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Talent-Trace - A Student Skill Portfolio System for Intelligent Skill-Based Campus Recruitment

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Abstract: ***Talent Trace is an innovative Student Skill Portfolio System developed to digitally transform the traditional placement process by providing a centralized and structured platform where students can present their skills, academic achievements, projects, internships, and certifications in a professional manner. The system minimizes the limitations of manual resume screening by enabling smart profile management and automated resume generation in standard formats. It allows recruiters and placement officers to efficiently search, filter, and shortlist candidates based on specific skills, academic performance, and domain interests. With secure data storage and an administrative dashboard for streamlined management, the platform ensures transparency and reliability in recruitment activities. By focusing on skill-based evaluation rather than only academic marks, Talent Trace aims to create equal opportunities for students and strengthen the connection between emerging talent and industry requirements.***

Keywords: Student Portfolio System, Skill Showcase Platform, Resume Automation, Placement Management, Recruiter Dashboard, Candidate Filtering, Secure Student Database, Skill-Based Evaluation, Academic Profile Builder, Talent Recruitment System.

I. INTRODUCTION

In today's competitive academic and professional environment, students possess diverse skills, certifications, projects, and practical experiences that often remain underrepresented in traditional resumes. During campus placements, recruiters usually rely on manual resume screening, which can overlook talented candidates due to limited visibility of their complete skill sets [1], [2]. This creates a gap between student potential and industry requirements.

A. Talent Trace

A Student Skill Portfolio System is designed to bridge this gap by providing a centralized digital platform where students can systematically showcase their technical skills, academic achievements, internships, certifications, and project work. The system enables structured profile management and automated resume generation, ensuring that student information is presented in a professional and standardized format. Additionally, the platform supports recruiters and placement officers by offering smart search and filtering options based on skills, CGPA, and domain interests. With secure data storage and administrative controls, the system ensures transparency, efficiency, and reliability in the recruitment process. By promoting skill-based evaluation rather than solely academic scores, Talent Trace aims to modernize campus hiring and create equal growth opportunities for students [3].

II. LITERATURE REVIEW

In recent years, digital portfolio systems and online recruitment platforms have gained significant importance in academic and professional environments. Several studies highlight that traditional resume-based recruitment processes are time-consuming and often fail to accurately represent a candidate's practical skills and competencies [1]. Researchers emphasize the need for structured digital profiling systems that allow students to showcase projects, certifications, internships, and technical expertise in an organized manner.

Existing platforms such as LinkdIn - based professional profiling and institutional placement portals provide partial solutions; however, they often lack centralized academic integration and automated resume generation tailored for campus recruitment. Previous research on e-portfolio systems suggests that digital portfolios enhance student visibility, improve employ ability, and promote skill-based evaluation rather than solely academic performance [3], [4].

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Moreover, studies on recruitment management systems indicate that automated filtering and candidate shortlisting significantly reduce manual workload and increase hiring efficiency [5]. Secure database management and role-based access control are also identified as critical components for maintaining data integrity and transparency in such systems [6]. Based on these findings, the Talent Trace system is proposed to integrate digital portfolio management, automated resume generation, and intelligent candidate filtering into a single unified platform, addressing the limitations identified in existing research and practical implementations.

III. PROBLEM DEFINITION

In the existing campus placement system, student evaluation is largely dependent on traditional resumes and manual shortlisting processes. These resumes are often limited in structure and space, which makes it difficult for students to effectively present their complete skill set, technical expertise, internships, certifications, and project experience. As a result, many capable and talented students remain unnoticed simply because their abilities are not showcased in a clear, organized, and impact manner.

Recruiters and placement officers also face significant challenges during the hiring process. Reviewing a large number of resumes manually is time-consuming, inefficient, and prone to human error [1], [5]. There is often no centralized platform where student data can be searched, filtered, and analyzed based on specific parameters such as technical skills, domain interests, CGPA, or project experience. This lack of automation and structured data management leads to delays in shortlisting and may result in mismatched hiring decisions. Furthermore, many institutions do not have an integrated system that combines profile management, resume generation, recruiter access, and administrative control in a single unified platform. Students frequently rely on external tools to create resumes, which may not follow standardized formats required by companies. This creates inconsistency and reduces professionalism in presentation. Therefore, there is a strong need for a secure, centralized, and skill-focused digital portfolio system that can systematically organize student information, automate resume creation, and provide intelligent search and filtering mechanisms for recruiters. Such a system would enhance transparency, improve recruitment efficiency, and ensure that hiring decisions are based on actual competencies rather than limited resume screening alone.

IV. PROPOSED SYSTEM

The proposed system, Talent Trace – A Student Skill Portfolio System, is a centralized digital platform designed to streamline the campus recruitment process by integrating student profile management, automated resume generation, and intelligent recruiter access into a single unified system. In this system, students can create and manage their professional profiles by adding details such as technical skills, academic records, projects, internships, certifications, achievements, and domain interests. The platform organizes this information in a structured format, ensuring clarity and professionalism. It also provides an automated resume generation feature that allows students to instantly generate standardized resumes in formats such as PDF and Word.

For recruiters and placement officers, the system offers advanced search and filtering capabilities [5]. Candidates can be shortlisted based on specific parameters like skill sets, CGPA, project experience, certifications, and areas of specialization. This reduces manual effort, saves time, and improves the accuracy of the selection process. The proposed system also includes a secure database for storing student information and an admin dashboard for managing recruitment drives, user access, and data monitoring. Rolebased authentication ensures data privacy and controlled access for students, recruiters, and administrators [6]. By combining digital portfolio management with intelligent candidate filtering, the proposed system aims to enhance transparency, promote skill-based hiring, and bridge the gap between student potential and



Fig. 1.Overview of the proposed system of Talent Trace

V. SYSTEM ARCHITECTURE AND METHODOLOGY

The Talent Trace system is designed using a **Three-Tier Architecture** to ensure scalability, molecularity, and secure data management. The system is divided into three major layers:

1) Presentation Layer: This layer provides the user interface for Students, Recruiters, and Admin. Students can create and update profiles, add skills, projects, certifications, and generate resumes. Recruiters can search and filter candidates based on required criteria, while Admin manages users and recruitment activities. The interface is designed to be user-friendly and responsive.
2) Application Layer: This is the core processing layer that handles business logic, authentication, authorization, resume generation, and candidate filtering. It processes user requests, validates inputs, and ensures secure communication between the frontend and database through APIs. Role-based access control is implemented in this layer.
3) Database Layer: This layer securely stores all system data including student details, academic records, skills, projects, certifications, and recruiter information. A relational database structure ensures data integrity, consistency, and fast retrieval for search and filtering operations.

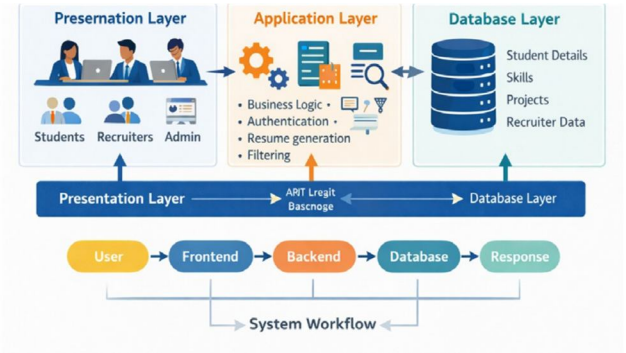
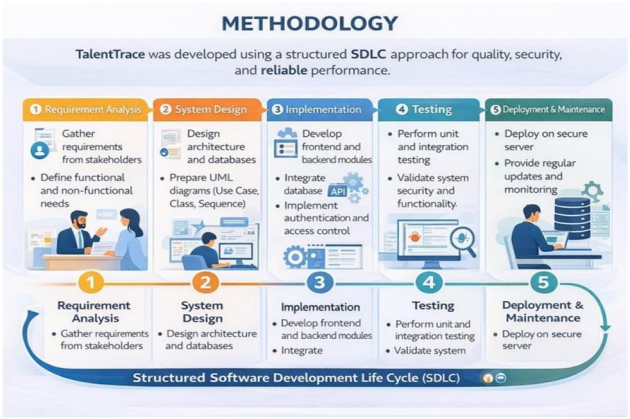


Fig. 2. Three-tier system architecture of Talent Trace

A. *Methodology*

The development of Talent-Trace follows a structured Software Development Life Cycle (SDLC) approach to ensure quality, security, and reliability.

1) Requirement Analysis: System requirements were collected from students, recruiters, and placement officers. Both functional requirements (profile creation, resume generation, candidate filtering) and non-functional requirements (security, performance, usability) were clearly defined.
2) System Design: The system architecture and database schema were designed. UML diagrams such as Use Case and Class Diagrams were prepared to define system workflow and module interaction. User interface layouts were also planned.
3) Implementation: Frontend and backend modules were developed, including authentication, profile management, resume generation, and filtering features. Database integration was completed with role-based access control.
4) Testing: Unit, integration, and system testing were performed to ensure proper functionality and security of the system.
5) Deployment and Maintenance: The system was deployed on a secure server, with regular monitoring and updates to improve performance and add future enhancements .This methodology ensures smooth development, reliable performance, and secure recruitment management.



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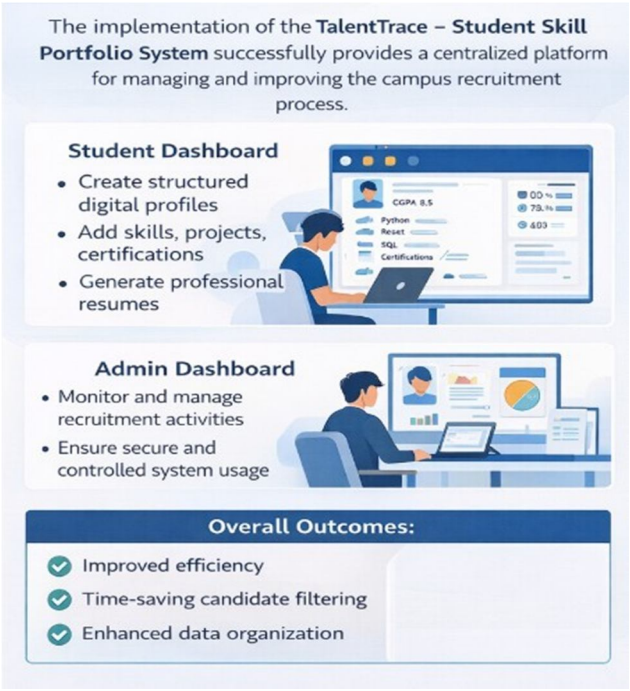
VI. RESULT AND DISCUSSION

The development and implementation of the Talent-Trace – Student Skill Portfolio System has successfully demonstrated the effectiveness of a centralized digital recruitment platform within an academic environment. The system enables students to build comprehensive digital profiles that include academic records, technical skills, certifications, internships, projects, and achievements in a well-structured format. This organized representation improves clarity and professionalism in candidate presentation.

The automated resume generation feature ensures standardized formatting and reduces the time required for resume preparation. Students can instantly generate resumes in professional formats, improving consistency across applicants during campus placements.

From the recruiter's perspective, the advanced filtering and search functionality significantly enhances shortlisting efficiency. Recruiters can apply filters based on skill sets, CGPA, specialization, certifications, and experience level. This reduces manual screening effort and allows data-driven decision-making.

The admin dashboard further strengthens system management by providing centralized control over users, placement drives, and data monitoring. Secure authentication and role-based access control ensure privacy and prevent unauthorized data manipulation. Overall, the system operates reliably, efficiently handling data storage, retrieval, and user interactions.



VII. DISCUSSION

The results clearly indicate that digitizing student portfolios improves recruitment transparency and operational efficiency. Traditional resume-based screening often limits candidate visibility due to unstructured presentation and time constraints. In contrast, Talent-Trace organizes student information into searchable and filterable datasets, enabling recruiters to identify suitable candidates quickly and accurately. The system also promotes a shift toward skill-based hiring practices [3], [4]. Instead of focusing solely on academic scores, recruiters can evaluate students based on technical competencies, project experience, and certifications. This aligns better with modern industry expectations and employability standards. Another key observation is improved student engagement. The platform encourages students to regularly update their profiles, maintain digital records of achievements, and focus on skill development. This contributes to long-term professional growth and better career readiness.

However, system effectiveness depends on accurate and complete data entry by users. Continuous monitoring, database optimization, and future integration with platforms such as LinkedIn and GitHub can further enhance functionality. Advanced features like AI-based recommendation systems and analytics dashboards may also improve recruitment insights in future versions.

In conclusion, the proposed system demonstrates strong potential to modernize campus recruitment by combining structured data management, automation, and skill-oriented evaluation into a single integrated platform.

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VI. CONCLUSION

The development and implementation of the Talent-Trace – Student Skill Portfolio System represent a significant advancement in modernizing the traditional campus recruitment process. Conventional placement systems largely depend on static resumes and manual shortlisting, which often overlook practical skills, certifications, and real project experience. Talent Trace addresses these limitations by offering a centralized, structured, and skill-oriented digital platform that ensures transparency, efficiency, and accessibility for all stakeholders.

The system enables students to create dynamic digital portfolios where they can showcase academic performance, technical skills, internships, live projects, certifications, and extracurricular achievements. This structured representation improves candidate visibility and allows recruiters to evaluate applicants beyond CGPA-based filtering. As a result, the recruitment process becomes more skill-driven and performance-oriented.

From the recruiter's perspective, the platform provides advanced search and filtering mechanisms that reduce manual workload and save time. Recruiters can shortlist candidates based on specific technical skills, certification levels, project domains, or academic criteria. This automated filtering enhances decision-making accuracy and ensures that companies identify candidates who best match their job requirements. The administrative module further strengthens the system by maintaining data integrity, managing user access, and monitoring placement activities. Role-based authentication and secure database management ensure confidentiality and controlled system usage. This makes the platform reliable and scalable for long-term institutional use.

The project followed a structured Software Development Life Cycle (SDLC) methodology, including requirement analysis, system design, implementation, testing, and deployment. This systematic approach ensured quality assurance, system stability, and security validation before final deployment. Proper testing procedures minimized functional errors and enhanced overall performance reliability.

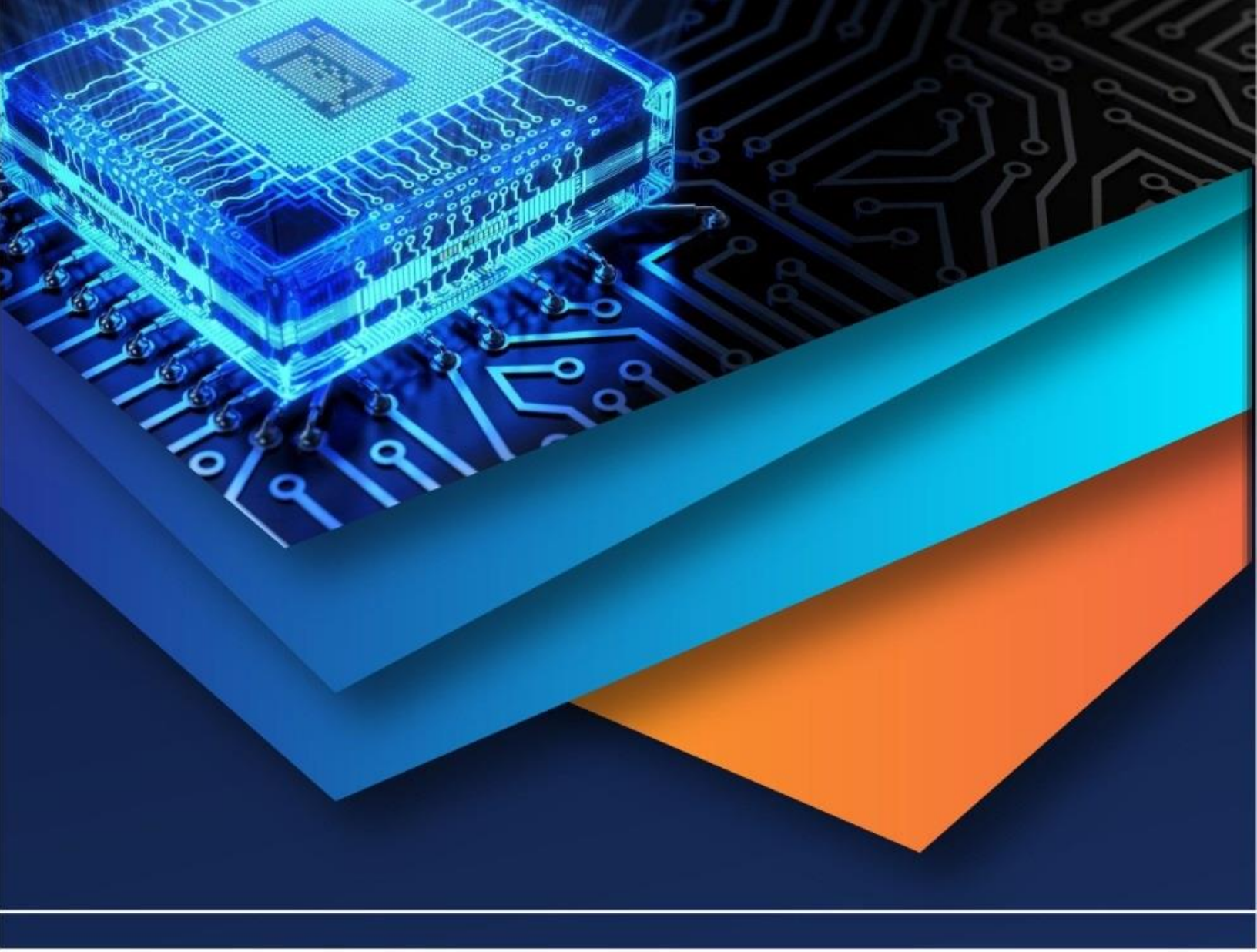
Overall, Talent-Trace successfully bridges the gap between students and recruiters by transforming traditional placement processes into a digital, efficient, and data-driven ecosystem. The system improves operational efficiency, enhances candidate exposure, and promotes merit-based recruitment practices.For future enhancements, the platform can incorporate Artificial Intelligence-based skill matching, predictive analytics for placement trends, automated interview scheduling, real-time notifications, and integration with professional networking platforms. With these improvements, Talent-Trace has the potential to evolve into a comprehensive smart recruitment management system capable of supporting large-scale academic institutions

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