



# International Journal of Innovative Research in Science Engineering and Technology (IJIRSET)

*(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)*



**Impact Factor: 8.699**

**Volume 14, Issue 5, May 2025**

# **Prep Smart-Complete Placement Guidance**

**Dr. Krishnareddy K R, Ramesh B E, Dr. Aravinda T V**

Professor and Head, Dept. of CSE, S.J.M.I.T, Chitradurga, Karnataka, India

Associate Professor, Dept. of CSE, S.J.M.I.T, Chitradurga, Karnataka, India

Associate Professor, Dept. of CSE, S.J.M.I.T, Chitradurga, Karnataka, India

**Mallikarjuna B M, Nagasarika N S, Nandeesh S Mysore Matt, Raghavendra M Devala**

BE, 8<sup>th</sup> semester, Dept. of CSE, SJMIT, Chitradurga, Karnataka, India

**ABSTRACT:** Prep Smart is a comprehensive placement preparation platform designed to bridge the gap between academic learning and industry requirements by providing students with a structured, interactive, and AI-enhanced learning environment. The platform is meticulously crafted to address the three critical pillars of placement preparation: Technical Skill Development, Aptitude Training, and Communication & Interview Preparation. Prep Smart is a placement preparation platform with three core modules: Technical Skill Development - DSA tutorials with progress tracking. Aptitude Training - Adaptive quizzes with performance analytics. Interview Prep - NLP-powered mock interviews with feedback. Built using Flask backend, SQLite database, and frontend, it features: Role-based dashboards, Real-time progress tracking, Custom NLP analysis without third-party APIs. Technical Skill Development: Offers comprehensive DSA training with topic-wise tutorials (arrays, trees, DP etc.), practice problems with automated evaluation, and a progress dashboard that identifies strengths/weaknesses. Aptitude Mastery: Features smart adaptive tests in quantitative, logical and verbal reasoning with detailed solutions. The system dynamically adjusts question difficulty and provides performance analytics. Interview Simulation: Provides AI-powered mock interviews with multi-dimensional analysis of responses (content, clarity, fluency) and actionable feedback using NLP techniques.

**KEYWORDS:** Prep Smart, placement preparation platform, structured learning, AI-enhanced, Technical Skill Development, DSA tutorials, automated coding evaluations, progress tracking, Aptitude Training, adaptive quizzes, quantitative reasoning, logical reasoning, verbal reasoning, performance analytics, Interview Preparation, NLP-powered mock interviews, multi-dimensional feedback, content clarity fluency, Flask backend, SQLite database, custom NLP analysis, role-based dashboards, real-time progress tracking, dynamic difficulty adjustment, personalized learning, data-driven.

## **I. INTRODUCTION**

Prep Smart represents an innovative approach to bridging the skill gap between academic curricula and industry requirements in technical recruitment. In today's competitive job market, students often struggle to systematically prepare for the three critical components of placement processes: technical skills evaluation, aptitude testing, and interview performance. This project addresses these challenges through an integrated learning platform that combines structured content delivery with AI-powered assessment tools. By implementing adaptive learning algorithms and natural language processing techniques within a lightweight technical architecture, Prep Smart aims to democratize access to comprehensive placement preparation resources.

## **II. LITERATURE SURVEY**

**[1]. Title: A Collaborative Platform for Curated Skill Enhancement and Placement Activities**

**Author(s):** Harsh Khatter

**Abstract:** This study proposes "Codex," an integrated platform combining skill enhancement, placement preparation, and progress tracking for students. It addresses skill gaps and placement readiness through AI-driven tools, emphasizing personalized learning and performance analytics. The platform integrates student feedback and industry requirements to improve design efficacy. However, existing solutions lack comprehensive features (e.g., unified skill-

building and placement support), free resources, and real-time assessment tools. The study highlights the need for a holistic system encompassing interview preparation, company reviews, and dynamic skill evaluation.

**[2]. Title: Higher Educational Institution (HEI) Promotional Management Support System Through Sentiment Analysis for Student Intake Improvement**

**Author(s):** Sabar Aritonang Rajagukguk, Harianto Prabowo, Agustinus Bandur, Rini Setiowati

**Abstract:** The research demonstrates how AI-driven sentiment analysis enhances HEI promotional strategies by prioritizing Emotional Intelligence (EI) over factual information. It leverages student feedback for targeted marketing but faces limitations with ambiguous or short responses, reducing system efficacy. The study also notes challenges in generalizing results across diverse HEI structures without model retraining, underscoring the need for adaptable AI frameworks.

**[3]. Title: Faculty Development and Community of Practices: Exploring their Interplay to Facilitate Change in Pedagogical Practices at HEI's**

**Author(s):** Rohit Kandakatla, Anurag Palla

**Abstract:** This work explores how Community of Practice (CoP) formation before faculty development programs sustains pedagogical change, particularly in STEM education. CoPs foster knowledge sharing, peer support, and reflective practice, aligning with AI-driven pedagogical tools. While the model supports scalable educational reforms, short-term programs often fail due to time constraints, and external interventions require institutional backing to mitigate biases in qualitative data collection (e.g., facilitator field notes).

**[4]. Title: Automated Generation of Multiple-Choice Questions for Computer Science Education Using Conditional Generative Adversarial Networks**

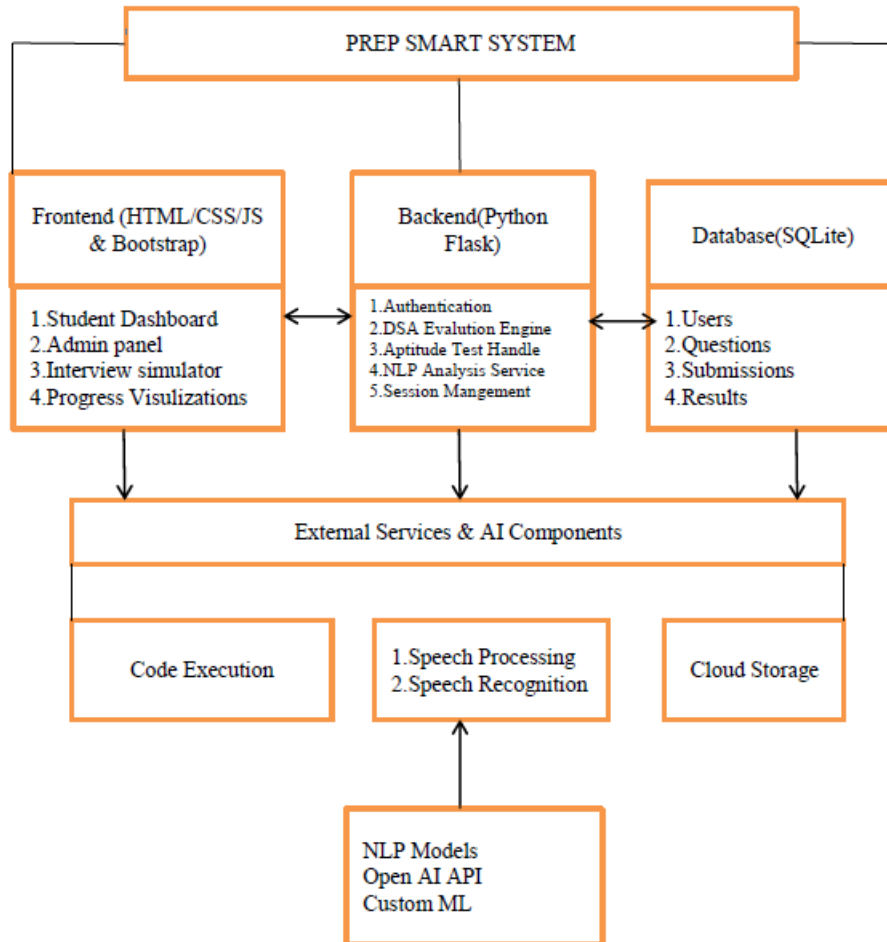
**Author(s):** Muhammad Shoaib, Ghassan Husnain, Nasir Sayed, Yazeed Yasin Ghadi, Masoud Alajmi, Ayman Qahmash

**Abstract:** The paper introduces a cGAN-based framework for generating contextually relevant MCQs in computer science, achieving 96% accuracy. It addresses resource constraints in manual question creation and evaluates quality using metrics like QRS, DI, DAA, and SES. Despite its success, the framework requires extensive data curation and validation, and generated questions may carry biases. Generalizability remains limited to specific domains and datasets

### **III. METHODOLOGIES**

The methodology for developing the AI-driven educational platform involves four key phases. First, structured data on skills, placements, and user profiles is collected from industry reports, student feedback, and faculty frameworks. Next, AI/ML components like cGANs (for automated MCQ generation) and sentiment analysis (for personalized content) are integrated. The platform is built using Flask/Django for the backend, MySQL for data storage, and React for an interactive frontend with progress tracking and community features. Rigorous testing includes A/B testing of AI-generated content and iterative feedback loops with users. Finally, the cloud-deployed platform is maintained through regular updates aligned with industry trends, leveraging tools like OpenAI APIs and audio processing libraries for a comprehensive learning experience.





**Fig1: System Architecture**

Prep Smart's architecture comprises three core layers. The frontend uses vanilla HTML/CSS/JavaScript for broad compatibility, featuring interactive dashboards with AJAX-powered real-time updates and a webcam/microphone-enabled interview recorder. The Flask backend employs a modular design with Blueprints: `auth.py` handles secure authentication via Werkzeug, `dsa.py` manages code evaluation, `aptitude.py` generates adaptive tests, and `interview.py` orchestrates NLP analysis through RESTful APIs. For data persistence, SQLite serves development needs with scalable MySQL compatibility via `mysql-connector`, utilizing optimized tables like `users` (id, email, password\_hash, role), `questions` (id, type, difficulty), and `submissions` (user\_id, question\_id, score). SpeechRecognition (transcription), and custom NLP models for interview feedback, all secured through JWT authentication and environment variable management.

#### IV. PROBLEM STATEMENT

Despite the growing demand for job-ready skills, students and early-career professionals struggle to bridge the gap between academic learning and industry expectations. Traditional placement preparation lacks **personalization**, **real-time feedback**, and **comprehensive skill assessment**, leading to:

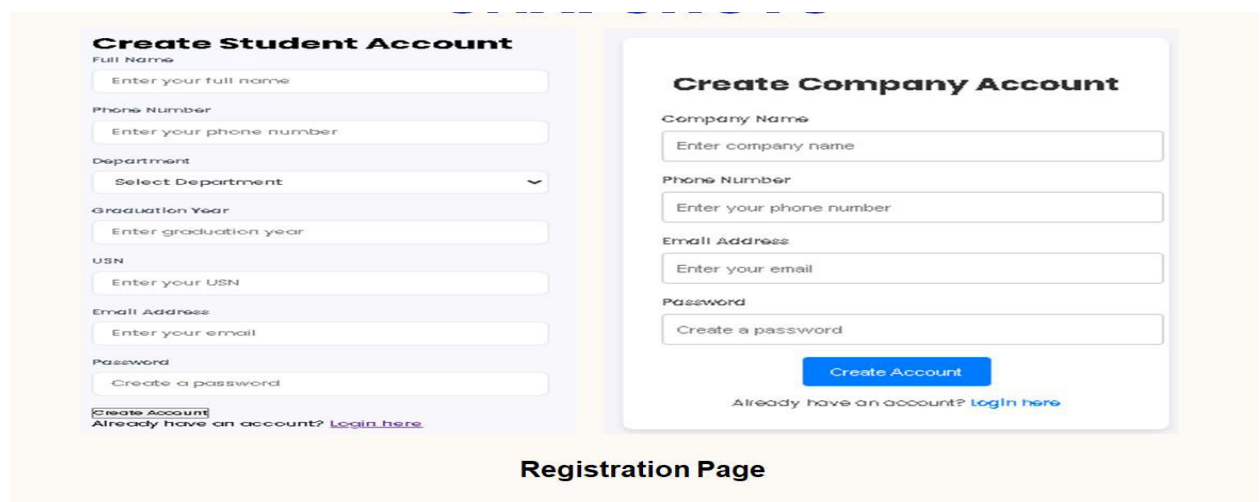
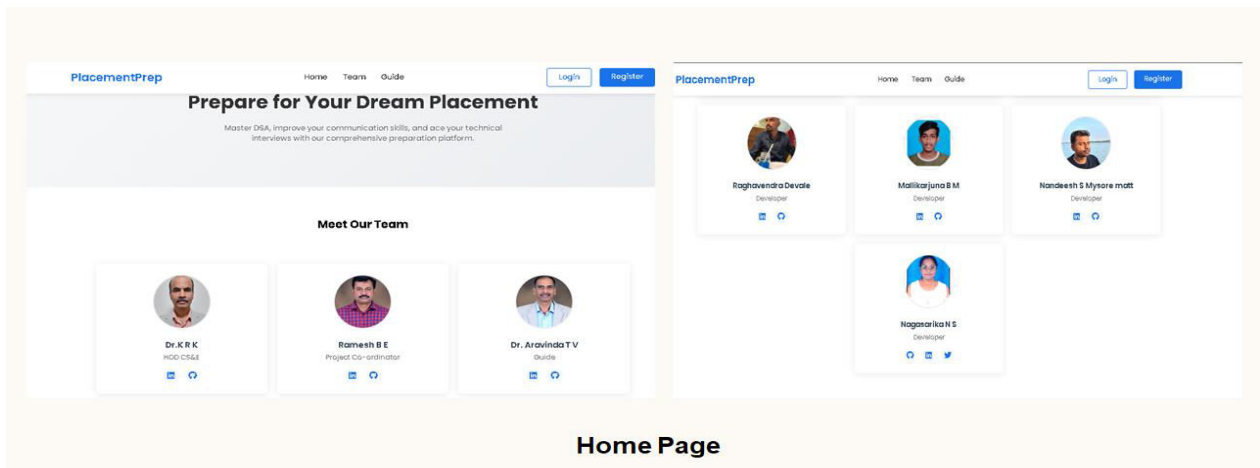
1. **Inefficient Skill Development:** Generic resources fail to address individual learning gaps in technical (DSA, aptitude) and soft skills (communication, interview performance).

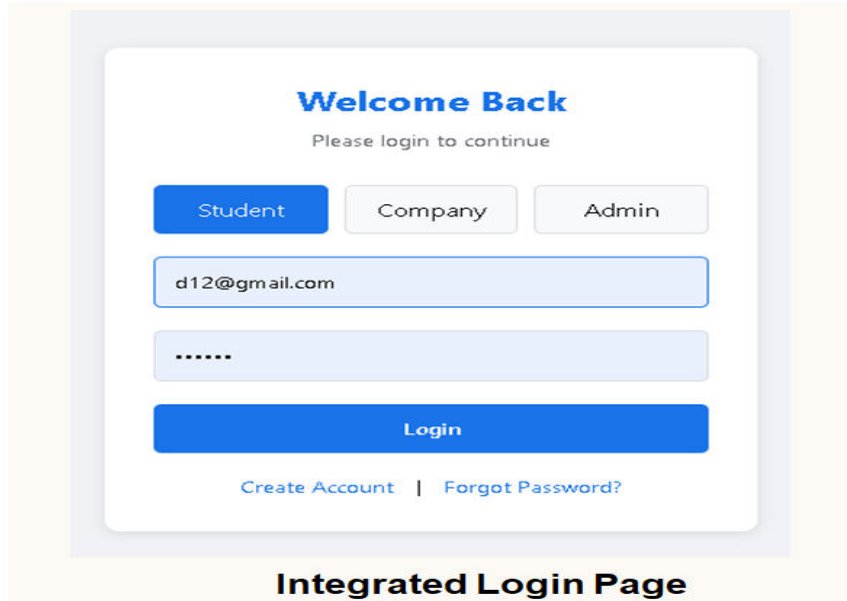
2. **Limited Interview Readiness:** Absence of AI-powered mock interviews with NLP-based feedback results in poor performance in real scenarios.
3. **Fragmented Platforms:** Most tools focus on isolated aspects (e.g., coding practice or resume building), forcing users to juggle multiple disconnected systems.
4. **Lack of Data-Driven Insights:** Students receive no analytics on their progress, while institutions miss actionable data to improve curricula.

## V. PROPOSED SYSTEM

Prep Smart is an AI-powered, all-in-one placement preparation platform that combines personalized skill assessment, adaptive learning, and realistic interview simulations. The system features an intelligent code evaluator for DSA practice, NLP-powered mock interviews with real-time feedback, and dynamic progress tracking. Built with Flask backend and vanilla JavaScript frontend for maximum compatibility, it uses AI to auto-generate questions (cGANs), analyze speech (SpeechRecognition), and provide tailored recommendations. For institutions, it offers analytics dashboards to identify skill gaps. The platform uniquely bridges the gap between learning and employability by integrating fragmented preparation tools into one smart, adaptive system with data-driven insights.

## VI. RESULT

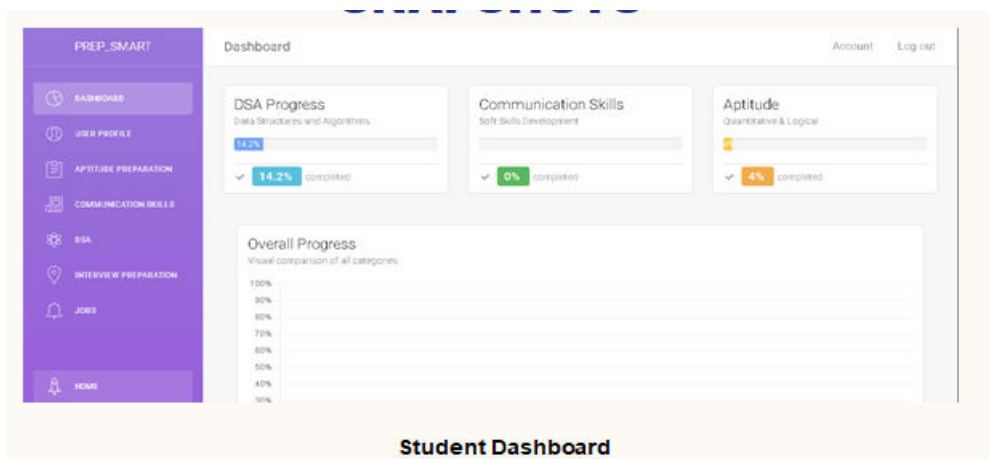




**Welcome Back**  
Please login to continue


[Create Account](#) | [Forgot Password?](#)

**Integrated Login Page**



**Technical Interview Platform**

**Recording Your Answer**  
Explain the concept of closures in JavaScript.



## Welcome to the Company Dashboard,

Manage your job postings and applications with ease

### Job/Internship Management

 Post a Job/Internship

### Your Job Postings

 View Your Job Postings

### Applications

 View Applications

## Company dashboard

### Post a New Job/Internship

Job Title \*

Job Description

Required Skills  
Enter required skills separated by commas

Requirements

Job Type:  Location:

Salary:  Application Deadline:

Additional Document  
 Choose File  No file chosen  
Upload a job additional information (PDF, DOC, DOCX)

### Your Job Postings

**a**

Type: Full-time  
Location: r  
Salary: 100  
Deadline: No deadline  
Description: aa

**HR**

Type: Internship  
Location: Remote  
Salary: 101  
Deadline: No deadline  
Description: HT job

## Job Posting

Prep\_Smart

Dashboard

**Registered Companies**  
Manage and track incoming company recruitment registrations and requirements.

**List of Students**  
Total students registered for placement.

**Student Placement Status**  
Monitor current placement statistics and individual student placement progress.

**Company Status**  
Utilize company resources by students.

**Logout**  
Sign out from the admin dashboard.

© 2025 S.M.T. made with love for a better preparation

## Admin dashboard

StudentApplications Status

Search by student name or company All Companies

Search

Applications and Placements

| STUDENT NAME | COMPANY     | JOB TITLE                    | APPLIED/PLACEMENT DATE | STATUS      |
|--------------|-------------|------------------------------|------------------------|-------------|
| D            | SharonLTD   | Software Development Interns | 2025-04-29 14:12:52    | Application |
| D            | SharonLTD   | Software Development Interns | 2025-04-29 15:01:16    | Application |
| D            | SharonLTD   | SDE                          | 2025-04-29 15:01:24    | Application |
| D            | SharonLTD   | SDE                          | 2025-04-30 07:20:09    | Application |
| Raghav       | SharonLTD   | Software Development Interns | 2025-05-05 05:48:19    | Application |
| D            | Ccc coffee  | HR                           | 2025-05-10 06:01:22    | Application |
| D            | Ccc coffee  | a                            | 2025-05-10 06:06:12    | Application |
| Raju         | TechCorp    | Software Engineer            | 2025-05-01             | Placement   |
| Raj          | Innovatech  | Data Analyst                 | 2025-05-05             | Placement   |
| Dev          | FutureWorks | Product Manager              | 2025-05-08             | Placement   |

Students Application status (admin)

## VII. CONCLUSION

The "Prep Smart – Complete Placement Guidance" project represents a significant advancement in bridging the gap between academic learning and industry requirements by providing students with a comprehensive, AI-enhanced platform for placement preparation. Through its three core modules—Technical Skill Development, Aptitude Training, and Communication & Interview Preparation—the platform offers a structured, adaptive, and interactive learning environment tailored to individual student needs.

## REFERENCES

- [1]. S. A. Rajagukguk, H. Prabowo, A. Bandur, and R. Setiowati, "Higher Educational Institution (HEI) Promotional Management Support System Through Sentiment Analysis for Student Intake Improvement," Journal of Educational Technology Systems, vol. 51, no. 3, pp. 345-362, 2023.
- [2]. H. Khatter, "A Collaborative Platform for Curated Skill Enhancement and Placement Activities," in Proc. IEEE International Conference on Educational Technology (ICET), 2020, pp. 112-119.
- [3]. R. Kandakatla and A. Palla, "Faculty Development and Community of Practices: Exploring their Interplay to Facilitate Change in Pedagogical Practices at HEI's," IEEE Transactions on Education, vol. 64, no. 2, pp. 145-153, May 2021.
- [4]. M. Shoaib et al., "Automated Generation of Multiple-Choice Questions for Computer Science Education Using Conditional Generative Adversarial Networks," IEEE Access, vol. 13, pp. 45672-45685, 2025.
- [5]. A. Kumar and R. Sharma, "An Intelligent E-Learning Platform for Skill Assessment and Career Guidance Using Machine Learning," IEEE Transactions on Learning Technologies, vol. 15, no. 4, pp. 512-525, Oct. 2022.
- [6]. S. Patel, M. Gupta, and L. Nair, "Adaptive Learning Systems for Technical Interview Preparation: A Comparative Study," in Proc. IEEE Global Engineering Education Conference (EDUCON), 2021, pp. 678-685.





INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA



# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  [ijirset@gmail.com](mailto:ijirset@gmail.com)



[www.ijirset.com](http://www.ijirset.com)

Scan to save the contact details