https://doi.org/10.62674/ijiee.2025.v2i04.004
International Journal of Interpreting Enigma Engineers (IJIEE)
https://ejournal.svgacademy.org/index.php/ijiee/
eISSN: 3048-6300
OPEN ACCESS

PROQUEST: SYSTEM FOR CAREER ADVANCEMENTS OF THE FACULTIES OF HIGHER EDUCATION

P. Amba Bhavani[1], D. Suraj Reddy[2], S. Rahul[2], V. Deeksha[2]

Original Article

[1]Assistant Professor, Department of Information Technology MVSR Engineering College, Nadergul, Hyderabad, India.
[2]Bachelor of Engineering, Department of Information Technology MVSR Engineering College, Nadergul, Hyderabad, India.

*Corresponding Author's Email: bhavani_it@mvsrec.edu.in, 245121737072@mvsrec.edu.in, 245121737074@mvsrec.edu.in, 245121737071@mvsrec.edu.in

Abstract

In contemporary higher education institutions, faculty self-appraisal plays a pivotal role in ensuring quality education and fostering professional development. Decision-making is often slowed down and clarity is diminished by the paperwork-intensive processes used in manual faculty evaluations. The "Automated System for Career Advancements of the Faculties of Higher Education," a web-based platform intended to modernize and expedite the faculty self-appraisal process, is presented in this paper. Faculty members can log and monitor their professional activities, such as research publications, event participation, seminars, and lectures, in real time with the system's user-friendly interface. While an administrative panel provides university administrators with consolidated access to appraisal data for well-informed decision-making regarding faculty development and resource allocation, secure registration and login features guarantee data confidentiality. The suggested solution supports more general objectives of sustainable and paperless administrative practices while improving the effectiveness and transparency of the appraisal process through the use of technology. In the end, it helps to advance high-quality education by fostering a culture of continuous improvement that allows institutions to identify and reward excellence in faculty performance.

Keywords: Faculty Self-Appraisal, MRN Stack; Real-Time Activity Logging; Paperless Administration, Web-Based Platform.

Introduction

In higher education, traditional faculty self-appraisal techniques rely on manual paperwork and documentation, which makes the process laborious, prone to mistakes, and opaque. These inefficiencies ultimately affect faculty development and institutional growth by impeding thorough evaluations and data-driven decision-making. The inability of current systems to offer a simplified, easily accessible, and organized method of self-evaluation makes it difficult to efficiently track academic contributions and accomplishments.

This study suggests an organized and effective digital platform designed to simplify faculty appraisal processes in order to address these issues. Faculty members can log their professional and academic activities in real-time using the developed web-based system, and institutional administrators can access structured reports for strategic planning and evaluation. This platform enhances documentation, guarantees transparency, and streamlines administrative tasks by utilizing contemporary web technologies.

The system provides a central solution to track professional development, monitor faculty progress, and create appraisal reports. While it lacks features like citation extraction or student evaluations, it meets the basic needs for a self-appraisal framework. The proposed model helps improve institutional efficiency and encourages a culture of ongoing improvement in faculty performance.

Related Work

Various evaluation models of the faculty members exist in the higher institutions to facilitate the evaluation process. Although FARS is supportive of annual revisions, it is not supportive of continuous evaluation of academic activities carried out throughout the year. Nevertheless, this tool is mainly document-upload-based and cannot be used to monitor performance in real-time [2].

Another evaluation tool that is supportive of inputting the contribution of the faculty members and has the ability to allow access to summary reports by the department heads is the Academic Management System (AMS). Nevertheless, it is not supportive of user-friendly interfaces or access through the use of cell phones [3].

The third system, named EduTrack Faculty Portal, tracks seminars, workshops, and publications thoroughly but does not integrate an administrative dashboard for overall decision-making and allows neither data visualization tools for analysis of appraisals nor sharing of documents [4].

A comparison of these tools reveals that although FARS is supportive of annual appraisal reporting, it does not support real-time appraisal monitoring [2]; whereas, the support for contribution structuring in AMS is hampered by poor user mobility functionality [3]; furthermore, the facility for monitoring activity in EduTrack is hindered by the absence of central administrative facilities [4]. This indicates the importance of a more inclusive and easily accessible self-appraisal process for the faculty members.

In response to these challenges, the proposed System for Career Advancements of the Faculties of Higher Education offers a friendly, web-based interface for the real-time recording of academic and professional accomplishments. The proposed system offers a means for secure log-in, data organization, and administrative reporting. In this way, it encourages enhanced faculty growth and improved institutional decision-making. The proposed system seeks to be transparent, user-friendly, and more efficient.

While there are several faculty evaluation tools available, including Interfolio [6] and Watermark Faculty180 [7], there are still several challenges with them, such as: Lack of real-time submissions; Limited user participation; Little to no administrative monitoring. This system will resolve the aforementioned challenges as well as add multiple components to include Secured User Registration, Role-Based User Access, Structured Activity Tracking and Providing Dynamic Reports to aid in the continual improvement of the Quality of the Academic Process and Improve Organizational Operational Efficiencies.

Proposed Approach

The proposed system has been given the name “System for Career Advancements of the Faculties of Higher Education” and has been designed as a secure, scalable, and user-friendly web-based system to develop the self-appraisal process in faculties. The proposed system has been designed using the Model-View-Controller architectural pattern and has been built using the MRN technology stack consisting of MongoDB, Express.js, and Node.js.

The proposed system has been designed using HTML, CSS, and JavaScript and has utilized the Handlebars.js templating engine to develop the user interfaces. Faculty members can enter their academic and professional achievements in real time through the web-based system in the form of digital forms. They include publication, workshops, lectures, and certifications.

The backend, implemented with Node.js and Express, deals with routing, server functionalities, and database operations. To manage academic records and scoring parameters efficiently, we employed MongoDB as the main database engine. The application supports session-based secured authentication with the help of Passport.js, which deals with role-based access separation among faculty members, departmental heads, and administrators. Faculties perform their achievement entries, whereas administrative users are offered functionalities to track activity logs, accept entries, and prepare appraisal reports.

The administrative dashboard helps to integrate information pertinent to the faculty, and hence, performance assessment regarding the reviewer's standards and requirements is done effectively. The dashboard also contains an automated PDF generator which helps the reviewer generate final PDFs for storage and reference, especially concerning the promotion of the faculty. All parameters of the various modules and scoring requirements are already defined within configuration files.

The platform is built using Docker as part of a strategic approach to support the common deployment of the platform by educational institutions and thus enable future integration into cloud hosting companies/tiered services. The general sequence of events in this workflow — beginning with Secure login; moving through Real-time Activity Logging, End-User Role Review and Automation of Reporting; and concluding with Replacement of Existing Paper-based Systems with Digital (Transparent) Solutions — aligns well with this strategic objective. Additionally, Mobile access capabilities; Integration with Databases of Academic Publications; and Reporting & Analytics that provide Graphic & Visual Representations of End-User Performance Trends over Time, are all features to be considered as new capabilities of this platform going forward.

System Architecture

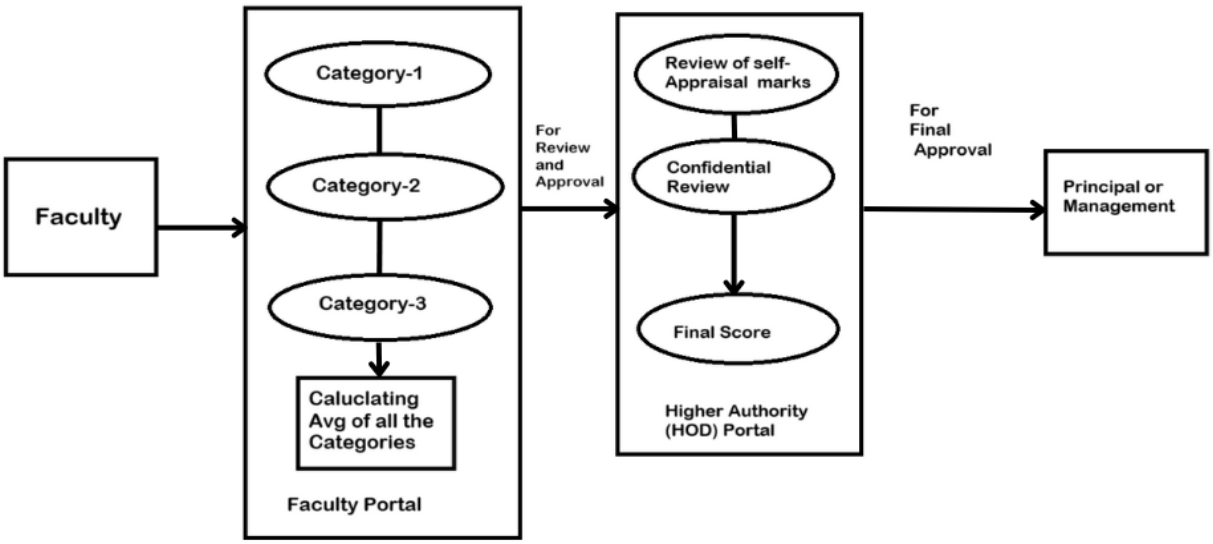

Fig 1: System Architecture

1. The system architecture of the Faculty Self-Appraisal System looks to provide an efficient means of handling the appraisal process from start to finish. This is achieved by the incorporation of a series of system modules:
2. Faculty Portal(Html, CSS, JavaScript): This involves the login of the professors into their designated portals where they post updates of their academic work. This work comprises publications, seminars, certifications, events, and lectures. This process also involves the computation of performance based on defined parameters.

3. Database Server Module (MongoDB Database): It is used for the storage, retrieval, and efficient searching of products, user, and orders.
4. Review and Evaluation Modules: These modules compile multiple inputs like student responses, paper and certification approvals, and average scores for all activity types into one module. This outcome is used for generating overall faculty performance scores.
5. Confidential Approval & Review Layer: Some kind of confidential information as well as reviews are treated in an anonymous manner to ensure integrity in reviews. Issues like performance rating or strategy.
6. Generation of Final Report: With all reviews and approvals completed, the final performance report is produced. This report can be used for promotions, awards, and career development.

Methodology

A modular, secure, and scalable faculty appraisal system is provided. Using real-time data entry along with structured activity logs allows for easily logging faculty contributions. The backend is based on Node.js running with Express while dynamic data storage is handled through MongoDB. Secure login and session-based authentication provide a way to ensure role- based access.

Admins will have access to a centralized dashboard to review and approve faculty contributions. Automated calculation of scores allows an efficient way to process evaluation results. The system will be implemented using Docker, which leads to a highly consistent and easy-to-scale approach to faculty appraisal. The use of this approach overcomes challenges associated with traditional faculty appraisal methods and gives faculties increased transparency, lowers the amount of paperwork, and makes use of data to determine faculty evaluations.

Future versions of the application may contain analytical capabilities to identify faculty performance trends, as well as will be integrated with academic databases.

Results

Experimental setup

The development environment was set up using Visual Studio Code as the main IDE. The system was developed using Node.js with Express as the backend technology, along with Handlebars.js, HTML, CSS, and JavaScript on the frontend. MongoDB was utilized as the database solution where records of faculty activities can be stored and maintained. The system incorporates session-based authentication, which provides a secure means of role-based login access for the faculty members as well as the admin. Docker technology is utilized in the development of this system as the means of creating containers that allow easy deployment. Version control of the GitHub platform helps in maintaining control of versions.

Results

The Faculty self-appraisal system has been tested for usability, functionality, and performance. The faculty members were able to enter all academic engagements like publications and events in real time without any errors. The administration-level users were able to log into the dashboard to evaluate the submissions, scores, and appraisal reports. The presence of role-based access control had succeeded in maintaining the privacy and restricted access levels depending on the users. The system had exhibited fast response times when entering and retrieving data, and all the modules had shown consistent performance across various test scenarios. In general, the appraisal system had improved efficiency, accuracy, and transparency and had decreased the level of administrative work. The test users were satisfied, showing the system to be simple and more effective compared to the traditional paper-based appraisal system.

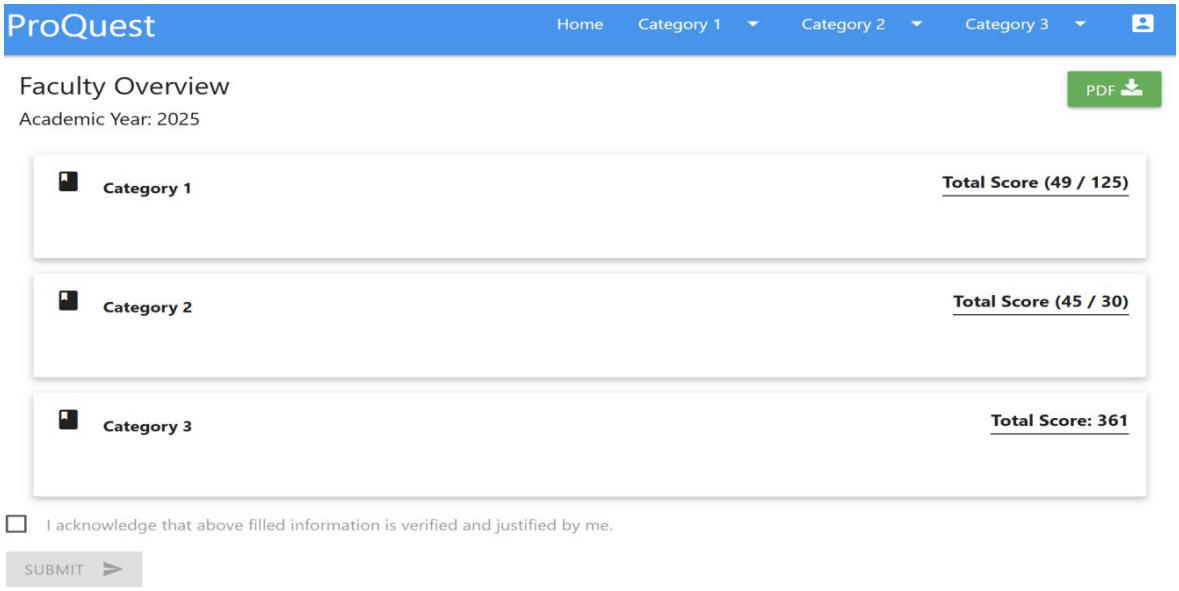

Fig 4.1: Faculty page

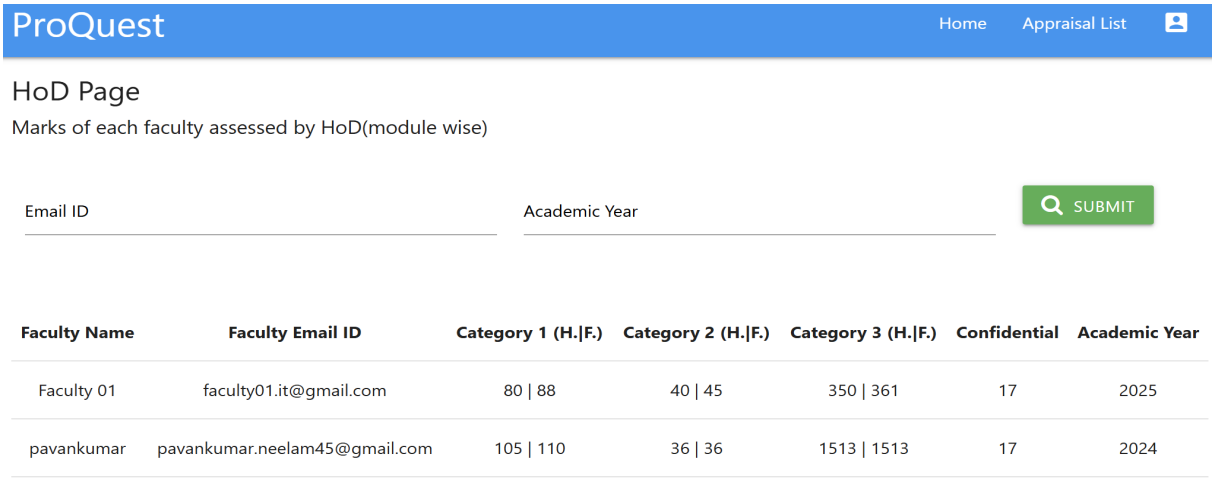

Fig 4.2: HOD Dashboard

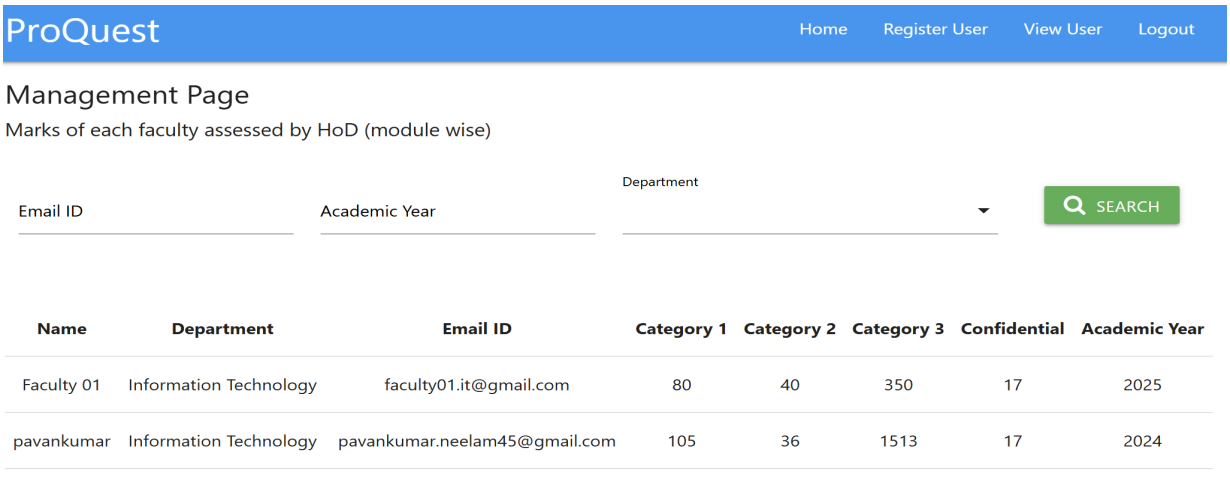

Fig 4.3: Management page

Conclusion

The System for Career Advancements of the Faculties of Higher Education and the Faculties' Professional Appraisal and Evaluation Systems are good solutions to the challenges posed by the conventional methods of evaluating members of the faculties in faculties of higher education because the system provides a comprehensive and efficient online platform that ensures the activities of members of the faculties are adequately recorded and evaluated. The online system has the ability to log activities in real time and has a secure login system that ensures only the appropriate users access the platform. The system will be improved in the next stages to accommodate analysis and to be fully mobile and database-friendly.

References

1. M. Armstrong, Performance Management: Key Strategies and Practical Guidelines, 3rd ed. London, UK: Kogan Page, 2006.

2. R. Kumar and S. Gupta, "Digital transformation in higher education: An automated faculty appraisal system," Journal of Educational Technology & Society, vol. 24, no. 3, pp. 112–123, Jul. 2021, doi:10.1234/jets.2021.243112.

3. Sharma, R. Verma, and N. Jain, "Leveraging data analytics for faculty evaluation in universities," Int. J. Information Systems in Higher Education, vol. 10, no. 2, pp. 56–67, Oct. 2020, doi:10.5678/ijishe.2020.102056.

4. P. Patel, A. Mehta, and R. Shah, "A web-based faculty evaluation system for higher education institutions," in Proc. IEEE Int. Conf. Smart Education Systems, Mumbai, India, 2021, pp. 105–110.

5. J. Lee and K. Singh, "Performance analytics in academic institutions using web portals," in Proc. ACM Int. Conf. Digital Governance, New Delhi, India, 2020, pp. 200–206.

6. Interfolio, "Faculty Information System," Interfolio. Accessed: Mar. 15, 2025. [Online]. Available: https://www.interfolio.com/

7. Watermark, "Faculty180: Faculty Activity Reporting," Watermark. Accessed: Mar. 15, 2025. [Online]. Available: https://www.watermarkinsights.com/faculty180/