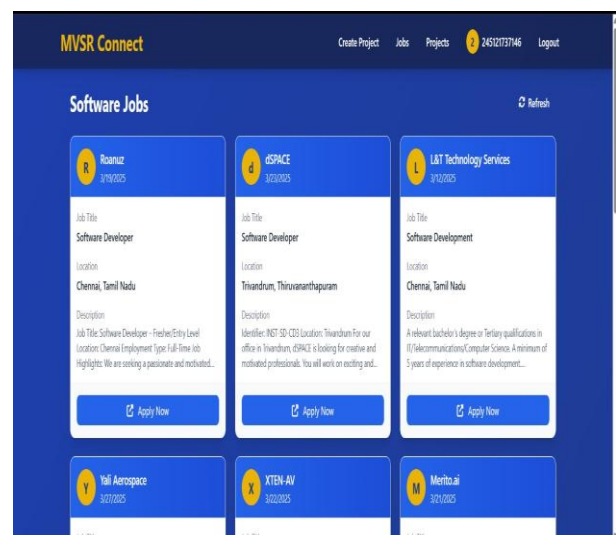


Fig 4: Job Posting

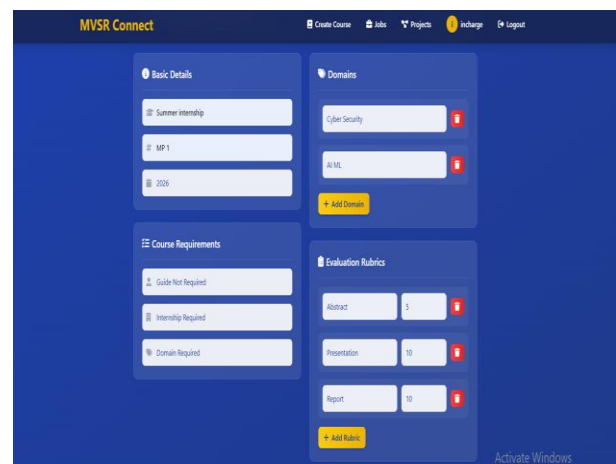


Fig 5: Create course type with evaluation rubrics



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