

**A REPORT
ON
STUDENT PLACEMENT MANAGEMENT SYSTEM**

Submitted by,

RAGHAVENDRA RAKESH	-	20211CDV0018
HARISH BHASKARAN	-	20211CDV0053
KAVANA S K	-	20211CDV0065
RUTHWICK S S	-	20211CDV0068
HEMALATHA G	-	20221LDV0002

Under the guidance of,

Mr. RAJAN THANGAMANI,

in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND TECHNOLOGY (DevOps)

At



PRESIDENCY UNIVERSITY

BENGALURU

MAY 2025

PRESIDENCY UNIVERSITY

PRESIDENCY SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the Project report “**STUDENT PLACEMENT MANAGEMENT SYSTEM**” being submitted by “**RAGHAVENDRA RAKESH, HARISH BHASKARAN, KAVANA. S. K, RUTHWICK. S. S, HEMALATHA. G**” bearing roll numbers “**20211CDV0018, 20211CDV0053, 20211CDV0065, 20211CDV0068, 20221LDV0002**” in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in **COMPUTER SCIENCE AND TECHNOLOGY** is a bonafide work carried out under my supervision.

Mr. RAJAN THANGAMANI
Assistant Professor
PSCS
Presidency University

Dr. S. PRAVINTH RAJA
Professor & HoD
PSCS
Presidency University

Dr. MYDHILI NAIR
Associate Dean
PSCS
Presidency University

Dr. SAMEERUDDIN KHAN
Pro-Vice Chancellor - Engineering
Dean –PSCS & PSIS
Presidency University

PRESIDENCY UNIVERSITY

PRESIDENCY SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

DECLARATION

We hereby declare that the work, which is being presented in the report entitled **“STUDENT PLACEMENT MANAGEMENT SYSTEM”** in partial fulfillment for the award of Degree of **Bachelor of Technology in Computer Science and Technology (DevOps)**, is a record of our own investigations carried under the guidance of **Mr. RAJAN THANGAMANI, ASSISTANT PROFESSOR, Presidency School of Computer Science and Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

NAME	ROLL NUMBER	SIGNATURE
RAGHAVENDRA RAKESH	20211CDV0018	
HARISH BHASKARAN	20211CDV0053	
KAVANA. S. K	20211CDV0065	
RUTHWICK. S. S	20211CDV0068	
HEMALATHA. G	20221LDV0002	

ABSTRACT

The Student Placement Management System (SPMS) is a secure web application based on roles, aimed at automating and simplifying campus recruitment procedures. It enables smooth communication between students and administrators while maintaining data protection via multi-factor authentication (MFA). Students can only view their personal, academic, and contact details, alongside customized lists of qualifying companies and placement histories. Administrators have access to improved features, such as managing student data, registering companies, tracking placements, and generating statistical reports. An integrated Decision Support System (DSS) module assists in forecasting and trend analysis to facilitate strategic planning and policy development. SPMS also includes modules for overseeing placement policies, handling student applications, and providing interactive statistical dashboards. By automating essential placement tasks, the system reduces manual effort, guarantees transparency, upholds data integrity, and greatly enhances the efficiency of the placement process.

Keywords: Student Placement, Role-Based Access Control (RBAC), Multi-Factor Authentication (MFA), Decision Support System (DSS), Campus Recruitment Automation.

ACKNOWLEDGEMENT

First of all, we indebted to the **GOD ALMIGHTY** for giving me an opportunity to excel in our efforts to complete this project on time.

We express our sincere thanks to our respected dean **Dr. Md. Sameeruddin Khan**, Pro-VC - Engineering and Dean, Presidency School of Computer Science and Engineering & Presidency School of Information Science, Presidency University for getting us permission to undergo the project.

We express our heartfelt gratitude to our beloved Associate Dean **Dr. Mydhili Nair**, Presidency School of Computer Science and Engineering, Presidency University, and **Dr. S. PRAVINTH RAJA**, Head of the Department, Presidency School of Computer Science and Engineering, Presidency University, for rendering timely help in completing this project successfully.

We are greatly indebted to our guide **Mr. Rajan Thangamani**, Assistant Professor and **Dr. S. Pravinth Raja**, Head of the Department, Presidency School of Computer Science and Engineering, Presidency University, for rendering timely help in completing this project successfully.

We would like to convey our gratitude and heartfelt thanks to the CSE7301 University Project Coordinators **Mr. Md Ziaur Rahman** and **Dr. Sampath A. K.**, department Project Coordinators **Ms. SUMA N. G** and Git hub coordinator **Mr. Muthuraj**.

We thank our family and friends for the strong support and inspiration they have provided us in bringing out this project.

Raghavendra Rakesh

Harish Bhaskaran

Kavana. S. K

Ruthwick. S. S

Hemalatha. G

ACKNOWLEDGEMENT

We would like to express our deepest gratitude to the Indian Space Research Organisation (ISRO) for providing us with this invaluable opportunity to work on our project. ISRO, as a pioneering space research organization, has made remarkable contributions to space exploration, satellite technology, and the nation's scientific advancement. Being associated with such an esteemed institution has been a truly enriching experience for us.

We express our sincere gratitude to, **Mr. RAJIV RATAN CHETWANI, OUTSTANDING SCIENTIST**, Director, Directorate of Information Systems & Management (DISM), ISRO Headquarters, for providing us with the esteemed opportunity to work on a project under the auspices of ISRO.

We are especially thankful to our guide from ISRO, **Mr. HARI PRASAD. C. N, DEPUTY DIRECTOR**, Directorate of Information Systems & Management (DISM), ISRO Headquarters, for his continuous support, guidance, and encouragement throughout the project. From the very beginning, he has guided us through understanding the necessary tools and technologies, learning how real-time companies operate, and providing us with a well-defined problem statement. His expert advice and insightful suggestions have played a vital role in our journey from the initial stages to the successful completion of this report. We truly appreciate his dedication and the time he devoted in guiding us through every phase of our work.

This experience has not only enhanced our technical skills but has also inspired us to pursue excellence in the field of space research. We extend our heartfelt thanks to the entire ISRO team for their cooperation and support.

Raghavendra Rakesh

Harish Bhaskaran

Kavana. S. K

Ruthwick. S. S

Hemalatha. G

LIST OF FIGURES

Sl. No.	Figure Name	Caption	Page No.
1	Figure 4.1	System Architecture	16
2	Figure 6.2.1	Class Diagram	20
3	Figure 6.3.1	System Architecture	21
4	Figure 7.1	Gantt Chart	24

TABLE OF CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
	ABSTRACT	iv
	ACKNOWLEDGEMENT	v
	ACKNOWLEDGEMENT	vi
1.	INTRODUCTION	1
	1.1 Need for Student Placement Management System	1
	1.2 Scope of the project	3
2.	LITERATURE REVIEW	3
	2.1 Existing Methods	4
3.	RESEARCH GAPS OF EXISTING METHODS	13
	3.1 Inadequate Real-Time Analytics and Forecasting Capabilities	13
	3.2 Absence of Dynamic Role-Based Access Control	13
	3.3 Limited Support for Multi-Stakeholder	13
	3.4 Poor Visualization and Statistical Reporting Mechanisms	14
4.	PROPOSED METHODOLOGY	15
5.	OBJECTIVES	17
6.	SYSTEM DESIGN AND IMPLEMENTATION	19
	6.1 Functional Requirements	19
	6.2 Class Diagram and Activity Diagram	20
	6.3 Implementation Process	21
7.	TIMELINE FOR EXECUTION OF PROJECT	24
8.	OUTCOMES	25
9.	RESULTS AND DISCUSSIONS	27
10.	CONCLUSION	30
	REFERENCES	31
	APPENDIX A: Pseudo Code	32
	APPENDIX B: Screenshots	43
	APPENDIX C: Enclosures	46

Chapter 1

INTRODUCTION

The Student Placement Management System (SPMS) is a secure, role-oriented web application created to enhance and automate the campus hiring process in educational establishments. It acts as a centralized hub that promotes effective communication among students, administrators, and recruiters while maintaining data security via multi-factor authentication (MFA) and role-based access control (RBAC). SPMS reduces manual workload, increases transparency, and aids strategic decision-making by offering tailored access to student profiles, company listings, application tracking, and placement records through its integrated data analytics and decision support tools. This framework is crucial for contemporary organizations that seek to handle placements efficiently, ensure data accuracy, and provide a smooth placement process.

1.1 NEED FOR STUDENT PLACEMENT MANAGEMENT SYSTEM

Conventional approaches to handling campus placements tend to be manual, disjointed, and ineffective, resulting in delays, mistakes, and communication breakdowns among students, administrators, and recruiters. As educational organizations expand and industry requirements change, there is an immediate necessity for a reliable, effective, and data-oriented system to optimize the complete placement procedure. The Student Placement Management System (SPMS) is vital for these reasons.

Below is a detailed analysis of the need for a **Student Placement Management System**:

1. Automation of Placement Activities

- Prompt alerts regarding placement drives.
- Precise monitoring of student applications and their statuses.
- Removal of redundant administrative duties.

2. Role-Based Access Control (RBAC)

- .Students can view only their personal data and pertinent company listings.
- Administrators possess wider access to oversee and regulate all activities.

- Improved privacy and system protection.

3. Multi-Factor Authentication (MFA) for Data Security

- Stops unauthorized entry.
- Safeguards student information and institutional records against breaches.
- Establishes confidence among users about data security.

4. Centralized Student and Company Management

- Keeping and refreshing student academic, personal, and placement information.
- Creating and overseeing company profiles and hiring requirements.
- Pairing qualified students with businesses using established criteria.

5. Data Analytics & Decision Support System (DSS)

- Predicting trends in placement data.
- Spotting underperforming academic fields or departments.
- Reinforcing strategic choices with data-driven proof.

1.2 SCOPE OF THE PROJECT

The Student Placement Management System (SPMS) covers the design, creation, and implementation of a secure, role-based web application that automates and oversees the complete campus placement processes in an educational institution. The platform will assist in student registration and profile management, permit businesses to advertise job openings, and empower administrators to manage and organize placement-related activities effectively. Important aspects consist of multi-factor authentication (MFA), role-based access management (RBAC), application monitoring, placement history oversight, company qualification screening, and automated report creation. The system will incorporate a Decision Support System (DSS) module to examine historical data and deliver insights for predicting and strategic planning. The SPMS will facilitate scalable user access, maintain data privacy and integrity, and improve communication among all parties involved. The goal is to minimize manual work, guarantee transparency, and enhance the overall effectiveness and success rate of the campus recruitment procedure.

Chapter 2

LITERATURE REVIEW

The development of student placement systems has been a significant focus in educational technology, motivated by the desire to enhance efficiency, transparency, and scalability in campus recruitment. Conventional manual systems have shown to be labor-intensive, prone to mistakes, and challenging to oversee as organizations expand in size and intricacy. Literature emphasizes the growing use of online platforms that automate various placement functions, including student registration, tracking job applications, managing companies, and generating reports.

2.1 EXISTING METHODS

Current approaches to handling student placements in educational institutions mainly depend on either manual methods or simple digital tools like spreadsheets, emails, and independent databases. In manual systems, placement officers keep physical files of student profiles, eligibility, and applications, which take a lot of time to update and are susceptible to human mistakes. Interaction with students and businesses frequently occurs via notice boards or group messaging applications, resulting in delays and misunderstandings.

Certain organizations utilize simple web portals or content management systems (CMS) to disseminate information; however, these typically do not include functionalities such as role-based access, real-time updates, and application monitoring. Furthermore, eligibility assessments are typically performed manually or through basic filters that do not expand effectively with larger datasets.

The security measures in these systems are minimal, usually restricted to username-password authentication, which fails to adequately safeguard sensitive student and institutional information. Reports and analytics are produced either by hand or with simple chart tools lacking any smart forecasting features. While certain advanced institutions have embraced database-driven applications with some automation, they frequently lack integrated features such as multi-factor authentication (MFA), decision support systems (DSS), or dashboards for visualizing data.

[1] Dutta & Kaushik (2020) – "Decision Support Systems in Educational Institutions":

Dutta and Kaushik (2020) emphasize the incorporation of Decision Support Systems (DSS) within educational organizations to enhance decision-making and strategic planning. They describe how DSS can analyze past data, forecast trends, and offer practical insights to managers. In the realm of Student Placement Management Systems (SPMS), a DSS may be utilized to predict placement trends, assess student performance information, and determine the most effective methods for enhancing placement results.[1] Through the use of predictive analytics, DSS can offer suggestions on which students are most probable to achieve successful placement, which companies should be focused on for recruitment efforts, and how to enhance the entire placement procedure. The article emphasizes the benefits of utilizing data for decision-making and forecasting, which can assist organizations in enhancing the effectiveness and outcomes of their placement procedures.

Merits:

1. DSS assists educational institutions in predicting placement trends, assessing student performance, and analyzing other important metrics.
2. Delivers insights based on data that can be utilized for long-term strategic planning and policy formulation.
3. Provides decision-makers with practical insights derived from data.

Demerits:

1. The effectiveness of a DSS relies on the quality and amount of data accessible. Insufficient or erroneous data may result in incorrect forecasts.
2. Creating and implementing a DSS can be intricate and demanding in resources, necessitating expertise in data science and analysis.

[2] Verma, K., & Sharma, R. (2020) – "Integration of Decision Support Systems in Web Portals":

Verma and Sharma explore the incorporation of Decision Support Systems (DSS) within online platforms utilized by educational organizations. The article contends that web portals function not just as data storage systems but also as analytical resources that enable administrators to make well-informed choices. By incorporating DSS, organizations can forecast placement results, analyze training efficiency, and examine company involvement

patterns. The document also discusses technical frameworks for incorporating DSS elements like dashboards, predictive algorithms, and comparative analysis components.[2] In systems such as SPMS, integrating DSS enables strategic planning for placement, allocation of resources, and recognition of skill deficiencies among students.

Merits:

1. Enables decision-making based on data to enhance placement results.
2. Imparts strategic benefit by means of predicting and analyzing trends.
3. Promotes openness and responsibility in placement procedures.

Demerits:

1. .Elevated implementation complexity—necessitates organized and historical information.
2. Requires qualified individuals for efficient application and understanding.
3. Integration might necessitate the re-engineering of current platforms.

[3] Kamal & Nasir (2019) – "Role-Based Access Control for Secure Systems":

Kamal and Nasir (2019) explore the idea of Role-Based Access Control (RBAC) regarding the security of systems, especially in settings where users require various degrees of access to confidential resources. The document describes how RBAC can be applied in different systems, including those used by educational institutions, to manage access to sensitive information such as student records, corporate profiles, and placement histories. By designating various roles (e.g., students, administrators, recruiters) to users and providing them with specific permissions according to their role, the system guarantees that only permitted users can access sensitive information.[3] This is especially vital in a Student Placement Management System (SPMS), where safeguarding and confidentiality of student information are essential. The document additionally emphasizes the scalability and adaptability of RBAC, enabling its use in both small and large organizations. Nonetheless, adopting RBAC necessitates thorough planning and a comprehensive grasp of roles and permissions, which can be intricate, particularly in large organizations with various user categories.

Merits:

1. RBAC guarantees that only permitted users can reach sensitive information, greatly improving system security.
2. Establishes distinct user roles (e.g., students, administrators, recruiters), minimizing the likelihood of unauthorized access.
3. RBAC can efficiently expand to larger organizations with numerous users, safeguarding secure access control across all tiers.

Demerits:

1. Establishing RBAC necessitates meticulous planning to accurately define roles and permissions, a task that can be intricate in extensive systems.
2. Incorporating RBAC into older systems can be challenging without completely revamping the current user management framework.

[4] Shukla & Singh (2019) – "Campus Recruitment Management System":

Shukla and Singh (2019) introduced a Campus Recruitment Management System (CRMS) aimed at automating different phases of the campus recruitment procedure. The system seeks to enhance the communication among students, recruiters, and placement officers by automating essential functions like student registration, management of job applications, and application tracking. Students are able to create and oversee their profiles, which contain their personal, academic, and skill information, enabling them to seek employment and connect with opportunities that align with their qualifications. Conversely, companies or recruiters can list job vacancies, access student applications, and handle the recruitment process systematically. The system improves communication by offering immediate updates on application statuses, interview timetables, and placement operations. The CRMS streamlines the recruitment process by automating manual tasks, which decreases administrative burden and enhances efficiency.[4]

Merits:

1. The system minimizes manual labor by automating essential functions like student enrollment, job listings, and application handling.

2. Decreases the duration required for handling placement-related activities, enhancing both speed and dependability of the process.
3. Facilitates improved monitoring and management of student applications and placement documentation.

Demerits:

1. The document fails to address role-based access control (RBAC) or multi-factor authentication (MFA), both of which are crucial for safeguarding sensitive data of students and companies.
2. There is no reference to decision support systems (DSS) or predictive analytics for forecasting trends or aiding in strategic planning.
3. The system might struggle to manage large institutions that have thousands of students effectively.

[5] Bhatia, P., & Arora, S. (2018) – “Security Enhancement of Web-Based Applications Using MFA”:

This paper examines the importance of Multi-Factor Authentication (MFA) in improving the safety of web applications. As cyber-attack threats, including phishing, password breaches, and brute force attacks, increase, conventional authentication techniques are viewed as increasingly insufficient. Bhatia and Arora highlight the importance of MFA, which consists of two or more verification techniques such as passwords, biometrics, OTPs, or authentication applications, in offering a multi-layered security approach. The research offers a comparative evaluation of various MFA techniques, examining their security robustness and user-friendliness[5]. It determines that incorporating MFA into systems such as SPMS greatly enhances authentication security and user confidence, particularly when handling sensitive academic and placement information. The writers also address factors related to implementation, including expenses, user approval, and alignment with current infrastructures.

Merits:

1. Enhances system security by lessening reliance solely on passwords.
2. Safeguards against various types of attacks (phishing, credential theft).

3. Establishes user confidence through the implementation of rigorous access restrictions.
4. Easily adjustable to educational platforms with a moderate level of technical effort. .

Demerits:

1. May introduce usability challenges or inconvenience for end users (e.g., OTP delays).
2. Implementation requires additional infrastructure and costs.
3. Possible resistance from users unfamiliar with multi-step login processes

[6] Kamal & Nasir (2019) – "Role-Based Access Control for Secure Systems":

Kamal and Nasir (2019) explore the idea of Role-Based Access Control (RBAC) regarding the security of systems, especially in settings where users require various degrees of access to confidential resources. The document describes how RBAC can be applied in different systems, including those used by educational institutions, to manage access to sensitive information such as student records, corporate profiles, and placement histories[6]. By designating various roles (e.g., students, administrators, recruiters) to users and providing them with specific permissions according to their role, the system guarantees that only permitted users can access sensitive information. This is especially vital in a Student Placement Management System (SPMS), where safeguarding and confidentiality of student information are essential. The document additionally emphasizes the scalability and adaptability of RBAC, enabling its use in both small and large organizations. Nonetheless, adopting RBAC necessitates thorough planning and a comprehensive grasp of roles and permissions, which can be intricate, particularly in large organizations with various user categories.

Merits:

1. RBAC guarantees that only permitted users can reach sensitive information, greatly improving system security.
2. Establishes distinct user roles (e.g., students, administrators, recruiters), minimizing the likelihood of unauthorized access.
3. RBAC can efficiently expand to larger organizations with numerous users, safeguarding secure access control across all tiers.

Demerits:

1. Establishing RBAC necessitates meticulous planning to accurately define roles and permissions, a task that can be intricate in extensive systems.
2. Incorporating RBAC into older systems can be challenging without completely revamping the current user management framework.

[7] Sharma & Choudhary (2018) – "A Survey on Campus Placement Management Systems":

Sharma and Choudhary (2018) carried out a study on current campus placement management systems, examining their characteristics, advantages, and drawbacks. The study explores different systems designed to oversee and streamline the campus placement process, emphasizing the shared characteristics and difficulties encountered by educational organizations. It addresses the automation of placement tasks, the centralized oversight of student information, and the improvement of communication among recruiters, students, and administrators[7]. The article examines the enhancements in efficiency brought about by these systems and highlights their significance in minimizing manual mistakes and the duration allocated to administrative duties.

Merits:

1. Provides a comprehensive overview of various campus placement systems, aiding in the identification of shared trends and effective practices.
2. Highlights the difficulties encountered by educational institutions in handling placements, including inefficiency, communication issues, and absence of transparency.
3. Explores how automation can minimize manual labor, enhance efficiency, and elevate the overall placement experience.

Demerits:

1. The article mainly centers on an overview of current systems, lacking an in-depth exploration of their technical features or architectural structures.
2. It fails to address sophisticated security measures such as RBAC and MFA, which are crucial for safeguarding student and company information.

3. Does not provide a thorough analysis of how decision support systems can be incorporated into these systems for improved strategic placement management..

[8] Gupta & Sharma (2017) – "Student Placement Prediction Using Data Mining Techniques":

Gupta and Sharma (2017) investigate the application of data mining methods to forecast student placement achievements using past data. The article examines the application of data mining to assess trends in student achievement, encompassing academic records, skill sets, and extracurricular involvement, to forecast their chances of successfully securing employment. Through the application of data mining algorithms on extensive datasets, the system can produce predictions that assist students in grasping their likelihood of success and enable placement officers to identify high-potential candidates for particular job opportunities[8]. The predictive model can be utilized to detect trends, project placement rates, and aid in enhancing placement strategies. This method enables a more personalized and data-driven placement procedure. Nevertheless, the system has constraints, such as the intricacy of data mining methods, which may be challenging to implement in smaller organizations with restricted resources.

Merits:

1. Applies data mining methods to forecast placement results, enhancing choices for both learners and managers.
2. Provides customized placement forecasts for each student according to their academic achievements and abilities.
3. Assists organizations in recognizing trends and enhancing placement approaches.

Demerits:

1. Although the theoretical framework is robust, the paper is missing practical application examples or case studies that showcase the effectiveness of these methods.
2. The document fails to consider security issues such as RBAC or MFA for safeguarding sensitive student information utilized in the prediction models.
3. Employing data mining methods can be intricate and might not seamlessly fit into current, less technical frameworks.

[9] Jaiswal, S., & Tiwari, R. (2017) – “Campus Placement Automation Using Web Application”:

This document presents a web-centric automation solution tailored for overseeing campus placement operations. The writers point out the limitations of manual placement methods, including scheduling issues, data inconsistency, and a lack of transparency. The suggested system features student enrollment, job alerts, application monitoring, and interview arrangement capabilities. It emphasizes that consolidating placement data through a web interface enhances efficiency and minimizes human mistakes[9]. While the system streamlines important tasks, it centers on fundamental automation with little focus on access control, analytics, or predictive modeling, rendering it a foundational option ideal for organizations starting their digital transformation in placement management.

Merits:

1. Significantly minimizes manual documentation and administrative burdens.
2. Facilitates quicker, clearer communication between coordinators and students.
3. Affordable and fairly simple to implement in small to medium-sized organizations.

Demerits:

1. Does not have sophisticated security measures (e.g., RBAC, encryption).
2. Lack of integrated analytics or tools for decision support.
3. Restricted scalability and flexibility for upcoming upgrades.

[10] Patil & Pawar (2017) – "Online Student Placement Management System":

Patil and Pawar (2017) created an Online Student Placement Management System designed to streamline the placement process, enhancing communication between students and placement officers. The system enables students to sign up, build profiles, and apply for jobs listed by companies, while also giving placement officers a user-friendly platform for overseeing student profiles and job applications. It assists placement officers in tracking application statuses, overseeing job postings, and efficiently monitoring the advancement of placement activities[10]. Students gain from the capability to apply to various companies, monitor their application progress, and get notifications about placement events. The system additionally offers a platform for recruiters to advertise job openings, review student

applications, and engage with the students. This automation lessens the administrative load, conserving time and energy for placement officers, while also assisting students in effectively handling their career-related information.

Merits:

1. Streamlines student enrollment and application monitoring, enhancing operational effectiveness.
2. The system offers instant updates to students and administrators, facilitating improved communication.
3. Consolidates information about students, companies, and placements into a single platform, enhancing data accessibility.

Demerits:

1. The document fails to consider security issues like MFA or RBAC for controlling access to sensitive information.
2. There is no reference to a decision support system that offers insights or analytics for improved decision-making.
3. It does not have sophisticated user role specifications, which reduces its flexibility in handling permissions for various stakeholders (e.g., students, recruiters, administrators).

Chapter 3

RESEARCH GAPS OF EXISTING METHODS

3.1 Inadequate Real-Time Analytics and Forecasting Capabilities :

The majority of student placement management systems (SPMS) now used in educational institutions mainly serve as fixed stores of past data. They are intended to gather and retain fundamental student data, academic transcripts, placement application information, and hiring results. Although these systems might provide fundamental features like search filters, tracking eligibility, and logs of placement history, they lack the capability to deliver real-time, actionable insights. There is no allowance for sophisticated data analysis, forecasting trends, or simulations based on various scenarios. Consequently, placement officers and institutional leaders have restricted insights while developing strategies for engaging recruiters, enhancing student skills, or creating policies.

3.2 Absence of Dynamic Role-Based Access Control

Present SPMS implementations frequently depend on basic role-based access controls where user permissions are predetermined and fixed according to broad classifications like "student," "admin," or "recruiter." This method fails to provide the adaptability needed for intricate institutional hierarchies and the subtle data access needs of various stakeholders. For instance, faculty coordinators might need access to statistics at the batch level but not to individual student resumes, whereas recruiters should only be able to view shortlists that are based on the criteria they establish. Additionally, these systems frequently do not have audit trails or mechanisms for dynamic policy adjustments, resulting in possible data leakage, violations of regulations, and user dissatisfaction.

3.3 Limited Support for Multi-Stakeholder

Conventional placement systems function in isolated settings and are frequently structured with a student-administrator duality in focus. They neglect to include additional stakeholders like recruiters, alumni, faculty mentors, industry training providers, and career counselors. This narrow focus diminishes the system's usefulness and does not tap into the collaborative capabilities of the broader academic environment. For instance, alumni associations, which may serve an essential function in mentoring and referrals, are typically

lacking. Similarly, recruiters are provided with basic interfaces that have restricted features, frequently depending on manual email communication for coordinating candidates.

3.4 Poor Visualization and Statistical Reporting Mechanisms

Most SPMS platforms restrict data visualization to simple tables and unchanging bar or pie charts. These do not provide real-time engagement, multi-layered analysis, or user-controlled filtering. Consequently, placement officers and administrators struggle to derive actionable insights or showcase engaging visual data during stakeholder meetings, accreditation processes, or strategic evaluations.

Chapter 4

PROPOSED METHODOLOGY

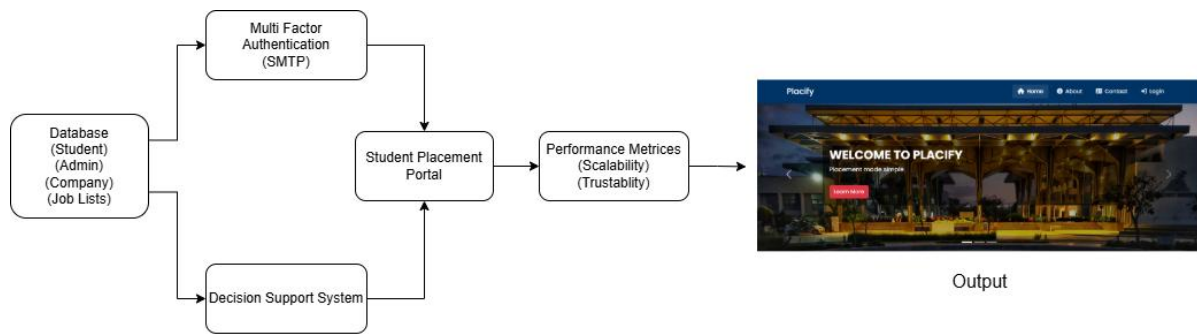


Figure 4.1 System Architecture

The Student Placement Management System (SPMS) is advanced to deal with the important thing demanding situations in traditional placement techniques thru a structured, modular architecture that emphasizes steady authentication, data-driven selection-making, and person-centric layout. One of its center features is Multi-Factor Authentication (MFA), (shown in Figure 4.1) which ensures a secure login mechanism for both students and directors, thereby reducing the hazard of unauthorized get admission to. The Student Dashboard affords students with view-handiest get admission to to their personal, educational, and speak to facts, in conjunction with a dynamically generated list of corporations for which they're eligible based on instructional overall performance. Additionally, students can tune their placement history, receive notifications, and update their passwords securely. The Admin Panel gives complete control over scholar statistics, enabling administrators to add or edit facts, reveal placement applications, control organizations and process postings, and replace placement statistics and policies in real time. A key highlight of the system is the included Forecasting Module (Decision Support System - DSS), which leverages educational statistics, agency traits, and ancient placement records to generate predictive insights and visible analytics through graphs and dashboards, aiding strategic decision-making. The system additionally includes Placement Statistics functionality to generate real-time reviews on selected college students, top recruiters, average earnings applications, and more. The Company Management module lets in for the dynamic addition or removal of organizations and task listings, with automated filtering of eligible scholar applications to streamline the location workflow. Finally, the gadget ensures secure termination of person periods through Secure Logout and Session Handling,

protective in opposition to unauthorized get admission to and statistics breaches. Overall, SPMS is a comprehensive and secure platform aimed toward enhancing the efficiency, transparency, and intelligence of the student placement procedure.

Chapter 5

OBJECTIVES

To improve a Real-Time Analytics and Forecasting Capabilities:

It is suggested to incorporate a strong Decision Support System (DSS) module into the SPMS framework. The DSS must utilize machine learning algorithms for real-time data mining, trend analysis, and forecasting. Predictive models, including time series forecasting (ARIMA, Prophet), regression techniques, and classification methods (Random Forests, SVM), can be developed using past placement information. The system is capable of forecasting upcoming hiring trends, pinpointing areas with low placement success, and recommending improvement measures. Moreover, a real-time dashboard utilizing front-end frameworks like React.js and data visualization tools like D3.js or Recharts allows administrators to track KPIs such as placement ratios, recruiter involvement, and student eligibility instantaneously. This would greatly improve institutional flexibility and readiness.

To implement Dynamic Role-Based Access Control:

A robust and scalable RBAC system ought to be established using frameworks like Django's permission classes or by incorporating an OAuth2-driven policy engine. Every user must be assigned a specific role, and every role should include detailed access permissions regulated by a policy matrix that correlates user actions to allowed data operations (CRUD – Create, Read, Update, Delete). Moreover, Attribute-Based Access Control (ABAC) can be implemented to enhance permissions by considering contextual factors like department, graduation year, academic achievement, or application status. To improve security, incorporate Multi-Factor Authentication (MFA) with authenticator applications or biometric methods, guaranteeing that users with valid credentials also complete an extra verification step before entering sensitive areas. Incorporating audit logs and session tracking can assist in post-incident investigations and compliance evaluations.

To provide Support for Multi-Stakeholder:

To convert the SPMS into a comprehensive ecosystem, modular platforms need to be created for every stakeholder group. Recruiters need secure and customizable dashboards to publish job listings, establish eligibility criteria, view candidate pipelines, and arrange interviews. Alumni should have access to controlled mentorship platforms where they can offer assistance with resume evaluations, practice interviews, or webinars. Training

providers must be connected via APIs to input real-time data on student certification and skill development into the placement system. Token-based authentication (e.g., JWT) in RESTful APIs should be implemented to facilitate smooth and secure data transfer between modules. These improvements will cultivate deeper connections with industry and establish a nurturing atmosphere for student growth outside of conventional placement procedures..

To improve Visualization and Statistical Reporting Mechanisms:

Create a completely interactive dashboard system utilizing contemporary front-end libraries like Recharts, Chart.js, or Plotly, connected with backend APIs developed using Flask Framework. Essential metrics like recruitment statistics by company, placement trends by student, success ratios by department, and analyses of skill gaps should be made readily available in a dynamic manner. Elements such as time sliders, geographic maps (for off-campus or global placements), and pivot tables can further improve data understanding. Visuals that can be exported in PDF or PNG formats need to be included for official reporting needs. This system would enable decision-makers to implement policy changes based on data and enhance placement strategies efficiently.

.

Chapter 6

SYSTEM DESIGN & IMPLEMENTATION

6.1 FUNCTIONAL REQUIREMENTS

Functional necessities define the unique functionalities that the Student Placement Management System must provide to meet the objectives and make certain clean operation.

The Student Placement Management System emphasizes sturdy consumer authentication to ensure steady get right of entry to for both college students and administrators. Students are required to log in the use of their unique User ID and password, with an introduced layer of Multi-Factor Authentication (MFA) to protect their money owed. Similarly, directors access the machine thru a secure login procedure that still employs MFA, making sure best legal employees can control and oversee touchy placement records via the admin dashboard.

In phrases of profile control, college students are granted get admission to to view their personal, educational, and make contact with information via a study-handiest interface, retaining the accuracy and integrity of institutional information. However, they hold the potential to soundly trade their passwords while necessary thru a committed password trade module. This guarantees that while information integrity is maintained, students still have manipulate over their account security. (Shown in Figure 6.2.2)

The machine supports complete placement hobby control, allowing administrators to sign up groups by means of inputting info inclusive of process roles, eligibility standards, and task descriptions. Based on these standards—which includes CGPA, active backlogs, and specialization—college students are proven handiest the ones activity listings for which they're eligible. They can then apply at once via the device, which streamlines the software technique and reduces the likelihood of ineligible packages. Administrators can screen the status of pupil applications (applied, selected, rejected) and generate placement reviews and data which include placement costs and enterprise participation. (shown in Figure 6.2.1)

To beautify institutional selection-making, the platform consists of a Decision Support System (DSS) module that analyzes pupil overall performance traits and historical placement facts to forecast destiny effects. This feature enables administrators make records-

driven selections for enhancing placement techniques. In addition, the system guarantees well timed notifications and signals: students get hold of updates approximately activity possibilities and alertness statuses, even as admins are informed of latest corporation registrations and activity postings, ensuring clean coordination and real-time communicate in the platform

6.2 CLASS DIAGRAM AND ARCHITECTURE

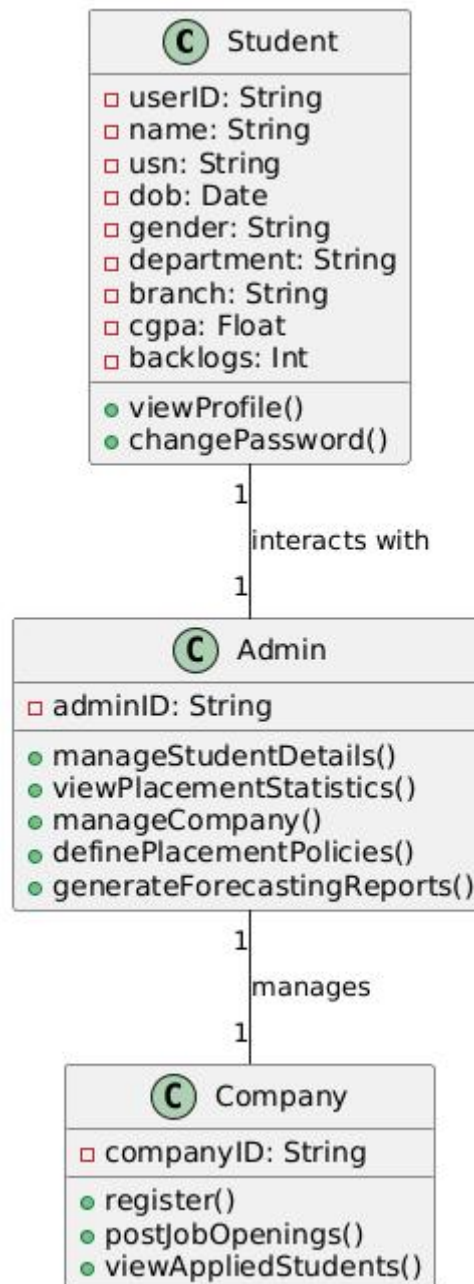


Figure 6.2.1 Class Diagram

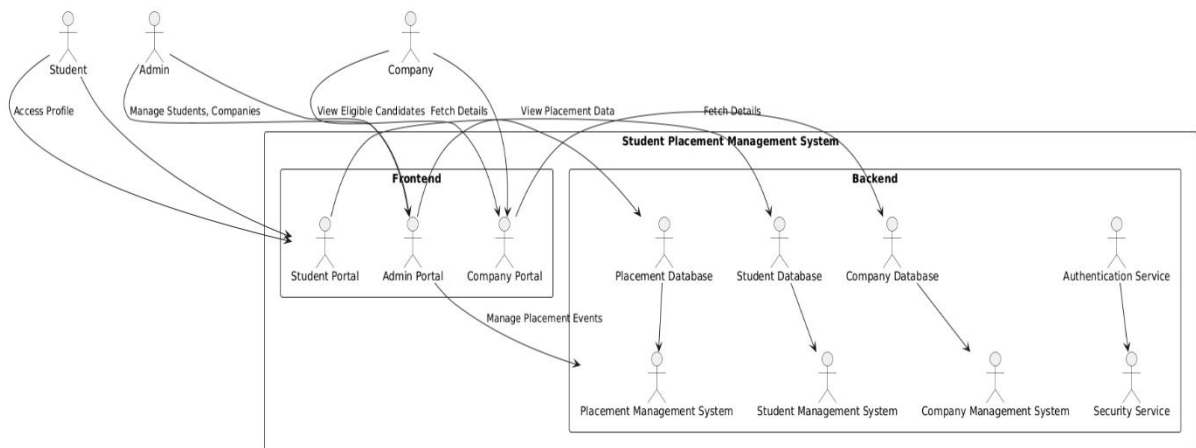


Figure 6.2.2 Activity Diagram

6.3 IMPLEMENTATION PROCESS

The deployment of the Driver Alertness Detection System entails a sequence of processes, ranging from hardware installation to software creation. Here is a comprehensive step-by-step guide for establishing the system..

1. Tools and Technology

i. Frontend Development:

- a) **HTML, CSS, and JavaScript:** These technology are used to create the person interface (UI) of the device. HTML offers the shape, CSS handles styling, and JavaScript allows dynamic and interactive factors in the system.
- b) **Bootstrap:** A framework used for building responsive internet pages. It ensures that the utility works properly throughout one-of-a-kind devices.

ii. Backend Development:

- a) **Python:** Python is chosen for backend development because of its simplicity and widespread support for libraries and frameworks.

iii. Database Management:

- a) **SQLite3:** For improvement and checking out, SQLite is used because of its simplicity and smooth setup.

iv. Authentication:

- a) **Multi-Factor Authentication (MFA):** For greater protection, the machine implements MFA, using equipment like Google Authenticator or Twilio for producing time-primarily based one-time passwords (TOTP).

v. Deployment:

- a) **AWS:** Cloud structures for website hosting the application, making sure scalability, protection, and availability.

2. Modules Implemented

Module 1: User Authentication Module:

The User Authentication Module handles the login method for both students and administrators:

- Both college students and admins input their credentials at the Login Page.
- The Authentication Service verifies the credentials in opposition to statistics saved inside the Database.
- If authentication is successful, the person is redirected to the perfect portal (Student or Admin).

Module 2: Student Profile Module:

The Student Profile Module permits students to view their profile statistics:

- The student logs into the device via the Student Portal. The portal fetches the profile statistics from the Student Database.
- The profile information is displayed to the pupil, ensuring that the scholar can view their private, educational, and contact info, but can not modify them..

Module 3: Placement Management Module (Admin):

The Placement Management Module is accountable for admins to manage student and employer information, as well as placement events:

- The Admin Portal lets in the admin to replace scholar records, manage organisation info, and schedule placement occasions.
- Data is updated or retrieved from the Student Database, Company Database, and Placement Database consequently.
- This module enables admins to track placements, manage organizations collaborating in placements, and ensure the easy execution of placement sports.

Module 4: Placement Application Module (Student):

The Placement Application Module permits students to apply for placement activities:

- The Student Portal shows a listing of eligible organizations for placement.
- The portal retrieves this listing from the Placement Database.

- The student applies for a placement, and the Placement Database is updated to mirror the student's application.
- The portal confirms the student's software as soon as it's miles correctly registered in the database.

Module 5: Reporting and Analytics Module (Admin):

The Reporting and Analytics Module permits admins to view placement information and generate reviews:

- Admin requests placement reports through the Admin Portal.
- The portal fetches the required data from the Placement Database.
- The statistical records is exhibited to the admin, providing insights into placement developments, scholar performance, and corporation participation.

This module facilitates in selection-making and forecasting for destiny placement occasions.

Module 6: Multi-Factor Authentication (MFA) Module:

The Multi-Factor Authentication (MFA) Module enhances security:

- After the scholar or admin enters their credentials, the device triggers the MFA Service.
- A Time-based totally One-Time Password (TOTP) is despatched to the user's cellphone.
- The user enters the TOTP, and the MFA Service verifies it.
- Once confirmed, the consumer is redirected to their respective portal.

Chapter 7

TIMELINE FOR EXECUTION OF PROJECT (GANTT CHART)

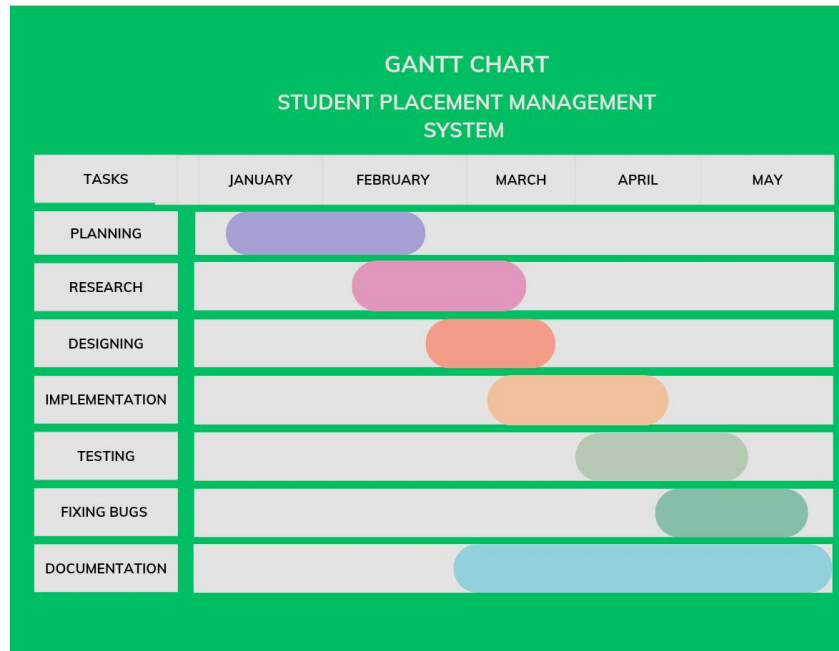


Figure 7.1 Gantt Chart

The Gantt chart outlines a timeline for a web development project spanning January to May. Shown in Figure 7.1

Key tasks include:

- **Planning:** Completed in February.
- **Research:** Gathered information between February and March.
- **Designing:** Connected and developed during February and March.
- **Implementation:** Implemented during March and April.
- **Testing:** Conducted in April.
- **Fixing Bugs:** Conducted during April and May.
- **Complete Documentation:** Started from March and completed by May.

Chapter 8

OUTCOMES

The a success implementation of the Student Placement Management System (SPMS) is expected to yield a variety of impactful consequences that make contributions to the efficiency, transparency, and effectiveness of campus recruitment approaches. The following are the precise viable outcomes of the proposed system::

1. Enhanced Security and Data Integrity

The integration of multi-factor authentication (MFA) and function-primarily based get right of entry to manipulate (RBAC) will considerably enhance the safety posture of the gadget. Only authorized customers might be able to get right of entry to particular modules and carry out approved movements. This will make certain that sensitive records inclusive of student statistics, business enterprise data, and site statistics remain covered from unauthorized get entry to, information breaches, or tampering.

2. Improved Student Awareness and Engagement

With the availability of a user-pleasant dashboard, college students could have clear visibility into their instructional records, enterprise eligibility primarily based on real-time standards, and site history. This transparency will empower students to take proactive steps in getting ready for recruitment drives, main to higher participation and preparedness.

3. Efficient Administration and Reduced Manual Workload

The admin panel will permit placement coordinators and directors to streamline their workflows by means of digitizing duties which includes adding/editing student information, dealing with groups, and updating placement data. This will reduce the dependency on guide documentation and repetitive administrative processes, allowing group of workers to focus on strategic planning and pupil assist.

4. Data-Driven Decision Making Through Forecasting and Analytics

The incorporated Decision Support System (DSS) will analyze historical placement statistics, instructional tendencies, and agency hiring styles to generate predictive insights. These forecasts can assist in awaiting student placement consequences, figuring out at-danger students, and aligning education packages to industry demands. Graphical dashboards will further decorate know-how and selection-making for administrators.

5. Real-Time Placement Statistics and Reports

SPMS will generate computerized, real-time reports on various metrics along with the variety of college students placed, maximum and average packages, branch-sensible placement fees, and organization-smart recruitment counts. These reviews will not best serve internal evaluation needs but also can be shared with stakeholders including accreditation bodies, university leadership, and potential recruiters.

6. Streamlined Company and Job Management

The system will allow dynamic addition and removal of agencies and process possibilities, together with automatic scholar filtering based totally on predefined eligibility criteria. This will ensure that most effective qualified applicants are allowed to apply for positions, lowering the weight on recruiters and enhancing the fine of programs.

7. Improved Transparency and Trust Among Stakeholders

Transparent get admission to to placement records, clean eligibility listings, and well timed notifications will help construct consider amongst college students, school, and recruiters. It reduces ambiguity in placement approaches and ensures that all stakeholders are on the same web page.

8. Scalability and Future Integration

The modular layout of the SPMS enables future improvements and integrations, along with incorporating alumni tracking, internship management, skill schooling modules, and integration with third-party assessment tools or mastering systems. This scalability ensures the system remains adaptable to evolving institutional desires.

Chapter 9

RESULTS AND DISCUSSIONS

The implementation of the Student Placement Management System (SPMS) marked a huge advancement in the automation, protection, and efficiency of campus placement activities. Through a modular and function-based totally architecture, the device successfully addressed diverse challenges faced by placement cells in instructional establishments. The effects discovered after deployment have been categorised and analyzed throughout more than one dimensions inclusive of usability, overall performance, safety, and choice-making abilities.

1. System Usability and User Experience

The device underwent checking out with a pattern institution of students, school coordinators, and administrative customers. Feedback collected thru usability surveys indicated a excessive degree of person satisfaction:

- Students appreciated the intuitive dashboard interface, which supplied consolidated get right of entry to to their instructional statistics, eligibility reputation for various corporations, placement records, and critical notifications. The "Company Eligibility" feature became in particular nicely-acquired, because it automatically filtered possibilities based on overall performance metrics like GPA and lively backlogs.
- Administrators observed the admin panel especially functional, allowing them to replace placement policies, reveal pupil packages, and manipulate task postings readily. The batch upload function for student facts appreciably reduced administrative overhead.

2. System Performance and Efficiency

The SPMS performed efficiently beneath simulated masses representing actual-global placement situations. Key performance metrics included:

- Reduced Processing Time: Tasks which includes pupil eligibility verification, resume shortlisting, and application processing—which previously took hours—have been completed in seconds through computerized backend common sense.

- Real-time Data Updates: Any modifications made in pupil profiles, enterprise criteria, or placement statuses had been right away pondered across the machine, making sure constant and up to date information get admission to for all customers.
- Stress testing revealed that the system may want to cope with concurrent sessions for greater than 500 customers with minimum latency, demonstrating scalability and robustness suitable for medium-to-big educational establishments.

3. Security and Role-Based Access Control

The implementation of Multi-Factor Authentication (MFA) and Role-Based Access Control (RBAC) yielded promising outcomes in enhancing data protection:

- Student statistics remained inaccessible to unauthorized customers, and admins were the simplest ones allowed to modify middle information factors.
- Secure session control protocols ensured that idle customers had been logged out routinely, lowering the risk of data leakage or misuse.
- These protection layers installed agree with amongst stakeholders and complied with general facts safety policies required for academic structures.

4. Predictive Insights thru the Forecasting Module (DSS)

The Decision Support System (DSS) incorporated into SPMS supplied one of the most transformative functions:

- Using past placement tendencies, educational information, and agency requirements, the machine generated predictive insights on student placement possibilities.
- Graphs and dashboards helped identify students liable to no longer being located, which in turn enabled early intervention strategies like skill development workshops and education packages.
- This analytical module also helped administrators make knowledgeable selections on improving relationships with recruiters, putting eligibility benchmarks, and making plans pre-placement activities.

5. Real-Time Placement Analytics and Reporting

The reporting module produced distinct analytics such as:

- Department-wise and gender-wise placement records
- Average, highest, and lowest salary programs
- Company-wise selection ratios
- Top-performing college students and excessive-frequency recruiters

6. Efficiency in Company and Job Management

The dynamic organization control module allowed seamless addition, change, and deletion of business enterprise profiles and activity postings. Key observations protected:

- Automated filtering of eligible applicants reduced the recruiter's burden and streamlined utility processing.
- Recruiters had been capable of view pre-filtered students lists based totally on their custom eligibility criteria, enhancing their engagement and delight.
- The capability to customize task postings according to semester, branch, or skill set similarly demonstrated the flexibility and flexibility of the gadget.

Chapter 10

CONCLUSION

The Student Placement Management System (SPMS) aims to improve the placement process in educational institutions through the automation and optimization of its various stages. The system is designed to enhance efficiency, reduce manual tasks, and provide an easy-to-use interface for students, administrators, and companies. By focusing on secure authentication, data management, and event organization for placements, the system facilitates essential operations such as managing student profiles, tracking placements, and conducting real-time analyses. The system utilizes a multi-factor authentication (MFA) approach to protect user data, particularly for students and administrators. It offers students a platform to manage their profiles and pursue job opportunities with different qualifying companies. The system enables administrators to manage student information, monitor placement data, and coordinate placement events, all in compliance with institutional regulations. From an architectural viewpoint, the system is designed with flexibility as a core focus. It facilitates the integration of databases to manage student, company, and placement data, thus ensuring data integrity. Additionally, utilizing a Decision Support System (DSS) provides predictive analytics, helping placement coordinators foresee placement patterns, student eligibility, and potential employer engagements. This skill for predicting is crucial for planning placement events and improving decision-making. A significant benefit of the SPMS is its user-friendliness, alongside the intuitive design of both the student and admin portals. Students can easily track their academic and placement progress, while administrators can efficiently oversee data management tasks.

REFERENCES

- [1] Dutta, S., & Kaushik, S. (2020). "Decision Support Systems in Educational Institutions," *International Journal of Scientific & Technology Research*, 9(3), 1752–1755.
- [2] Verma, K., & Sharma, R. (2020). "Integration of Decision Support Systems in Web Portals," *Journal of Emerging Technologies and Innovative Research (JETIR)*, 7(5), 345–350.
- [3] Kamal, T., & Nasir, S. (2019). "Role-Based Access Control for Secure Systems," *International Journal of Computer Science and Mobile Computing*, 8(4), 34–39.
- [4] Shukla, S., & Singh, A. (2019). "Campus Recruitment Management System," *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 5(1), 2456–3307.
- [5] Bhatia, P., & Arora, S. (2018). "Security Enhancement of Web-Based Applications Using MFA," *International Journal of Computer Applications*, 181(11), 20–24.
- [6] Patil, P., & Patil, D. (2018). "Automation of College Training and Placement System," *International Journal of Research in Advent Technology*, 6(3), 2321–9637.
- [7] Sharma, V., & Choudhary, P. (2018). "A Survey on Campus Placement Management Systems," *International Journal of Computer Sciences and Engineering*, 6(4), 331–336.
- [8] Gupta, P., & Sharma, A. (2017). "Student Placement Prediction Using Data Mining Techniques," *International Journal of Advanced Research in Computer Science*, 8(5), 453–457.
- [9] Jaiswal, S., & Tiwari, R. (2017). "Campus Placement Automation Using Web Application," *International Journal of Innovative Research in Computer and Communication Engineering*, 5(2), 267–271.
- [10] Patil, M., & Pawar, P. (2017). "Online Student Placement Management System," *International Journal of Engineering Research and Applications (IJERA)*, 7(3), 64–68.

APPENDIX-A

PSUEDOCODE

=====

DATABASE SCHEMA

=====

DATABASE: database.db

TABLES:

1. students

- Personal: id, first_name, last_name, email, phone, dob, parent_phone, gender, address
- Academic: student_id, degree, branch, cgpa1-6, cgpa_total, backlogs
- Dates: join_date, passout_date, created_at
- Files: resume_path
- Auth: password

2. companies

- Company info: id, name, website, industry, phone, email, address, city, country
- HR info: hr_name, hr_phone, hr_email
- Details: description, established_date, employees
- Files: logo_path
- Dates: created_at
- Auth: password

3. jobs

- Job details: id, company_name, job_title, job_type, location,

job_description

- Requirements: degree_required, branch_required, min_cgpa, max_backlogs, skills_required
- Salary: min_salary, max_salary
- Dates: posting_date, deadline, created_at

4. appliedjobs

- Job info: id, job_id, company_name, job_title, job_type, location, job_description
- Requirements: degree_required, branch_required, min_cgpa, max_backlogs, skills_required
- Salary: min_salary, max_salary
- Dates: posting_date, deadline
- Application: email, status

=====

INITIALIZATION

=====

CREATE Flask app

SET secret key

CONFIGURE upload folder (static/uploads)

ALLOW only PDF files for resumes

CREATE database tables if not exists

=====

HELPER FUNCTIONS

=====

FUNCTION send_email(from_email, password, to_email, subject, body):

 CREATE email message

 SET content, from, to, subject

 CONNECT to SMTP server (Gmail)

SEND email

CLOSE connection

FUNCTION allowed_file(filename):

 RETURN True if file has allowed extension (.pdf)

FUNCTION generate_random_password():

 CREATE password with:

- 1 uppercase letter
- 1 lowercase letter
- 1 digit
- 1 special character
- 4 random characters

 SHUFFLE characters

 RETURN password

FUNCTION parse_resume(file_path):

 EXTRACT data using ResumeParser:

- name, email, phone
- skills, college, degree
- experience, companies

 RETURN extracted data

FUNCTION clean_resume_text(text):

 REMOVE URLs, special characters, extra spaces

 RETURN cleaned text

FUNCTION predict_job_category(resume_text):

 LOAD pre-trained ML model (clf.pkl)

```
LOAD TF-IDF vectorizer (tfidf.pkl)
TRANSFORM resume text
PREDICT job category
MAP category ID to name
RETURN predicted job category
```

```
# =====
```

```
# AUTHENTICATION ROUTES
```

```
# =====
```

```
ROUTE /:
```

```
    SHOW index page
```

```
ROUTE /studentlogin (GET, POST):
```

```
    IF POST:
```

```
        GET email and password from form
```

```
        QUERY students table for match
```

```
        IF found:
```

```
            GENERATE OTP
```

```
            STORE in session
```

```
            SEND OTP email
```

```
            SHOW verification page
```

```
        ELSE:
```

```
            SHOW error message
```

```
    ELSE:
```

```
        SHOW student login page
```

```
ROUTE /verify (POST):
```

```
    COMPARE submitted OTP with session OTP
```

```
    IF match:
```

```
        REDIRECT to student home
```

ELSE:

SHOW error message

ROUTE /companylogin (GET, POST):

IF POST:

GET email and password from form

QUERY companies table for match

IF found:

STORE company info in session

REDIRECT to company home

ELSE:

SHOW error message

ELSE:

SHOW company login page

ROUTE /adminlogin (GET, POST):

IF POST:

VERIFY admin credentials

IF valid:

REDIRECT to admin dashboard

ELSE:

SHOW error message

ELSE:

SHOW admin login page

=====

STUDENT ROUTES

=====

ROUTE /studenthome:

GET student stats:

- Applied jobs count
- Accepted jobs count
- Rejected jobs count
- Pending jobs count

SHOW student dashboard with stats

ROUTE /addstudent (GET, POST):

IF POST:

COLLECT personal and academic data

HANDLE resume file upload

GENERATE random password

INSERT student into database

SEND credentials email

REDIRECT to student list

ELSE:

SHOW add student form

ROUTE /studentlist:

GET optional search query

QUERY students with optional search

SHOW student list page

ROUTE /deletestudent/<id>:

DELETE student with given id

REDIRECT to student list

ROUTE /resetpassword (GET, POST):

IF POST:

UPDATE student password

```
        SHOW success message
    ELSE:
        SHOW password reset form
# =====
# COMPANY ROUTES
# =====
ROUTE /companyhome:
    GET company stats:
        - Accepted applications count
        - Rejected applications count
        - Pending applications count
    SHOW company dashboard with stats

ROUTE /addcompany (GET, POST):
    IF POST:
        COLLECT company data
        HANDLE logo upload
        GENERATE random password
        INSERT company into database
        SEND credentials email
        REDIRECT to company list
    ELSE:
        SHOW add company form

ROUTE /companylist:
    QUERY all companies
    SHOW company list page

ROUTE /deletecompany/<id>:
```

DELETE company with given id

REDIRECT to company list

ROUTE /companypassword (GET, POST):

IF POST:

UPDATE company password

SHOW success message

ELSE:

SHOW password reset form

=====

JOB ROUTES

=====

ROUTE /postjob (GET, POST):

IF POST:

COLLECT job data

VALIDATE dates

INSERT job into database

REDIRECT to job list

ELSE:

SHOW post job form

ROUTE /joblist:

QUERY all jobs

SHOW job list page

ROUTE /deletejob/<id>:

DELETE job with given id

REDIRECT to job list

ROUTE /viewrequests/<job_id>:

 QUERY applications for given job

 SHOW applications list

=====

APPLICATION ROUTES

=====

ROUTE /jobs:

 PARSE student resume for skills

 QUERY all jobs

 MATCH jobs with student skills

 SORT by skill match count

 SHOW jobs page with recommendations

ROUTE /apply/<job_id>:

 CHECK if already applied

 CHECK if application limit reached (max 2 acceptances)

 IF can apply:

 INSERT application into appliedjobs

 REDIRECT to applied jobs

 ELSE:

 SHOW appropriate error message

ROUTE /appliedjobs:

 QUERY all applications

 SHOW applications page

ROUTE /Accept/<application_id>:

 UPDATE application status to 'accepted'

 REDIRECT to job list

ROUTE /Reject/<application_id>:

UPDATE application status to 'rejected'

REDIRECT to job list

=====

ADMIN ROUTES

=====

ROUTE /admindashboard:

GET stats:

- Total students count
- Total companies count
- Total jobs count
- Total applications count
- Pending/accepted/rejected applications count

SHOW admin dashboard with stats

=====

RESUME ANALYSIS ROUTE

=====

ROUTE /analyse (GET, POST):

IF POST:

GET uploaded resume file

PARSE resume data

PREDICT job category using ML model

SHOW analysis results with recommended job

ELSE:

SHOW resume analysis form

=====

MAIN EXECUTION

=====

IF `_name_ == "_main_"`:

 RUN Flask app in debug mode

APPENDIX-B

SCREENSHOTS

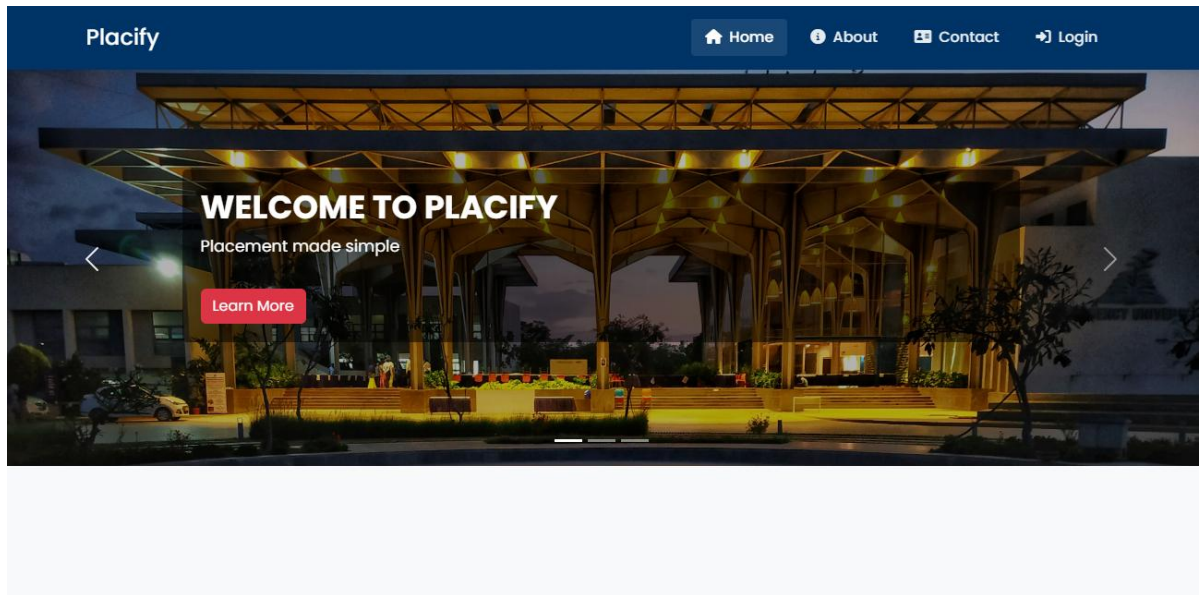


Figure B.1

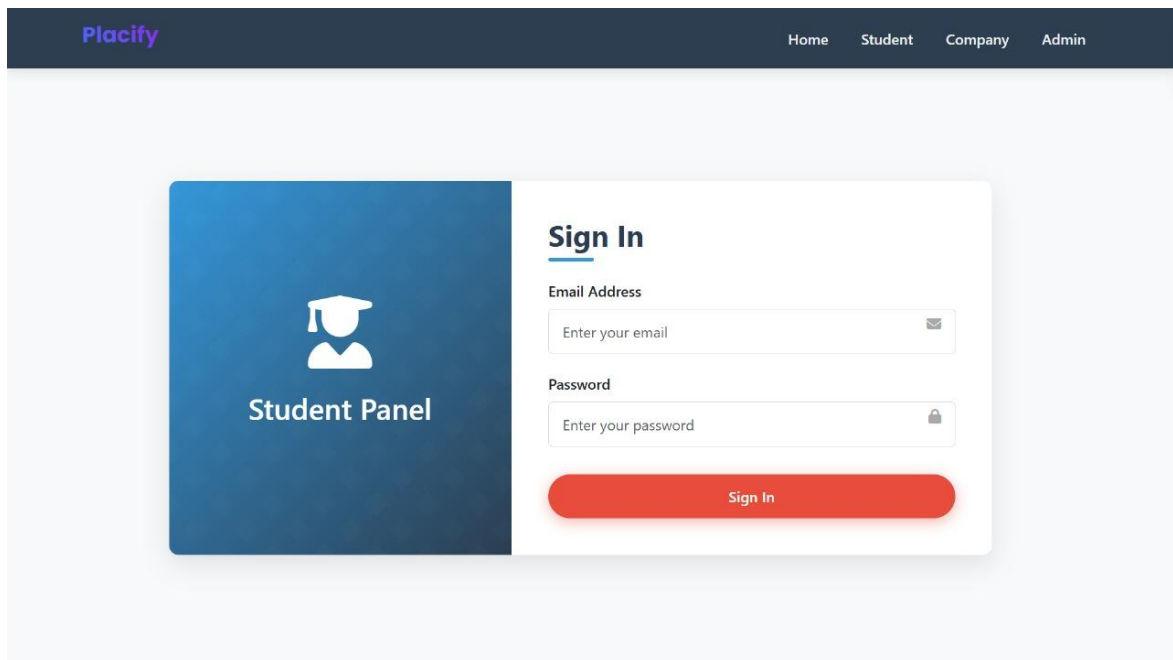


Figure B.2

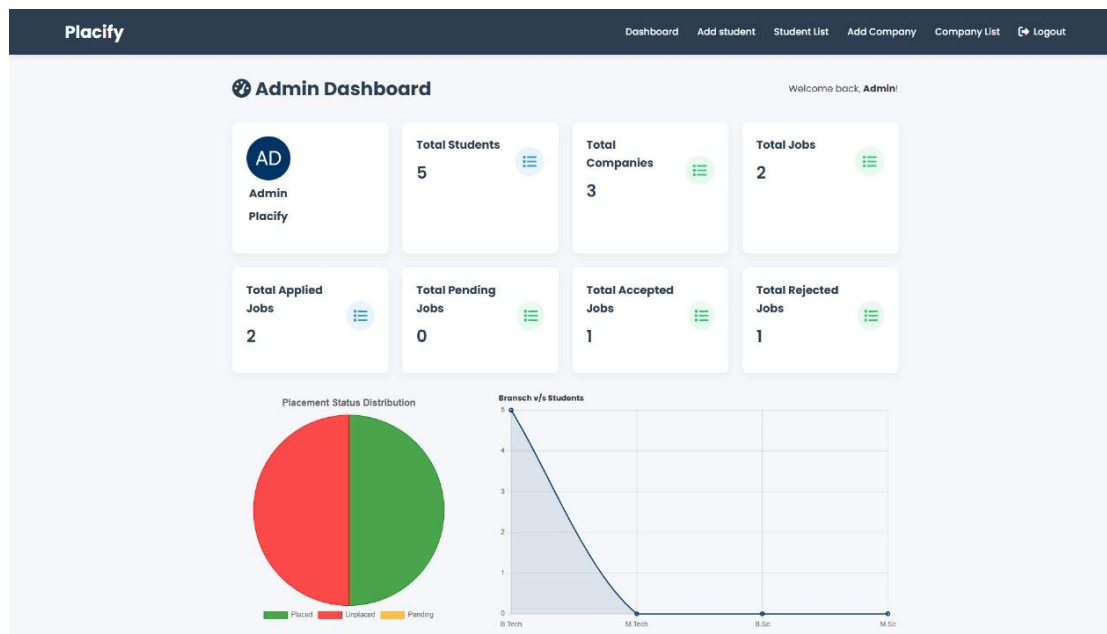


Figure B.3

The screenshot shows the 'Placify' 'Add Company' form. The top navigation bar is identical to Figure B.3. The form is titled 'Add Company' and features a progress indicator with five steps: 1 (selected), 2, 3, 4, and 5. Under the 'Basic Details' section, there are four input fields:

- Company Name
- Website URL
- Select Industry
- Phone Number

At the bottom of the form, there are two buttons: 'Previous' (disabled) and 'Next' (active).

Figure B.4

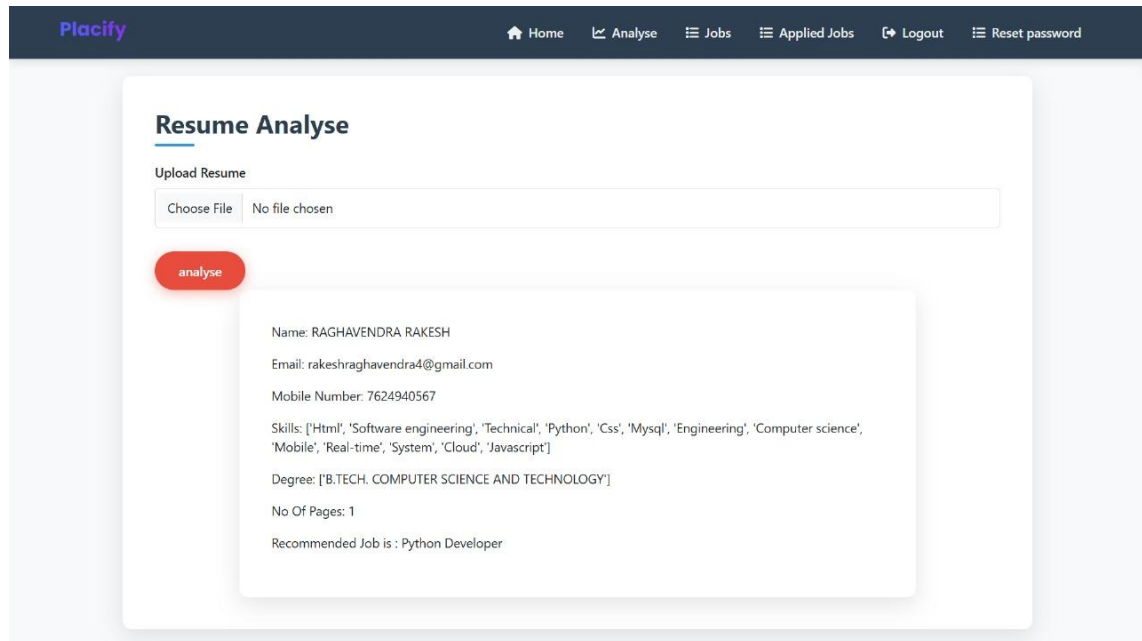


Figure B.5

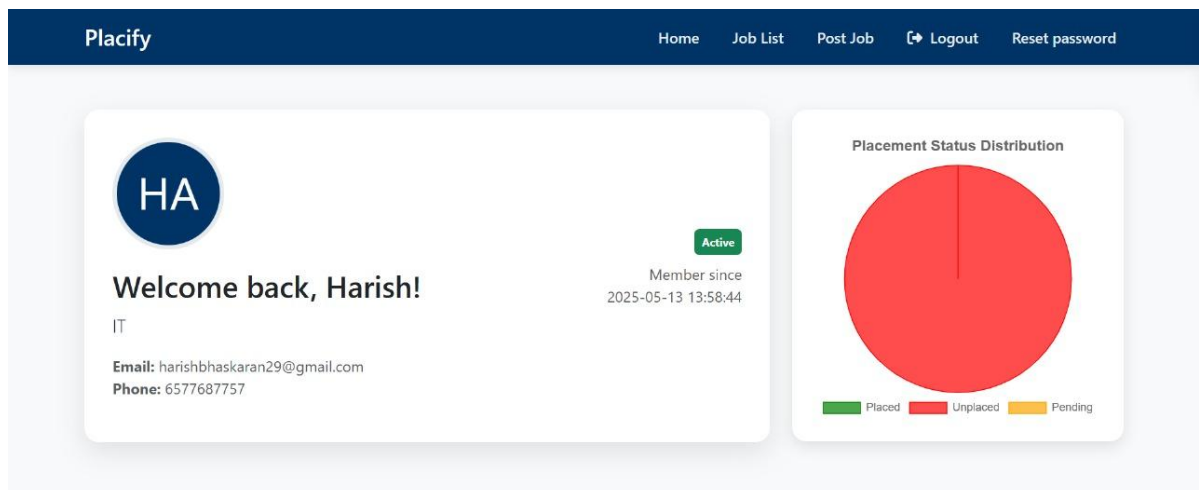


Figure B.6

APPENDIX-C

ENCLOSURES

1. Journal Certificates







2. Plagiarism Report for Research Paper

ORIGINALITY REPORT			
4%	3%	2%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
1	www.coursehero.com Internet Source	1%	
2	Submitted to Griffith College Dublin Student Paper	1%	
3	Lanting Ma, Antonio Hurtado, Sonsoles Eguilior, Juan F. Llamas Borrajo. "Acute and chronic risk assessment of BTEX in the return water of hydraulic fracturing operations in Marcellus Shale", Science of The Total Environment, 2024 Publication	1%	
4	mihirpopat.medium.com Internet Source	1%	

3. Plagiarism Report for Report

ORIGINALITY REPORT

1%

1%

1%

0%

SIMILARITY INDEXINTERNET SOURCESPUBLICATIONSSTUDENT PAPERS

PRIMARY SOURCES

1

Agbotiname Lucky Imoize, Webert Montlouis, Mohammad S. Obaidat, Segun I. Popoola, Mohammad Hammoudeh. "Computational Modeling and Simulation of Advanced Wireless Communication Systems", CRC Press, 2024
Publication

<1%

2

Submitted to Macquarie University
Student Paper

<1%

3

currencymart.net
Internet Source

<1%

4

efundi.nwu.ac.za
Internet Source

<1%

5

ijsra.net
Internet Source

<1%

6

dev.to
Internet Source

<1%

7

guardian.ng
Internet Source

<1%

8

www.coursehero.com
Internet Source

<1%

9

ijsrem.com
Internet Source

<1%

4. SDG Mapping

SUSTAINABLE DEVELOPMENT GOALS



This project supports,

- 1. SDG 4:** SPMS fosters equal opportunities for quality employment by aiding students in career preparation through access to placement options, resources for skill development, and tools for making informed decisions.
- 2. SDG 8:** It links students to job openings and internships that align with their skills and passions.