AI Powered Student Activity and Career Mapping Portal

[1]R.Divya, [2]S.Ishwarya, [3]M.Thilagavathi, [4]A.Nivetha, [5]M.Swetha
[1]Assistant Professor, [2345]Students
[1]Name of Department of 1st Author,
[12345]Salem College Of Engineering and Technology, Salem-Attur Main Road, M. Perumapalayam , Selliamman Nagar, Salem
[1]sesuraj0707@gmail.com, [2]ishwarya3.senthilkumar@gmail.com, [3]thilagavathiammapet@gmail.com, [4]nive3705@gmail.com

***Abstract*—An AI Powered Student Activity & Career Mapping Portal provides education institutions with an electronic-based comprehensive data-driven database to manage all their electronic records and administrative data regarding students. All personal information of each student and their attendance when they attend classes, their marks from examinations is stored securely in one place. With attendance records, teachers can record students' attendance while they are still at school as well as keep an eye on attendance records for any problems. The marks function allows teachers the ability to input internal and external assessments at any time as well as create grading for students based on these assessments or for grading purposes when a student withdraws from a course or program. The application achievement function tracks and stores all students' achievements and certificates, student certificates as well as the required supporting documentation needed for certificate verification. Student's view attendance status, marks, achievement awards, and download their certificate via a web-based interface. The system will offer administrative reports and analytics for each institution, thereby providing administrators with the ability to monitor student academic progress and the institutional performance.**

Along with academic administration, the system offers improved capabilities for career help. Details about job openings from different companies, such as job descriptions, requirements for eligibility, and application dates, can be added by the administrator. Students can create a digital profile for job chances by uploading their resumes to the portal. Using Natural Language Processing (NLP) techniques, the system analyses students' skills, academic records, and resume content to recommend suitable job opportunities. By matching student credentials with industry demands, our intelligent job recommendation feature helps close the knowledge gap between education and employment. All things considered, the AI Powered Student Activity & Career Mapping Portal encourages a technologically advanced, paperless learning environment. Efficiency is increased, data correctness is guaranteed, transparency is increased, and academic management and career growth are supported.

I. Introduction

The AI Powered Student Activity & Career Mapping Portal is an integrated digital platform developed to efficiently manage academic and administrative student information within educational institutions. The system replaces traditional manual record-keeping practices with a secure, centralized, and user-friendly digital solution. It is designed with three primary modules—Admin, Staff, and Student—each assigned specific roles to ensure structured and organized data management.

The Admin module functions as the central control unit of the system. Administrators can log in to manage institution-wide data, add or modify staff details, monitor system activities, and update career-related opportunities such as company information, job roles, eligibility criteria, and application deadlines.

The Staff module enables faculty members to maintain and monitor students' academic progress. Staff can

update attendance records, internal assessment marks, examination results, and review certificates uploaded by students. Additionally, faculty members provide structured feedback to guide students' academic and personal development.

The Student module empowers students by offering real-time access to their attendance, academic performance, and feedback records. Students can upload certificates, maintain digital records of achievements, download attendance and mark statements for official purposes, and track their academic growth. The system also supports career development by allowing students to upload resumes and create professional digital profiles. Using Natural Language Processing (NLP) techniques, the platform analyzes academic performance, skills, and resume content to recommend suitable job opportunities. By consolidating academic, achievement, and career data into a unified repository, the portal minimizes paperwork, enhances transparency, and supports informed decision-making within the institution.

II. LITERATURE REVIEW

institutions have led to the development of centralized student information systems aimed at replacing manual record-keeping. Traditional Student Information Systems (SIS) primarily focused on academic administration, such as attendance, marks, and enrollment [1]. However, these systems often lacked integration with faculty feedback, student achievements, and career planning tools.

The study by Nayyar Ahmed Khan and Khan Asif Rashid proposes an **Intelligent Student Information System** to streamline access to essential forms and academic information. Traditional paper-based processes are time-consuming, error-prone, and resource-intensive. The system digitizes form submission and record-keeping, allowing students to access, complete, and print forms online with minimal errors. Primarily used by the Student Affairs office, it also enables students to view their personal and academic data. By securely storing all records in a central database, the system reduces paper usage, simplifies data management, and provides administrators with accurate statistics and easy information distribution.

Pragun Agarwal and Anubhav Joshi discuss **Student Information Systems (SIS)** that centralize student records, including personal details, academic performance, attendance, curriculum, and examination results. Traditional paper-based record-keeping is time-consuming, error-prone, and costly due to stationery, storage, and labor requirements. Many institutions invest in complex management software, but these systems can be expensive and difficult to use. Digital SIS solutions provide a cost-effective alternative by streamlining record storage, retrieval, and updating, enabling administrators to quickly search and access student information while reducing operational costs and paper usage.

III. METHODOLOGY

The proposed AI Powered Student Activity and Career Mapping Portal is developed as a role-based web system integrating academic monitoring with intelligent job recommendation. The system consists of three modules namely Admin, Staff, and Students, all connected to a centralized database. The Admin manages staff details and job postings, the Staff updates student academic records such as attendance, marks, and feedback, and Students can view their performance details, upload certificates, and submit resumes.All user data is stored securely in a relational database, ensuring integrity and controlled access through authentication mechanisms. The AI-based recommendation module analyzes student performance, skills, and resume information to match suitable job opportunities from the database. Based on eligibility and profile similarity, personalized job suggestions are generated for students. This methodology ensures structured data management along with automated career guidance within a single integrated platform.

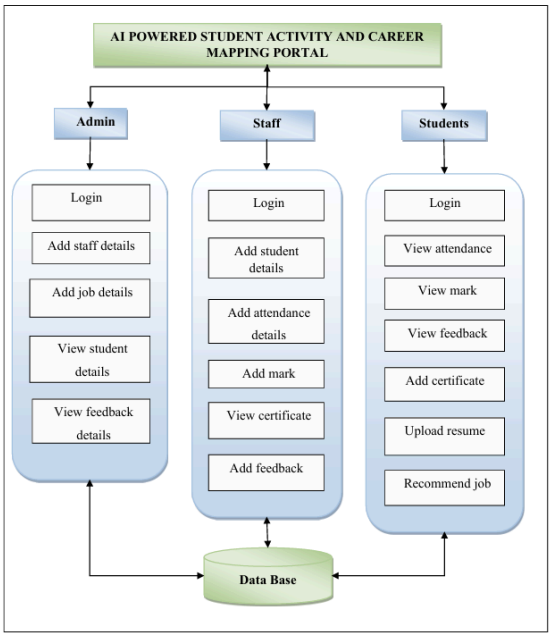


Fig3.1Student Activity and Career Mapping Portal

1. SYSTEM OVERVIEW

The proposed **AI Powered Student Activity and Career Mapping Portal**is a role-based web application designed to manage student academic activities and provide intelligent career recommendations. The system consists of three primary user modules: **Admin**, **Staff**, and **Students**, all connected to a centralized database.The architecture ensures secure authentication, structured data management.

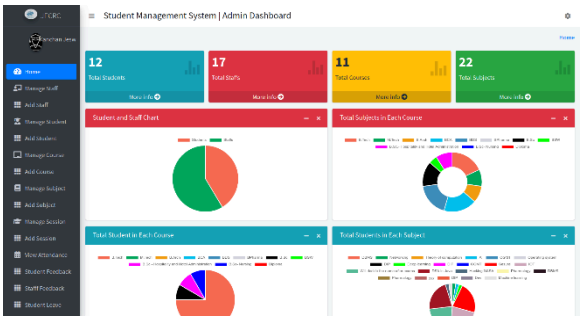
2. SYSTEM ARCHITECTURE

The system follows a three-tier architecture:

1. Presentation Layer – User interface for Admin, Staff, and Students.
2. Application Layer – Business logic and AI-based recommendation engine.
3. Database Layer – Centralized storage for academic, attendance, feedback, and career-related data.

Each module communicates with the central database through secure API endpoints.

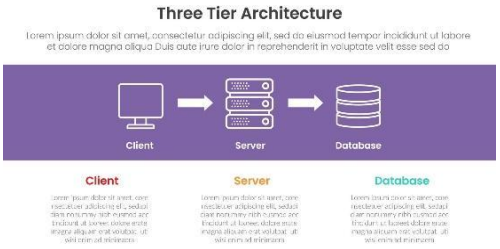
3. ADMIN MODULE



The Admin module controls the overall functioning of the portal. After authentication, the administrator can add staff details, upload job opportunities, and monitor student and feedback records. The Admin ensures that job postings are updated regularly so that students receive relevant career recommendations. This module acts as the supervisory layer of the system. Fingerprint recognition is a biometric authentication process that identifies individuals based on the unique patterns of ridges and valleys present in their fingerprints. In a smart attendance system, this method is used to ensure that the

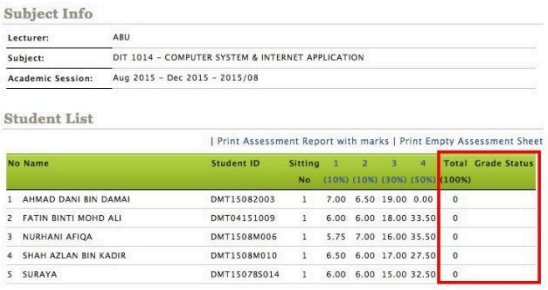
student who is attempting to mark attendance is indeed the authorized person, thereby preventingproxyorfraudulententries.Thesystembeginsby enrolling the fingerprints of each student into the device or central database.

4. WORKFLOW OF THE SYSTEM



The proposed system follows a three-tier architecture consisting of the presentation layer, application layer, and database layer. The presentation layer provides separate login interfaces for Admin, Staff, and Students. The application layer processes user requests, validates inputs, and executes business logic. The database layer stores academic records, user credentials, job details, and feedback information. All modules communicate securely with the centralized database to ensure structured data flow and controlled access.

5. STAFF MODULE



Subject Info

Lecturer:	ABU
Subject:	DIT 1014 - COMPUTER SYSTEM & INTERNET APPLICATION
Academic Session:	Aug 2015 - Dec 2015 - 2015/08

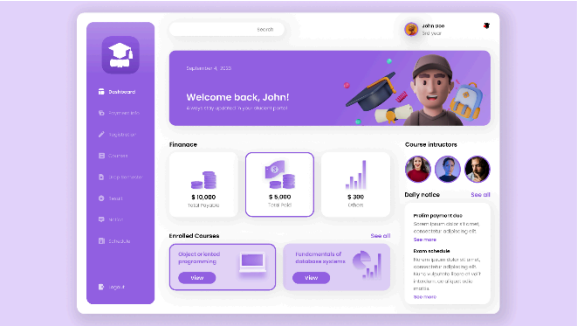
Student List

| Print Assessment Report with marks | Print Empty Assessment Sheet |

No	Name	Student ID	Sitting No	1 (10%)	2 (10%)	3 (30%)	4 (50%)	Total (100%)	Grade	Status
1	AHMAD DANI BIN DAMAI	DMT15082003	1	7.00	6.50	19.00	0.00	0		
2	FATIN BINTI MOHD ALI	DMT04151009	1	6.00	6.00	18.00	33.50	0		
3	NURHANI AFIQA	DMT1508M006	1	5.75	7.00	16.00	35.50	0		
4	SHAH AZLAN BIN KADIR	DMT1508M010	1	6.50	6.00	17.00	27.50	0		
5	SURAYA	DMT150785014	1	6.00	6.00	15.00	32.50	0		

The Staff module manages academic and performance-related data. Faculty members can register student details, update attendance records, enter marks, and provide feedback. These records are stored in the database and later analyzed by the AI engine for career mapping. The accuracy of job recommendations depends largely on the data maintained in this module.

6. STUDENT MODULE WITH AI RECOMMENDATION



The Student module allows students to view attendance, marks, and feedback. Students can upload certificates and resumes to enhance their profiles. The AI-based recommendation mechanism analyzes academic performance, skills, and resume content to suggest suitable job opportunities. Personalized job recommendations are generated by comparing student profiles with job requirements stored in the database.

IV. FUTURE ENHANCEMENT

The proposed system can be enhanced by integrating advanced machine learning algorithms to improve the accuracy of career predictions. Future development may include real-time industry trend analysis to align recommendations with current market demands. The portal can be extended with a skill gap identification module that suggests relevant certification courses and training programs. Integration with external job portals can enable automatic job updates and wider employment opportunities. A mobile application version of the system can improve accessibility and user engagement. Advanced data analytics dashboards can be incorporated to provide performance insights and predictive career growth analysis. The inclusion of internship tracking and project portfolio management can further strengthen student profiles. Chatbot support can also be added to provide instant guidance and career-related assistance. Cloud-based deployment can enhance scalability and data security. These enhancements will make the system more intelligent, scalable, and industry-oriented.

Furthermore, the system can be enhanced by incorporating alumni tracking to connect students with successful graduates for mentorship opportunities. Blockchain technology can be implemented to securely verify certificates and academic credentials. Gamification features such as achievement badges and progress tracking can be introduced to improve student engagement. Multi-language support can be added to make the platform accessible to a wider range of users. Continuous system updates based on user feedback and performance analytics can further improve reliability and user satisfaction.

V. RESULT

Through the use of the AI Powered Student Activity & Career Mapping Portal, there have been many improvements in the academic and career administration processes at the institution. This portal has allowed student data (i.e. Attendance and Marks) to be centralized eliminating errors due to manual input, as well as preventing redundancy of data. By providing accurate and transparent reporting of attendance, early alerts can be generated for students with low attendance rates. The automatic calculation of student grades has improved the consistency of evaluations by administrators. Additionally, by utilizing digital storage of certificates, administrators can retrieve them easily for future verification. Administrative reports and analyses provide insight on the academic performance of students as well as overall institutional progress, creating an opportunity for administrators to make data-driven decisions. From a career development perspective, the introduction of the AI job recommendation module has provided positive outcomes for skill/job matching. By using Natural Language Processing (NLP) techniques, the portal can analyze student resumes and academic records, generating job recommendations that are personalized and relevant to the student versus using the traditional method of manual matching. This will help reduce the gap between student skills and employer needs, and will increase student understanding of what their career paths should be.

VI. CONCLUSION

The AI Powered Student Activity & Career Mapping Portal is an easy-to-use centralized information system for both administrative and academic student record-keeping. Application provides more control over educational data that is accessible to all levels of users. Integration of Admin, Staff, and Student modules facilitate very efficient data flow, provides real-time updates, and gives users the ability to maintain accurate records. The system significantly reduces manual paperwork, diminishes human error, and provides transparency among all users. Students have access to their academic performance information, while staff and administrators have the ability to efficiently manage records and generate reports. The addition of features like the ability for students to upload their resumes and receive job recommendations using NLP will also assist students in developing their careers. Overall, this system brings an institution's operation into modern times and creates a technology-based, paper-free educational environment for all users of the system.

References

[1] Heinold, Brian. "A practical introduction to Python programming." (2021).

[2] Kneusel, Ronald T. Practical deep learning: A Python-based introduction. No Starch Press, 2021.

[3] Dhruv, Akshit J., Reema Patel, and Nishant Doshi. "Python: the most advanced programming language for computer science applications." Science and Technology Publications, Lda (2021): 292-299.

[4] Sundnes, Joakim. Introduction to scientific programming with Python. Springer Nature, 2020.

[5] Hill, Christian. Learning scientific programming with Python. Cambridge University Press, 2020.

[6] F. Ricci, L. Rokach, and B. Shapira, “Recommender Systems: Introduction and Challenges,” in Recommender Systems Handbook, 2nd ed., Springer, 2015

[7] J. B. Schafer, D. Frankowski, J. Herlocker, and S. Sen, “Collaborative Filtering Recommender Systems,” in The Adaptive Web, Springer, 2007

[8] Y. Gupta, CareerX: AI-Powered Career Path Recommender System for College Students, ResearchGate, Apr. 2025.

[9] AI-Powered Career Guidance System Using Machine Learning, IJIREM, vol. 12, 2025.

[10] “A Hybrid Recommender Model for Career Pathway,” International Journal of Computer Applications, 2025.“A Hybrid Recommender Model for Career Pathway,” International Journal of Computer Applications, 2025.