



AI Based Internship Finder and Profile Analyzer

M. Vasuki¹, S. Kirthika^{2*}

¹Associate Professor & HOD, Department of Master Computer Application, Sri Manakula Vinayagar Engineering College, Pondicherry, India Email: vasukimca@smvec.ac.in

²Student, Department of Master Computer Application, Sri Manakula Vinayagar Engineering College, Pondicherry, India Email: keerthisankar036@gmail.com

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Abstract: With the evolution of technology and fierce competitions in securing jobs in the market, interns have become an integral part of one's career development as a student. They provide practical training in addition to familiarizing students with the industry, in addition to giving you ample opportunity of developing professional skills before joining the work environment. However, securing relevant internships has proven difficult for many students since most of the internships available out there do not take the user's education, technical expertise, interests, and career goals into consideration. All the websites dealing with the search of internships provide numerous choices to students, but none of them are tailored according to a user's profile, and thus the user has to dedicate ample time for searching relevant options. AI technology is highly sophisticated in nature and allows processing of large amounts of data. Using artificial intelligence technologies, it is now possible for us to design computers to study a person's profile and suggest internships accordingly. With help of the profile of a user, it becomes easy for the system to know about his/her technical proficiency, education, career goals, interests, etc., which further enables the system to suggest more suitable internships to the user. The recommended AI-Based Internship Finder and Profile Analyzer would be able to solve all the above problems as it would be an efficient and intelligent tool for recommending internships and analyzing students' profiles. As such, the system would collect data about user's education, skills, interests, certifications, etc., process and analyze

them, and compare with the internship requirements in the database. In addition, the system would be able to suggest areas for improvement for each student individually based on the analysis conducted. One more function of the recommended system includes the analysis of skill gaps and offering possible ways to bridge them. For example, the system would evaluate what skills a particular student lacks compared to the requirements of the industry or company he or she works for, offer some suitable courses and other learning materials, and so forth. In turn, the proposed solutions would assist both in finding an internship and improving one's career perspective. In conclusion, it should be mentioned that the recommended system is aimed at providing accurate recommendations, making the process of finding an internship easier, and increasing students' career and learning experience. The application would perform several functions, which would help students in career and internship.

KEY WORDS: Artificial Intelligence, Internship Finder, Profile Analyzer, Skill Gap Analysis, Machine Learning, Recommendation System, Career Guidance, Student Employability.



1. Introduction

To solve the aforementioned issues, we are developing the AI-based Internship Finder and Profile Analyzer as an intelligent platform that assists users with matching internships and assessing their profiles. The system will allow users to input their background information (e.g., education and/or professional work experience) and analyze this data using our proprietary machine learning algorithms to match users based on their skill set to internships found within our database. The AI-based Internship Finder has the additional function of conducting a skills gap analysis on users' skill sets versus the skills needed by companies or industries within the internship database. The findings from this analysis will guide users to recommended education,

certification, or training that would assist them in bridging their current skills gap. The proposed AI-based Internship Finder and Profile Analyzer system will provide increased accuracy of internship recommendations, lower manual workload for users, and provide a more efficient and simple user interface for students. The AI-based Internship Finder and Profile Analyzer will serve as a comprehensive solution for students in terms of finding internships as well as growing their careers. In addition to providing better planning of a student's career, students will also receive improved support in making educated decisions about their future careers. Using artificial intelligence, the proposed AI-Driven Internship Finder and Profile Analyzer will create a smarter and more efficient internship search experience by analyzing a user's profile (e.g., academic achievements; technical expertise; interests; and any certifications). With this information, the AI-Driven Internship Finder and Profile Analyzer will identify relevant opportunities for internship placement and recommend personalized internships. By analyzing the user's competencies, the AI-Driven Internship Finder and Profile Analyzer will help the user identify skill gaps that may impede their career advancement. Furthermore, the AI-Driven Internship Finder and Profile Analyzer will provide information and tools for users to enhance their skill set and advance in their careers. For example, if the user is missing a skill (or skills), the AI-Driven Internship Finder and Profile Analyzer will recommend resources to the user to develop that particular skill. In summary, the proposed AI-Driven Internship Finder and Profile Analyzer bridges the gap between students and employers by providing customizable internship

opportunities and assisting students in making informed decisions regarding their future professions.

2. Literature Review

Kumar & Ratten (2025) The authors highlighted the increasing in recommendation and management systems. The study shows how to assist with decision making, automate processes and enhance user experience through intelligent analysis and personalised suggestions. Keiper (2023) Keiper examined the application of AI tools in digital platforms. The study found that intelligent systems can enhance productivity, simplify user interaction and provide suggestive recommendations based on user preferences and requirements. Sulaiman (2022) Sulaiman's study evaluated AI-based chatbot technologies and recommendation technologies. The author emphasised the role of Natural Language Processing and Machine Learning in providing accurate responses and personalized user experiences. Nosratabadi et al. (2022) Researchers have reviewed the use of Artificial Intelligence within management systems and have provided conclusive evidence to suggest that Artificial Intelligence can significantly enhance automation, improve data processing and reduce manual workflows. Chaskopoulos et al. (2022) This study examined the integration of conversational Artificial Intelligence in web applications. The authors determined that AI systems can improve overall user engagement, provide easier access to information and provide a basis for intelligent decision making processes. Zhang et al. (2021) Zhang and other researchers examined the use of machine-learning-based recommendation systems and found that using profile-based analysis can improve the accuracy of recommendations. The authors of this research recognised the importance of matching the characteristics of the user to the available opportunities. Sharma & Gupta (2021) The authors proposed a smart career suggestion for the students

3. Problem Statement

Fast modernization and growing job competition has created a high demand for student internships as they are critical in terms of development related to starting a career. When participating in an internship, a student can gain hands-on experience. Additionally, students often experience confusion because of the large amount of internship opportunities displayed all over multiple



platforms. Most students conduct online searches or visit job boards to find opportunities. Even though there is a wide variety of internships listed on their sites there is little value for students utilizing these sites; most just provide lists of internship postings with keyword searches. Therefore, students are forced to manually look through, evaluate and rank possible internships as per their knowledge. This procedure takes away considerable time for students looking for relevant results. Often students do not possess enough background information on what is required by the industry to determine if their experiences/skills match those of a potential employer, thereby applying for internships without regard to their qualifications, missing opportunities that may lead to future benefits. One of the most significant difficulties students encounter today is the lack of a method for determining their skills gap when applying for jobs. Specifically, many students don't know what skills are required for their desired internship position and frequently lack the necessary guidance to identify ways to improve their skill set. The result is that many students do not have an accurate understanding of their own strengths and weaknesses, making it even more challenging to develop themselves and get ready for future job opportunity. Most current internship websites only act as a source of internship information; therefore, the effectiveness of internship matching systems is diminished and the ability of students to become employed is limited. In addition to students' needs for personalized career guidance, employers must also find new hires with both a great deal of technical knowledge as well as hands-on experience. Because there is generally a mismatch between what is taught in school and the skill requirements needed by employers, there is a significant need to provide students with personalized guidance on how to improve their profiles to match current marketplace demands. The inability of existing systems to analyze user profiles and provide individualized recommendations creates a barrier between students and potential employers. Thus, a need exists for a solution that can bridge this divide. To solve this problem, an intelligent system capable of analyzing a user profile to identify the student's skills gap, as well as recommend appropriate internships for that student, is necessary. Such a system will result in improved accuracy of internship recommendations, reduced time spent manually matching student interns to internship opportunities, and will assist students in making informed career choices.

4. Existing System

Currently available internship searching platforms typically consist of various job portals, internship specific websites, and recruitment agencies which allow users to browse through an internship database. Students can perform a search for internships through keyword queries, categories, location based or through other filtering criteria. Even though these systems have made it easier for students to access information about internships, they still require a large amount of manual searching and user activity. The amount of time that a student must spend researching different internship opportunities and assessing their qualifications can be quite high. Many available platforms have been created with the purpose of providing users with a database to view available internships, but with little to no mechanism in place for recommending internships to that user specifically based on their individual needs or fit within the job market. Many of these platforms use very limited recommendation algorithms that fail to appropriately consider all aspects of your profile. For instance, when evaluating a user profile many existing systems do not take into account the user's educational background, technical skill level, interests, certifications and/or career aspirations. This means that there may be some instances where a user receives internship recommendations, but those suggestions do not actually line up with the actual skills and qualifications of the student. A third limitation with many of the current solutions is they do not have the capability of doing an intelligent analysis of the user's profile. Users do not receive feedback about what areas they are strong or weak in or where they need to improve. In many of these platforms students will also not receive information regarding any areas where they may be lacking skills, recommendations for types of classes/certifications/training programs to take to improve their chances of finding employment, etc. Because of this students are unlikely to know about the skills needed to secure employment or develop professionally.

5. Proposed System

The proposed AI-Based Internship Finder and Profile Analyzer addresses the shortcomings of existing internship search platforms by utilizing Artificial Intelligence to make recommendations. Analyzing user profiles allows the system to create a personalized and



intelligent method for discovering internships. The goal of the system is to simplify the process of searching for an internship while also helping students grow in their professional lives. The system will collect detailed user data, including education, technological skills, interests, qualifications and professional goals, and analyze that information with AI algorithms to give an in-depth view of the user's profile. After analyzing the profile, it will compare it to the internship specifications stored in the database and generate customized internship recommendations based on the degree of match and relevance between the user's profile and the internship requirements. One of the main characteristics of the proposed system is its skill gap analysis capabilities. The system will evaluate the differences between the user's current level of knowledge and the skills expected by different industries and types of internships. It will provide the user with a list of competencies that need to be developed based on this comparative analysis and provide suggestions of courses, certifications, workshops, etc. from which the user can utilize to increase his employability and career prospects. This platform provides all the features required by individuals looking for internships as well as providing tracking and management of profiles. Users will have a profile they can continuously update and track their progress based on the recommendations they receive on their profiles and additional skills they have acquired. This will be done through a user-friendly interface that allows for easy navigation and interaction. The system also allows for administrators to manage the internship database, view user activities and manage the overall function of the system with a dedicated management module. With the integration of Artificial Intelligence, profile analysis and internship recommendation, as well as skill gap identification via one system, the proposed system provides a complete solution for students and recent graduates. It reduces manual efforts, creates better accuracy for recommendations and gives students and new graduates useful career information. The AI Based Internship Finder and Profile Analyzer bridge the gap between the students' abilities and the requirements of the industry, supporting both informed and intelligent decision-making, as well as long-term professional growth.

6. System architecture

AI-Based Internship Finder & Profile Analyzer System Architecture has been designed on the basis of a layered

architecture which makes communication efficient among end users, application service providers, artificial intelligence modules and database components. Such architecture is designed to offer personalized internship recommendations based on individual profiles, skills, educational qualifications and career interests of students. There are many tasks involved at each level of architecture, which are carried out in coordination with one another in order to make the entire process effective and hassle-free for users.

A. Presentation Layer - Presentation Layer forms the front-end part of the system where interactions between users and applications takes place. The layer includes all functions for students' registration and logging into application, creating profiles, entering skills and educational qualifications and conducting searches and receiving recommendations for internships. Interface provided to students via this layer is easy, responsive and available on different platforms like desktop, laptop and smartphone etc. Dashboards, progress reports, skill gap analysis results and career guidance tips etc., also come under Presentation Layer. This layer is primarily responsible for making sure that user interaction with the system is hassle free.

B. Application Layer - Application Layer acts as the processing heart of system which helps the students details to store in data base.

C. AI Processing Layer - AI Processing Layer is the intelligent layer that is involved in the process of processing the information about user profiles in order to provide personalized recommendations. The system uses information about the user's skills, interests, qualifications, certifications, and career preferences to evaluate the user profile. The AI engine then analyzes the collected information against the internship requirements listed in the database in order to find the best-fit internships for each particular user. Besides, the engine performs skill-gap analysis to identify missing competencies necessary for internships.

D. Database and Analytics Layer - The Database Layer is the layer where all the information concerning users' data, profiles, internships, recommendations, skill gaps, etc. is stored. This layer provides security for user data and helps to effectively manage the data within the system. At the same time, the Analytics Layer allows generating various reports on users' success in searching for internships, users' skills and competencies, users' achievements in completing the



task, and so on.

7. Methodology

In this regard, the methodology of the AI-Based Internship Finder and Profile Analyzer System aims at providing a smart and effective way to assist students in finding relevant internships. In particular, there are several stages within this methodology, including user registration and authentication, profile creation and skill entry, profile analysis and intelligence extraction, recommendation of potential internships based on results of analysis, and evaluation and progress tracking of users. These stages contribute to the effectiveness of this system, as they allow users to get personalized recommendations and accurate suggestions concerning potential internships.

User Registration and Login - The first stage in the methodology of the discussed system is associated with the registration and login of users. In particular, students register themselves on the website and create an account through inputting their personal information. After successful registration, the user gets access to the system functions through logging in to his/her account. Thus, this stage involves creating user accounts, which can be easily found during the search.

Profile Creation and Skill Entry - Once logged in, users create their profiles by adding details about their educational background, technical skills, certificates, interests, and preferences regarding their careers. The details added by the users to their profiles are stored in the database and become the main data for profile analysis. With detailed profiles, the system can understand what the user can do best and what his/her interests are, and give him/her better internships.

Skill Gap Analysis- The skill gap analysis feature is done by analyzing the user's skills and comparing them with the requirements of the industry and internship. The use of Artificial Intelligence techniques enables the system to analyze the profile and detect any weaknesses in competencies which may impair the user's ability to be employable in the industry. On completion of the skill gap analysis, recommendations are issued regarding courses and other training materials.

Internship Recommendation and Progress Monitoring - This involves analyzing user profiles and finding internships for them from the internship database. The

system matches the user's qualification with the requirements of the particular internship. Internship recommendations are made accordingly. The user will also be able to monitor profile updates, recommendation records, and improvement of skills through a dashboard interface.

8. Working Process

The working process of the AI-Based Internship Finder and Profile Analyzer System commences when a registered user logs into the system application. Subsequently, the user creates an online profile that includes personal details, educational qualifications, technical skills, certifications, interests, and career objectives. The system captures all these details and stores them in the database in order to use them for analyzing user profile. The above stage is important since it supplies the necessary data needed for recommendation generation.

After successful creation of the user profile, the Artificial Intelligence engine will analyze the collected user data. In addition, the system carries out skill gap assessment based on industry requirements and internship expectations in order to assess what competencies the user still needs in his/her profile. Using such information, the artificial intelligence system will make recommendation for internships based on compatibility analysis. The next step involves matching of the user profile with suitable internships in the database. In addition, suitable internships will be ranked according to their relevance to the user profile. Personalized internship recommendations will be generated and provided to the user through the user's dashboard interface. The recommendations may also include courses, certifications, and other activities that improve user's chances. Through the dashboard, the user gets all the information regarding his profile, recommendation history, skills gap analysis, and progression tracking information. The users will be able to update their profiles periodically and keep track of their progress in terms of improvement. The system will analyze the updates periodically and provide new recommendations if required. Lastly, the administrators are supposed to oversee all activities in the system from the central control panel. All data related to internships, user records, recommendation reports, and performance of the system can be accessed by them. Notifications about internships, profile, and recommendation updates will be sent to the user.



9. Implementation

Implementation of the AI-Based Internship Finder and Profile Analyzer System involves integration of multiple modules that would work in harmony to provide intelligent recommendations. These include user authentication, profile management, skill gap analysis, recommendation generation, database management, dashboard functionality, and administrative monitoring of various activities within the system. Each module is developed for seamless interaction among users, artificial intelligence, and database services.

Profile Management- In this section of the system, the user will input all his/her information regarding academic achievements, technical skills, interests, certifications, and preferences related to the job or profession the user wishes to pursue. The information provided is then saved in the system's database for future use in generating recommendations and profile analysis.

Skill Gap Analysis Module - In the Skill Gap Analysis Module, users' skills are analyzed against the industry standards. This way, the system can determine any deficiencies in the skill sets of the users and make improvements in those areas. On the basis of this process, the system provides reports and suggestions for resources, certifications, and courses that could improve users' employability.

AI Recommendation Engine - The AI Recommendation Engine is the backbone of the entire application, which makes use of the information available in the user's profile in order to match it with internships available for the user. By making use of AI techniques, this system creates recommendations specifically suited for the user.

Database Management- All of the information related to the users' profile, recommendations, assessments, and other things is stored in the Database Management Module of the system. A Relational Database like MySQL can be used for the purpose of data storage.

Dashboard Implementation - Through the dashboard, the user gains access to views of recommendations, skill gap report, and profile status. It contains analysis of the system as well as personalized recommendation. The dashboard increases user satisfaction and enables the student to track his/her career development.

Administrative Module - The admin panel gives the administrators control over the activities that take place within the application. The administrator can modify the internship database. He/she will also get to monitor the activities of all users.

10. Tools and Technology

The implementation of the AI-Based Internship Finder and Profile Analyzer System will involve a fusion of different technologies related to the frontend, backend, database, and artificial intelligence fields to ensure reliability, reactivity, and intelligence for our platform. The latest tools of modern web development will be used to develop a powerful user interface and an efficient backend programming environment.

To build static content for web pages, HTML will be used; CSS will be responsible for the creation of appealing and responsive user interfaces, while JS will provide the interactivity inside the app. Optional, React.js framework may also be implemented for enhanced frontend. Python will act as a primary programming language for the backend because of its versatility and great applicability in implementing Artificial Intelligence and Machine Learning projects. Framework Flask or Django will facilitate development process on the backend side by providing convenient functionality in managing server-side processes. MySQL will be used as a database system for the storing of all user data, including their profiles, internships, recommendations, and administration. Libraries like Scikit-learn, TensorFlow, and Pandas will be applied for profile analysis and recommendations creation. Development IDE VS Code will be applied for coding, testing, and managing our software projects.

11. Challenges

In designing and implementing the AI-Based Internship Finder and Profile Analyzer System, several issues may arise and potentially have negative effects on the performance of the system and recommendation made. To begin with, the accuracy of the recommendations made by the system will be one of the main issues. The system has to provide relevant internships to users having varied profiles through effective analysis. Another challenging aspect about this system will be data privacy and security since there will be many confidential and sensitive pieces of data stored including personal data and career preferences.



It is crucial to take into account appropriate data security to prevent data theft and other cybersecurity attacks. Skill matching complexity is another problem associated with the system.

Accuracy in Recommendation- Another big challenge is providing accurate internship recommendations for users. Users come from different academic backgrounds and have varied interests, skills, and career goals, which makes the task very complicated. It needs to be possible to match users with internship options depending on their profile.

Privacy and Security Issues- This platform stores sensitive personal data, including personal information, education level, skills, credentials, preferences in terms of career choice, and other information. The protection of such information against any security threats or breaches poses another huge challenge in the development process.

Matching Users' Skills with Requirements of Internships- It should be noted that different industries require certain skills from interns. The task of accurately analyzing skills and matching them with internship requirements and finding skills that users may lack is complicated but important.

Management of Database Issues -With the growth of users and internship information, management of huge amounts of information becomes an issue. It is essential for efficient data management to make sure that databases are designed and optimized appropriately. This will guarantee the speed, reliability of data processing, and effectiveness of operations.

Real-time Data Processing- Users have the expectation that profile analysis should be done immediately and that there are real-time internship recommendations provided. Processing big amounts of data and coming up with personalized suggestions requires efficiency to avoid any delays that could reduce the efficiency of the system.

Heterogeneity of Users' Needs- Each of the students may be pursuing different fields of study and thus have different career goals. It is a challenge to develop such a system that caters to a heterogeneous population without being complicated.

12. Future Work

Some of the possible opportunities for expanding and improving the AI-Based Internship Finder and Profile Analyzer system include adding some more capabilities and features to its operations. For instance,

one of such features could be to add resume analysis. By means of it, the resume will be automatically evaluated, and suggestions will be offered for improvement to make the chances of being selected for an internship program higher.

Another possible feature involves creating an interview preparation tool which will prepare students for recruiting activities. This feature will provide users with interview questions, allow for practicing mock interviews and offer individual feedback for each user. In addition, in future versions of the software, the integration of internship-related APIs from recruitment websites and companies can be done. This will enable getting new information on vacancies available in real time. Moreover, a mobile application designed specifically for Android and iOS-based mobile devices can be created. More advanced Artificial Intelligence and Machine Learning models can be used to make recommendations even more accurate and to perform profile analysis better. Such features as career counseling, professional mentoring modules, as well as support in multiple languages can be provided.

13. Conclusion

The AI-Based Internship Finder and Profile Analyzer System is a revolutionary and intelligent approach towards helping students search for internships. The project successfully integrates such features as AI, profile analysis, skill gap identification, and internship recommendation into a single software solution. After conducting analysis of the user's qualifications, skills, interests, and career goals, the system comes up with recommendations that assist users in making career-related decisions. One of the most useful functions provided by the proposed system is that of identifying the skill gaps and offering advice on how they can be overcome. As stated above, many students do not know the requirements of the industry and often face difficulties when figuring out what skills need improvement. However, through comparison between the user's skillset and internship needs, the software offers the necessary assistance and advises on possible ways to achieve success. In addition, the application eliminates all the extra effort involved in searching for an internship position as all the research work is done automatically. With personalized recommendations from the system, users spend less time searching for an opportunity. The system's dashboard and progress tracker provide additional information about users' performance. In addition to that, the use of AI improves recommendation precision and creates a



personalization effect. The solution connects student skills with the expectations of the market thanks to its ability to provide students with intelligent and relevant suggestions and recommendations. The proposed AI-Based Internship Finder and Profile Analyzer System is an innovative solution for improving the level of career guidance and internships recommendation. Using the latest technologies, including the power of artificial intelligence, the solution is capable of helping students improve their employability and career prospects.

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