JOURNAL OF MODERN AND VERSATILE RESEARCH APPROACH (JMVRA)
© 2026 JMVRA | Volume 4, Issue 10, October 2026 | ISSN: 2984-8911 | JMVRA.ORG

AI INTERNSHIP AGGREGATOR AND RECOMMENDATION PLATFORM

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ABSTRACT

Students often find it difficult to discover suitable internships because opportunities are scattered across many company websites and job portals, and matching personal skills with the requirements of each role is largely a manual task. This paper presents an AI Internship Aggregator and Recommendation Platform that brings internship listings from multiple technology companies into a single web-based system. After login, a student uploads a resume in PDF, DOCX or text format. The system extracts the text, identifies technical skills, education, projects and experience using a JavaScript-based natural language processing taxonomy, and calculates a skill match percentage between the student and every internship. Recommended companies are ranked by this score, and the matching and missing skills are displayed for each role. Students can save internships, view verified company details, apply, and monitor every opportunity through an Application Tracking System supported by an SQLite database. A profile module allows personal details, identified skills and the resume to be managed. By combining resume analysis with transparent skill matching, the proposed platform aims to reduce search effort, guide students towards relevant opportunities, and highlight the skills they should develop.

KEYWORDS

Artificial Intelligence, Internship Recommendation, Resume Parsing, Skill Extraction, Skill Matching, Application Tracking System

1. INTRODUCTION

Internships give engineering students practical exposure to industry and improve their chances of employment. However, internship opportunities are published on many different company websites, general job portals and college notices. A student has to read each description, compare the required skills with his or her own profile, remember deadlines, and keep separate notes about the applications that have been submitted. This process requires considerable effort and may lead to missed deadlines or applications to roles that do not match the student's skills.

The proposed AI Internship Aggregator and Recommendation Platform aims to provide a centralised platform for discovering and managing internships. The system combines internship aggregation with automatic resume analysis. It can extract skills from an uploaded resume, recommend companies according to skill match, show matching and missing skills for each role, display verified company details, save shortlisted internships, and The system also provides a student profile in which personal and academic details can be maintained and the identified skills can be added or removed manually. Updated skills are used to refine the recommendations. A dashboard summarises the resume status, number of recommended companies, identified skills, and application statistics so that the student can see the overall progress at a glance.

The main objective of the proposed system is to reduce the time spent searching for internships, improve the relevance of the opportunities shown to each student, make skill gaps visible, and provide an easy way to monitor applications through a single, intelligent and centralised system.

2. LITERATURE SURVEY

Existing research has explored several approaches for improving job and internship recommendation. A systematic review of job recommender techniques for internship profile matching [1] and broader reviews of the field [2] describe how candidates are matched with

vacancies and the challenges involved. Learning-based representations of candidates and jobs [3] and semantic analysis of a candidate's resume [4] have been used for job recommendation, and job matching based on resume and competency information has been applied in vocational education [14]. General surveys of recommender systems describe content-based, collaborative and hybrid approaches [11].

Resume parsing is a key step in such systems because resumes differ widely in layout and wording. Systems for information and knowledge extraction from resumes have been developed [5], together with NLP-based resume parsers [6]. Skills have been predicted from resumes using multi-label classification [7], and machine learning has been used to classify and recommend from unstructured resume documents [8]. NLP-based resume screening and ATS-oriented resume generation have also been studied [9]. More recent work combines OCR, classification models and transformer-based entity extraction to recover sections and entities from resumes [10]. Term-weighting and similarity measures remain the basis of many text-matching techniques [12].

Explaining the result of an automated decision is also valuable: skills prediction from resumes has been combined with explanations of the model predictions [7], which shows that users benefit when the reasons behind a result are visible. For storing user-specific records such as saved internships and application status, lightweight embedded databases such as SQLite are suitable for small and medium web applications [13].

However, most of these works concentrate on a single stage, such as parsing, matching or recruiter-side screening, and few provide a complete student-facing workflow that moves from login and resume analysis to recommendation, shortlisting and application tracking.

Research Gap

Many existing systems focus on one specific task, such as job recommendation, resume parsing, or recruiter-side resume screening. There is a need for a student-oriented platform that combines resume analysis, transparent skill-based matching, company information, shortlisting, and personal application tracking within a single system. The proposed work addresses this gap by bringing these functions together into one centralised platform.

3. PROPOSED METHODOLOGY

The proposed system consists of multiple interconnected modules designed to simplify internship discovery and application management.

3.1 User Authentication

Students log in using a registered email address and password, and new students can create an account. Authentication keeps the resume, skills, saved internships and application records personal to each student. After a successful login, the student is taken to a dashboard that shows the resume status, recommended companies, identified skills, tailored roles and application statistics.

3.2 Resume Upload and Text Extraction

The student uploads a resume by drag and drop or by browsing the computer. PDF, Word (.docx) and plain text (.txt) files up to 5 MB are supported. The selected file name and size are displayed before the student chooses to analyse the resume, and the text is then extracted from the document.

3.3 AI Skill Extraction

The extracted text is processed by a JavaScript-based NLP engine that compares it with a skill taxonomy covering programming languages, frameworks, databases and engineering concepts. The engine also detects education, projects and experience. The result is shown as an analysis summary together with a preview of the raw extracted text so that the student can verify it. For the sample resume, nine skills were identified: JavaScript, Python, Java, HTML5, CSS3, Git, OOP, Data Structures and Cybersecurity.

3.4 Skill-Based Internship Recommendation

Each internship stores a list of required skills. The system compares them with the verified skills of the student and calculates the skill match percentage as (matched required skills ÷ total required skills) × 100. Recommended companies are ranked by this value and can be filtered by keyword, domain, work mode and skill alignment. The current prototype contains 40 demonstration internships from more than 25 technology companies. For every role the matching skills and the missing skills are listed. For example:

Role requirement:
"Blockchain Protocol & Solidity Research Intern requires

Calculated result:

"Skill match = (5 / 6) × 100 = 83%. Missing skill: Algorithms."

The missing skills indicate what the student should learn to reach full compatibility with the role.

3.5 Company Details and Saved Internships

The details page of an internship shows the stipend, work mode, duration, application deadline, eligibility, skill alignment breakdown, company description and verified recruitment contacts. The student can save the internship, open the company profile, or apply directly. Saved internships are kept in a shortlist with their match percentage, saved date, quick view, remove and apply options.

3.6 Application Tracking System

The Application Tracking System records the progress of every opportunity chosen by the student and stores the records in an SQLite database. The tracker counts internships in the following stages:

- Interested
- Marked Applied
- Assessments
- Interviews Scheduled
- Offers Received
- Rejected / Withdrawn

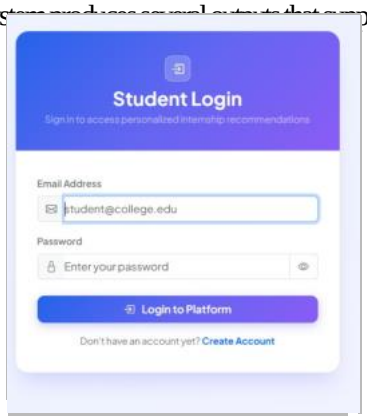
Records can be searched, filtered by status and sorted by time, and the same statistics are summarised on the dashboard.

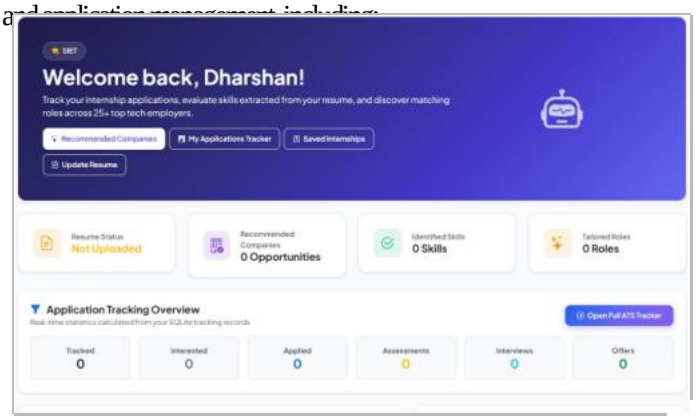
3.7 Student Profile Management

The profile module stores the student's name, college, degree, graduation year, contact details, GitHub and LinkedIn links and a short career summary. It also shows the uploaded resume and the number of skills extracted. Skills identified from the resume can be added or removed manually, which refines the recommendations, and the password can be updated from the same page.

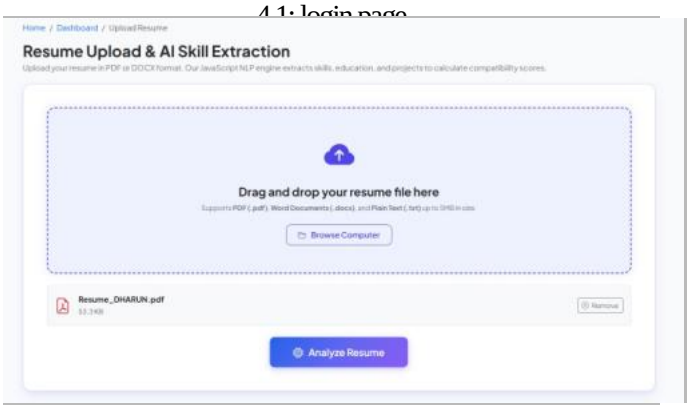
4. OUTPUTS

The proposed system produces several outputs that support internship discovery and application management, including:

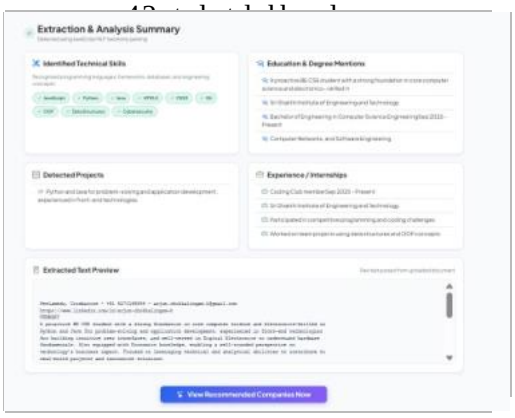




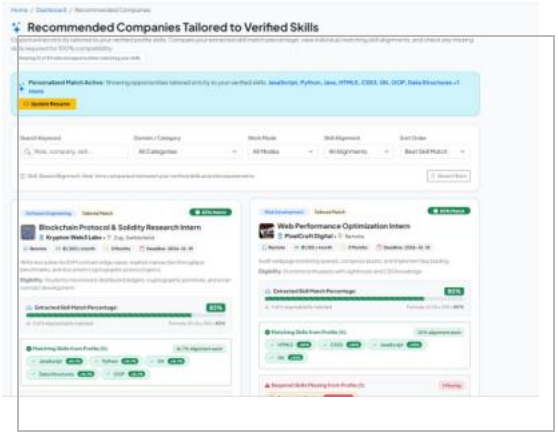
4.1: login page



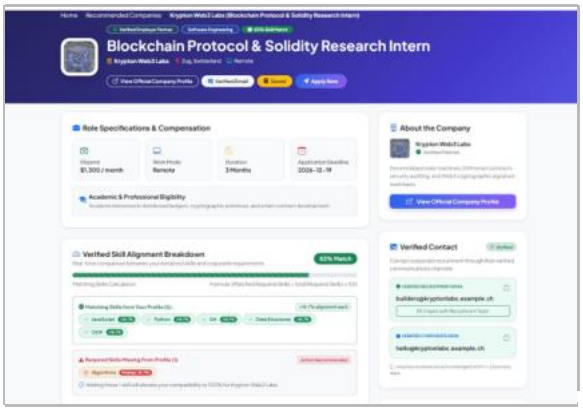
4.3: resume upload



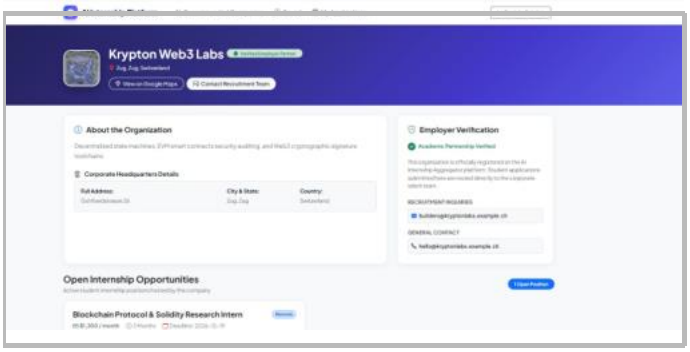
4.4: skill extraction and analysis summary



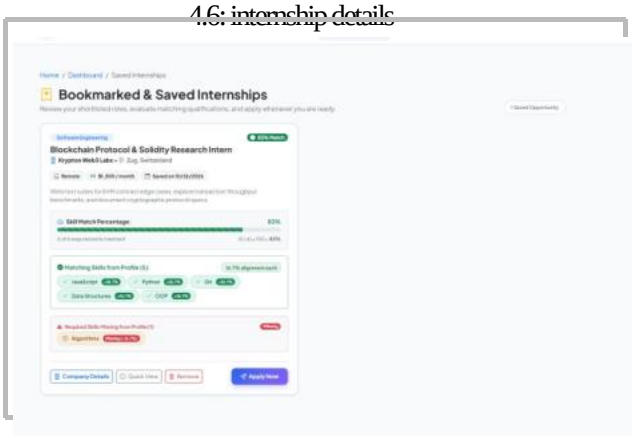
4.5: recommended companies



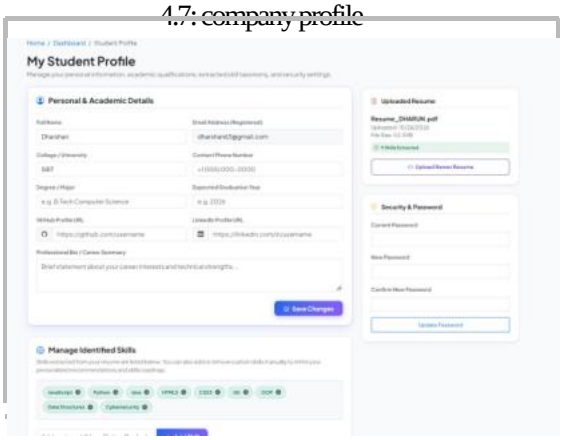
4.6: internship details



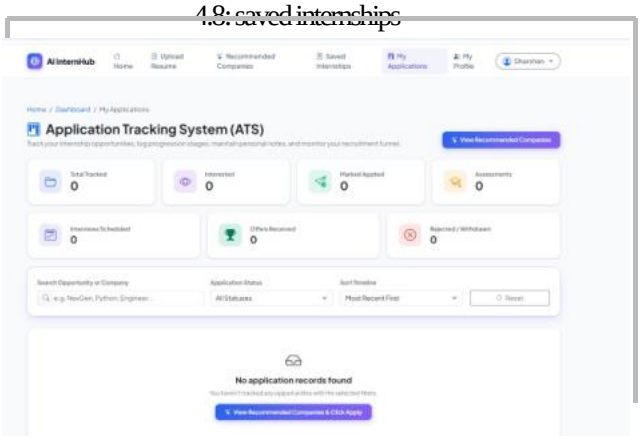
4.7: company profile



4.8: saved internships



4.9: student profile



4.10: application tracking system

The recommendation pages give students quick access to relevant internships, while the profile and tracking modules help them manage their skills and applications.

5. OUTCOME

The proposed system is expected to provide several benefits to students and institutions. Automatic skill extraction can reduce the effort required to compare a resume with many internship descriptions. Ranking by skill match helps students focus on the roles that are most relevant to their profile.

The matching and missing skills shown for every role make the recommendation transparent and help students decide which skills to learn next. The centralised platform also simplifies shortlisting and application management, since saved internships, deadlines and application stages are available in one place and the student does not have to rely on separate notes. The profile module allows skills to be corrected, so that the recommendations remain relevant as the student's skills improve.

Overall, the system provides an integrated approach to internship discovery by combining secure login, resume analysis, skill-based recommendation, company information, shortlisting and application tracking.

6. FUTURE ENHANCEMENT

The proposed system can be extended with additional features in the future. Internship listings can be collected automatically from company websites and job portals instead of the current demonstration data, and deadline reminders and email notifications can be added. A mobile application can also be developed so that students can access recommendations and application status from mobile devices.

The recommendation can be improved using semantic embeddings and a larger skill taxonomy, and OCR can be included to read scanned resumes. The system can suggest courses or learning resources for missing skills, provide resume improvement suggestions, and offer a recruiter dashboard and integration with the college placement cell. The accuracy of the skill extraction and matching can also be evaluated with resumes and placement data from a larger group of students.

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