An Integrated AI-Based Career Guidance and Placement Preparation Platform with Resume Analysis, Programming Practice, and Mock Interview Support

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***Abstract*—Preparing for campus placements can be challenging because students need to work on several skills at the same time. They may need career advice, a well-organised resume, aptitude practice, coding experience, and interview preparation. These activities are often spread across different websites and applications. This paper presents a Career Guidance and Placement Preparation Platform designed to bring these activities together in a Streamlit-based application. The project description includes career prediction, resume creation and ATS-oriented review, aptitude tests, programming tools, mock interviews, communication support, performance tracking, and job or internship information. The paper explains the platform's purpose, related work, design, architecture, modules, and proposed evaluation. The materials available for this draft describe the interface and intended features, but do not include verified source code or measured test results. Therefore, no claims are made about improved placement rates or the accuracy of the AI features. These claims should be assessed through documented tests before the platform is considered fully evaluated.**

***Index Terms*—Artificial Intelligence, Career Guidance, Employability, Placement Preparation, Resume Analysis, Mock Interviews**

I. INTRODUCTION

Getting ready for campus placements involves more than understanding technical subjects. Students also need to practise aptitude questions, prepare a clear resume, solve coding problems, and explain their ideas during interviews. When these tasks are spread across different tools, keeping everything organised can become difficult.

This project aims to make preparation easier to manage by bringing several placement-related activities into one Streamlit application. The described modules cover career exploration, resume support, aptitude practice, programming, mock interviews, communication coaching, progress information, and job or internship discovery. The actual behaviour of each module should be confirmed using the working application.

This paper describes the platform's purpose and proposed workflow, reviews related work, and outlines a way to evaluate the system. The available interface material helps identify the modules, but it does not prove that every feature or AI technique is fully implemented. For that reason, implementation details and performance claims should be supported by source code and test evidence.

II. PROJECT OBJECTIVES AND SCOPE

The main goal is to give students one place to access tools that can support their placement preparation. The planned scope includes career exploration, resume creation and ATSoriented review, aptitude tests, coding practice, mock interviews, communication support, performance summaries, and job or internship information.

The project synopsis also refers to adaptive learning, automatic question generation, natural-language processing, speech processing, and computer vision. These methods should be described as working parts of the system only after their use has been confirmed in the code and tested. This paper separates the

features described in the project materials from technical details that still need verification.

III. RELATED WORK AND RESEARCH GAP

The base paper, "AI NEWUS: An AI-Powered Career Guidance and Placement Preparation Platform," discusses a platform that brings together skill development, placement training, mock interviews, assessments, and performance analytics [1]. Work on educational data mining and adaptive learning offers useful background for understanding student activity and providing learning support [2]–[4]. Research on recommendation systems and usability also suggests ways to assess the relevance of suggestions and how easily people can use a system [5], [8].

The platform described in this paper aims to place resume support, aptitude practice, programming activities, communication coaching, and job discovery within a single interface. This combination may be convenient for students, but the number of modules alone does not establish a research contribution. The project should identify what it adds beyond existing systems and test that contribution—for example, whether feedback from one activity helps students choose more useful next steps.

The cited studies provide background for designing and evaluating educational and AI-supported applications. Before submission, the authors should check each reference against the original publication and make sure that it supports the statement attached to it.

IV. EXISTING AND PROPOSED SYSTEM

The base paper focuses on skill development, placement training, and AI-supported mock interviews [1]. The proposed platform is intended to bring these activities together with resume tools, career exploration, programming practice, communication support, and a job and internship dashboard. The wider set of tools could help students organise their preparation in one place, although this benefit needs to be checked through user testing rather than assumed.

In the intended workflow, a student opens the application, chooses a module, completes an activity, and reviews the output or feedback available from that module. Across the platform, the aim is to support career exploration, regular practice, resume preparation, interview rehearsal, progress review, and job discovery. Whether the modules share data or pass results between one another must be confirmed from the implementation.

V. SYSTEM DESIGN AND METHODOLOGY

The platform can be described in four broad parts: the Streamlit interface that students use, the Python code that manages each activity, any AI or analytical components used by those activities, and the layer that stores information. This is a high-level description; the final version should name the technologies and data flow found in the actual code.

A useful evaluation should start with a list of modules that are working and a description of what each one receives and produces. For every module, the team should record its input, processing steps, output, and known limitations. If a predictive model is used, the paper should identify the dataset, input features, training and test procedure, baseline, and evaluation measures. If a feature relies on fixed rules instead of a trained model, those rules should be explained clearly.

Different modules need different ways of being checked. Resume analysis, for example, could be compared with a resume checklist reviewed by a person. Career and job suggestions could be rated for relevance by students or independent reviewers. Aptitude scores should be checked against verified answer keys, while interview feedback could be compared with a clearly defined assessment rubric. These are proposed evaluation methods, not results from completed experiments.

VI. SYSTEM ARCHITECTURE

The proposed platform follows a layered architecture consisting of five layers: the User Layer, Application Layer, AI/ML Processing Layer, External Services and Database Layer, and Output Layer, as shown in Fig. 1.

A. User Layer

The User Layer represents students and job seekers who interact with the platform. Users can register or log in, provide profile details, upload resumes, access different modules, and view the generated results and suggestions. This layer serves as the starting point of the system workflow.

B. Application Layer

The Application Layer is implemented as a Streamlit web application. The user interface provides a dashboard, navigation menu, input forms, result displays, and interactive visualizations. This layer connects users to the core modules of the platform: career prediction, resume analysis (ATS checker), resume templates, coding practice with a code compiler, aptitude test generation, interview preparation, an AI communication bot, and job portal integration.

C. AI/ML Processing Layer

The AI/ML Processing Layer performs the intelligent processing required by the platform and consists of three components. The data preprocessing component cleans and processes user data and extracts text from uploaded resumes. The model processing component applies natural language processing for resume analysis, a machine learning model for career prediction, and evaluation of user performance. The recommendation engine generates personalized suggestions and matches user skills with suitable job roles.

D. External Services and Database Layer

This layer supports data storage and communication with external services. A relational database (MySQL or SQLite) stores user details, test results, resume data, and analysis reports. The OpenAI API may support the AI chatbot, mock interview analysis, and intelligent suggestions. Job portal APIs, including platforms such as Naukri and LinkedIn, can provide job and internship data when supported by approved integrations. Additional tools may include Python, Scikitlearn, and NLP libraries for model development, OpenCV for image analysis, and speech and voice analysis tools for evaluating communication skills. The final paper should retain only the technologies and integrations confirmed in the working implementation.

E. Output Layer

The Output Layer presents the results generated by the platform to the user. These outputs may include career recommendations, ATS scores and resume feedback, customized resumes, coding test results, aptitude test scores and analysis, mock interview feedback, job and internship listings, and overall performance analytics with suggestions.

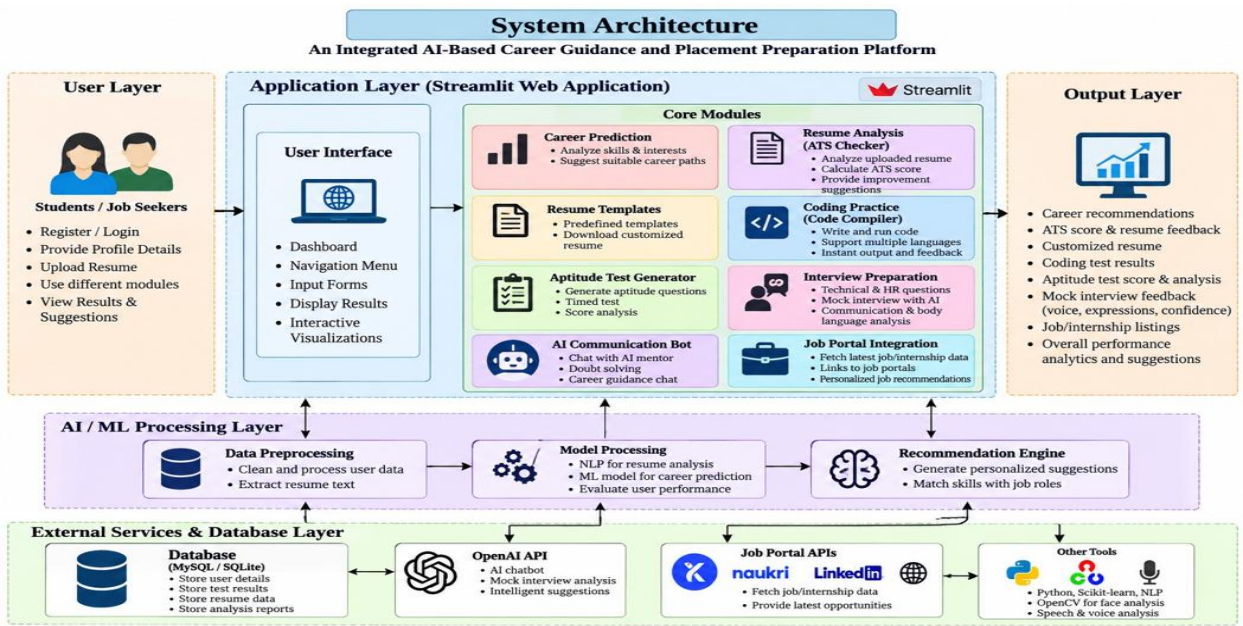

Fig. 1. System architecture of the integrated AI-based career guidance and placement preparation platform

F. System Workflow

The workflow begins when a student accesses the Streamlit interface and selects a required module. The application collects the relevant input and forwards it to the processing components. These components perform the applicable preprocessing, model

processing, and recommendation tasks. The database and external services support data storage and any enabled external functionality. Finally, results are displayed to the user through the Output Layer and may be saved for future reference if that functionality is implemented.

VII. DESCRIPTION OF THE APPLICATION MODULES

1) Registration and Login: This module provides account access if the feature is implemented. The paper should explain how accounts are verified, how passwords are handled, and where account information is stored.
2) Career Prediction: This feature is intended to help students consider career paths based on information they provide. The final paper should describe the model, input features, training data, and evaluation measures only after these details have been verified.
3) Resume Builder, Upload, and ATS Analysis: These tools support resume preparation and an ATS-oriented review. Any score produced by the application should
   be explained as an estimate based on its own scoring method, not as a guarantee that a resume will pass every employer's screening system.
4) Aptitude Test: This module is intended to give students aptitude practice. The paper should state how questions are selected, how answers are checked, and how the final score is calculated.
5) Online Compiler and Programming Practice: These modules are intended to support coding practice. The paper should identify the programming languages supported and explain how code is executed and how the output is checked.
6) Camera-Supported Mock Interview: The interface includes a camera-related interview feature. Any feedback about facial expression, gaze, or posture should be discussed only if the relevant analysis is present and has been tested. Camera use should be optional, with users clearly informed about how their data will be handled.
7) Communication Coach: This feature is intended to help students practise communication. The paper should explain what the feedback is based on and identify any speech or language tools used by the application.
8) Overall Performance: This area is intended to help students review their preparation progress. The metrics, calculations, and data-storage process should be described based on the working implementation.
9) Internship and Job Dashboard: This module brings job and internship information into the platform. The paper should identify where listings come from, how frequently they are updated, and whether any matching or filtering method is used.

VIII. IMPLEMENTATION AND EVALUATION

The platform is intended to make several placement preparation activities available through one application. The available material shows the interface and its planned modules, but it does not establish how accurate, reliable, or useful the AI-related functions are.

This draft does not include numerical results because no verified test dataset, participant study, or measured metrics were supplied. Before submission, the team should test each working module and report the conditions, sample size where relevant, metric definitions, and observed results. If students take a test before and after using the platform, the paper should describe the procedure and acknowledge limits such as practice effects and a small participant group.

After testing, the results section can include a table listing each module, the data or participants used, the evaluation measure, and the result. Values should be taken from recorded tests that another person could review or repeat; they should not be estimated to make the system appear more effective.

IX. PRIVACY, FAIRNESS, AND LIMITATIONS

The platform may handle personal details, resumes, test scores, voice recordings, or camera data. Students should be told what information is collected and why. The system should collect only what is necessary, limit who can access it, and explain how long records are kept and how they can be deleted. Any recording or analysis of audio or video should be clearly disclosed, and appropriate consent should be obtained.

Camera-based feedback can be affected by lighting, camera quality, disability, cultural differences, and

personal variation. Such signals should be treated as limited guidance, not as a definitive measure of confidence or employability. The team should also check whether recommendations produce different outcomes for students from different backgrounds.

This draft is based on the project synopsis, the cited base paper, and the available interface material. The source code, datasets, model settings, security tests, and user-study results have not been independently verified. These details should be checked and added before the paper is submitted.

X. CONCLUSION AND FUTURE WORK

This paper has described a proposed Streamlit platform that brings several career and placement-preparation activities into one place. The planned modules cover career exploration, resume and ATS-related tools, aptitude practice, programming, mock interviews, communication support, progress information, and job or internship discovery. Bringing these tools together may make preparation easier to organise, but its actual value still needs to be measured.

The next step is to test each implemented module and record the results clearly. Further work could focus on checking the quality of career suggestions and resume feedback, evaluating interview-practice features, improving privacy protections, and collecting feedback from a defined group of students. A clear, measurable contribution and transparent test results will make the paper more useful and credible.

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