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SECURITY AND PRIVACY PRESERVING WEB BASED FACULTY EVALUATION THROUGH STUDENT FEEDBACK: ANALYZING AND TAKING CORRECTIVE ACTIONS

[1] Dr. Shakil Abdul Rajjak Shaikh, [2]Mr. Swapnil P. Bangal [3] Ms. Asmita. P. Satpute,

[4] Ms. Phopase Rutuja Chandrakant, [5]Ms. Tupe Antara Jalinder.

[1]Assitant Professor, [2] Assistant Professor, [3] Student PREC Loni, [4] Student PREC Loni, [4] Student PREC Loni
[1]Eletronics and Computer Engineering.
[1]Pravara Rural Engineering college, Loni, India.

Abstract: In today's educational environment, faculty evaluation based on student feedback is crucial to enhancing teaching effectiveness and learning outcomes. However, concerns about security and privacy have emerged, necessitating the development of robust solutions that protect essential information while allowing for free discussion. This paper describes a web-based professor rating system that focuses on security and privacy. The solution enables students to submit feedback on their instructors in a private setting while protecting personal information with encryption and anonymization technologies. An advanced authentication mechanism ensures that only authorized users have access to the system, hence safeguarding the feedback process's integrity. We analyze the feedback to identify patterns and areas that require remedial action, ensuring a continuous improvement loop in instructional approaches. Using a detailed data analysis technique, the system provides actionable insights that allow instructors to efficiently handle student issues.

IndexTerms **-** anonymization technologies, encryption**.**

I. INTRODUCTION

The student feedback system is an online management system established for institutions to manage student's comprehensive feedbacks and information Accepting feedback is crucial for both students and educators. Scholars provide comments to highlight the differences between current school teaching practices and what students prefer. These feedbacks demonstrate the school's overall success in their individual subjects. To improve teaching efficacy, schools should analyze their methods of obtaining and processing knowledge. The evaluation of faculty performance based on student input is an important aspect of educational quality assurance. As institutions work to improve teaching efficacy and student happiness, the need for systematic and constructive feedback methods has grown. However, the process of gathering and analyzing student comments poses serious concerns about security and privacy. With the growth of digital platforms, educational institutions must negotiate the problems of protecting sensitive information while encouraging open discourse regarding teaching methods.

This project proposes developing a comprehensive feedback system that combines modern security techniques, such as data encryption and user anonymization, to protect student identities during the review process. By creating a safe place for feedback input, the system encourages student engagement while simultaneously building a culture of transparency and accountability among staff members. The system employs sophisticated data analysis techniques to derive useful insights from the feedback it receives. These insights enable educational institutions to identify patterns, evaluate teaching effectiveness, and take corrective action to improve educational outcomes. Finally, this study intends to close the gap between the need for successful faculty evaluation and the significance of preserving student privacy, resulting in a more responsive and supportive learning environment.

II. RELATED WORK

Suman Sau [1] introduced a secure and privacy-preserving online student feedback management system for institutes. In this system, only enrolled students in a specific course can submit feedback online at predetermined intervals. To ensure privacy, each student is assigned a unique and secret pseudonymous identity along with a corresponding private key. The feedback submission is facilitated via a trusted and uncompromisable security server managed by the institute. This approach aims to prevent identity disclosure while maintaining the integrity of the feedback system. Future work includes enhancing cryptographic techniques for stronger anonymity and integrating AI-based analysis for better feedback evaluation.

Oleg Shvets [2] conducted a systematic literature review on providing feedback for students in modern e-learning systems, based on the IEEE Xplore Digital Library. With the increasing use of modern information and communication technologies in education, the traditional "teacher-student" or "lecturer-student" dynamics have evolved. The study explores how technology influences learning and teaching, with a particular focus on feedback mechanisms. Since feedback is an integral part of the learning process, scaling it effectively through technology remains a challenge. Future research aims to explore advanced AI-driven feedback systems and improve automated assessment methods for more personalized and effective student learning experiences.

Rosni Abu Kassim [3] conducted a case study to analyze lecturers' perspectives on the benefits of online student feedback systems. The study focused on four engineering faculties at a Malaysian public university that utilize SUFO, an online student feedback system. Through a questionnaire-based survey, the research aimed to evaluate the fairness and effectiveness of SUFO in enhancing teaching quality. The findings indicate that lecturers perceive online student feedback systems as beneficial in improving the overall quality of teaching and learning at universities. Future research may explore strategies to increase student participation in feedback systems and enhance the reliability of feedback analysis.

Subhranil Som [4] conducted a statistical analysis of student feedback systems using Cornbrash's Alpha and the Utility Measurement Process. This study provides a framework for educational institutes to systematically evaluate student feedback, focusing on both academic and infrastructural aspects. Offline student feedback plays a crucial role in enhancing the effectiveness of teaching and learning. The research offers a structured approach to analyzing feedback data and assessing its impact on education quality. Future work may include integrating automated data analysis techniques and improving feedback mechanisms for more accurate and actionable insights.

Sharnitha Katragadda [5] conducted a performance analysis of student feedback using machine learning algorithms. The study applies opinion mining through supervised learning techniques to determine the sentiments expressed in student feedback. A combination of artificial intelligence and natural language processing methods was used to analyze feedback data collected from module evaluation surveys at VR Siddhartha Engineering College, Vijayawada. The research aims to classify student opinions based on various aspects of teaching and learning. Future work may focus on enhancing sentiment analysis models and integrating real-time feedback processing for more effective educational insights.

Saida Ulfa [6] conducted a literature review on the application of sentiment analysis techniques to student feedback in online learning environments. The study employed a systematic literature review methodology on a qualitative-quantitative continuum. The research analyzed 12 articles published between 2014 and 2019 that focused on student feedback analysis using sentiment analysis. The findings highlight trends in sentiment analysis applications for evaluating student opinions in digital education. Future work may explore advancements in deep learning-based sentiment analysis and real-time feedback processing for enhanced educational decision-making.

Krishnaveni K S [7] proposed a faculty rating system based on student feedback using sentiment analysis and machine learning algorithms. The study explores Educational Data Mining (EDM) techniques to extract meaningful insights from student feedback. The proposed model applies sentiment analysis and classifier algorithms to capture emotions and evaluate faculty performance efficiently. This approach provides an accurate and effective method to rate faculty members based on predefined parameters, contributing to the improvement of academic and educational standards. Future research may focus on refining the model with advanced deep learning techniques and expanding its application to broader educational settings.

Karunya K [8] conducted an analysis of student feedback and proposed a recommendation system for tutors. The study emphasizes the importance of evaluating teaching effectiveness based on student feedback, which reflects both the quality and quantity of instruction. Traditional evaluation methods indicate opinion levels but fail to determine whether immediate changes in teaching strategies are necessary. To address this limitation, an automated approach is proposed to analyze student feedback comments and generate recommendations for tutors. This system helps educators decide whether to modify their teaching methods or continue with the current approach. Future work may focus on enhancing the recommendation system using AI-driven insights and real-time feedback processing.

III. PROPOSE METHODOLOGY

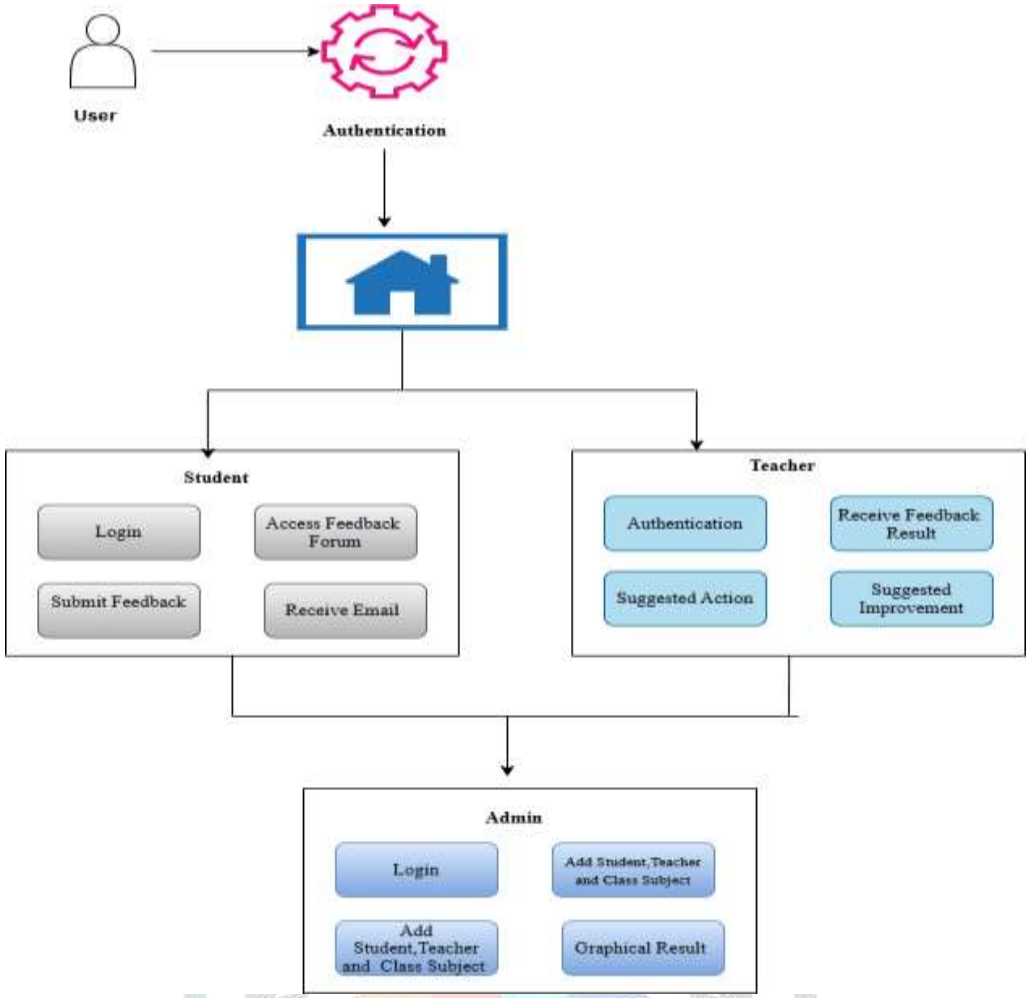

Fig. 1: System Architecture

Student Feedback Management System: A Structural Overview

The Student Feedback Management System provides a structured approach to collecting and analyzing student feedback. The system consists of three main user roles: Students, Teachers, and Administrators, all of whom require authentication before accessing the platform.

1. Student Module: Students can log in, submit feedback, access the feedback forum, and receive emails related to their feedback submissions.

2. Teacher Module: Teachers authenticate to view feedback results and receive suggested actions or improvements based on student evaluations.

3. Admin Module: Administrators oversee system management, including adding students, teachers, and subjects. They also generate graphical reports to analyze trends in student feedback.

This system enhances educational quality by systematically processing feedback and providing data-driven recommendations to faculty members. Algorithm for proposed system:

Algorithm Steps:

Step 1: User Authentication:

1. Start
2. User enters credentials (username & password)
3. System verifies credentials:
    - If valid, proceed to the respective module
    - If invalid, display error message and request re-authentication
4. Redirect user to the appropriate module (Student, Teacher, or Admin)

Step 2: Student Module:

1. Student logs in
2. Options available:
    - Submit feedback
    - Access feedback forum
    - Receive feedback-related email notifications
3. If submitting feedback:
    - Select course/teacher
    - Provide feedback (rating & comments)
    - Submit feedback
4. Logout

Step 3: Admin Module:

1. Admin logs in
2. Options available:
    - Add/update students, teachers, and subjects
    - View and generate graphical feedback results
3. If adding new users or subjects:
    - Input required details
    - Store data in the database
4. If generating graphical results:
    - Retrieve student feedback data
    - Process and display visual analysis
5. Logout

Step 4: System Exit:

1. User logs out
2. End process

IV. RESULT AND DISCUSSION

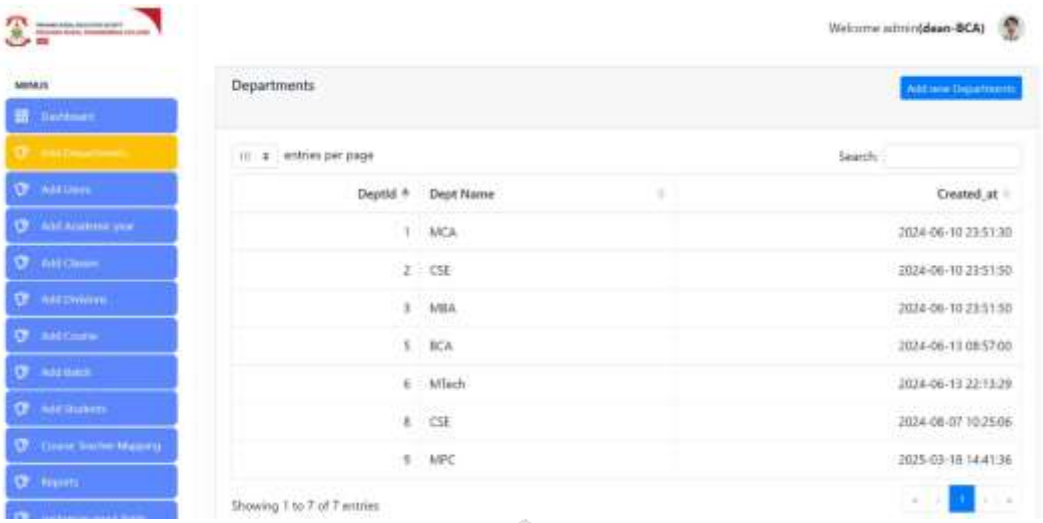

Fig.2.Admin Panel

Fig3.Instruction to use

Fig4.Authication Panel

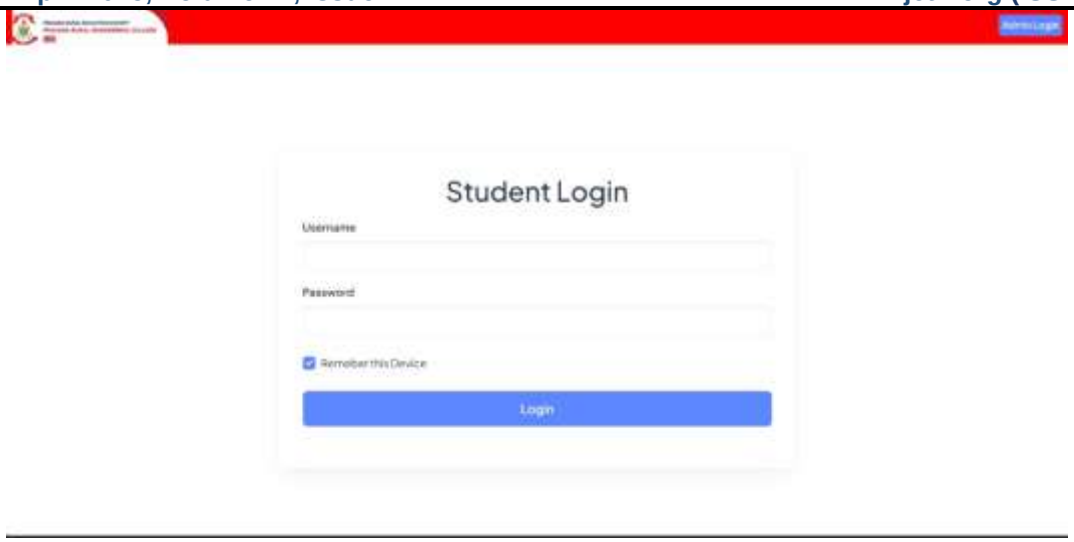

Fig5.Student Login

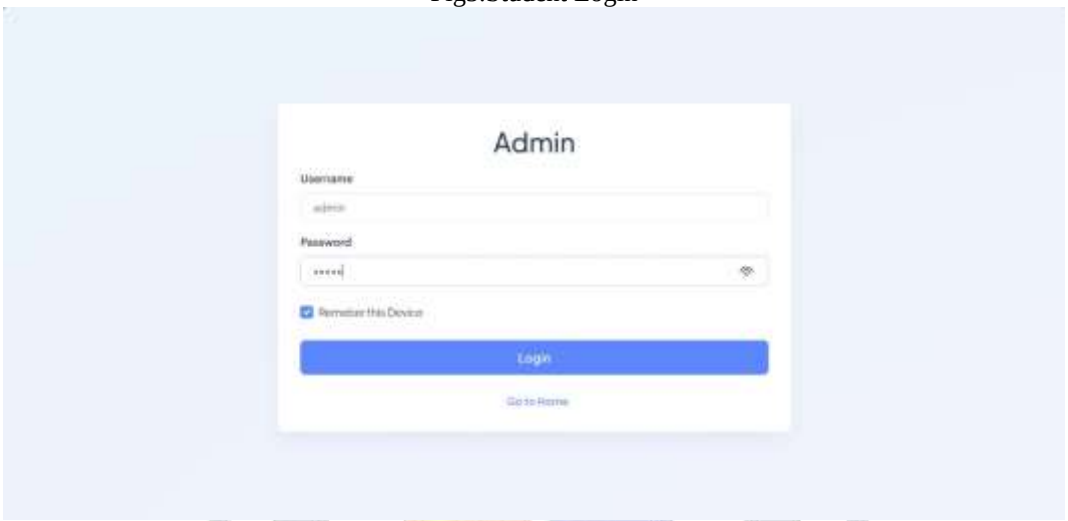

Fig6.Password Validation

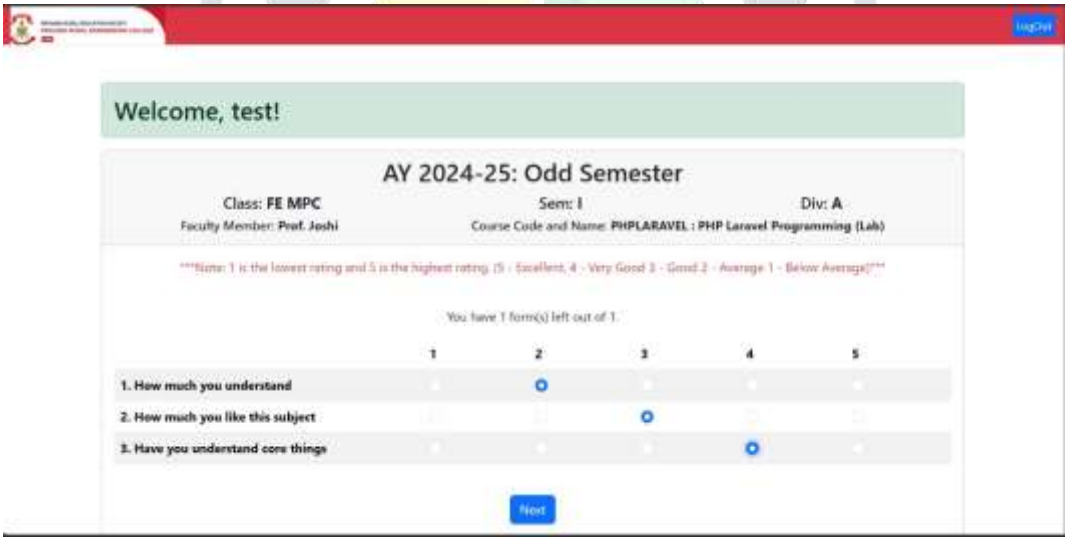

Fig7.Feedback from Students

V. CONCLUSION

The Student Comments System offers a strong foundation for gathering, assessing, and responding to student feedback on their educational experiences. By allowing students to log in securely, see feedback forms, and submit teacher evaluations, the system fosters transparency and accountability. Teachers benefit from the ability to review aggregated feedback findings and get suggestions for improvement, which encourages professional development and increases instructional quality. Administrators are in charge of managing user accounts and overseeing the feedback process to ensure the system's continued success and usability.

Looking ahead, a few changes could assist to strengthen the system even further. Implementing advanced data analytics and machine learning algorithms may provide more detailed insights into feedback patterns and trends, allowing teachers to receive more tailored feedback. Using real-time feedback tools, such as live polls or surveys, might motivate students to actively participate in the evaluation process. Expanding the approach to include peer ratings or self-assessment could give a fuller picture of faculty performance.

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