



RESUME MATCH:JOB ROLE MATCHING AND SKILL ASSESSMENT SYSTEM

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Abstract—

- The correlation and matching of skills for future-proofed careers is a critical topic in today's rapidly evolving job market.
- Identifying the intersection between individuals' current skill sets and the skills that will be in demand in the future is crucial for long-term career success.
- By leveraging data-driven approaches and predictive analytics, individuals can proactively align their skill development efforts with emerging trends and opportunities.
- This strategic approach not only enhances employability but also ensures resilience in the face of technological advancements and economic changes.

Keywords: Resume, Skills, job search

I. INTRODUCTION

- In today's rapidly changing job market, it is crucial for individuals to carefully correlate and match their skills with future-proofed careers to ensure long-term success and adaptability.
- By understanding their own strengths and interests, individuals can align their skill sets with the evolving demands of the workforce, reducing the risk of obsolescence.
- Through strategic planning and continued education, individuals can proactively position themselves for career opportunities that align with their abilities and aspirations.
- By focusing on the correlation and matching of skills for future-proofed careers, individuals can enhance their employability and seize new opportunities in an ever-changing job landscape

PROPOSED SYSTEM

- The proposed system aims to match individuals with careers by correlating their skills and attributes.
- Through the use of advanced algorithms and machine learning technologies, the system will analyze a person's

skill set and qualities to identify suitable career paths that align with their strengths and interests.

- By considering factors such as industry trends, job market demands, and individual aspirations, the system will offer personalized recommendations to help individuals navigate their career development.
- Ultimately, the goal is to empower users to make informed decisions and pursue rewarding and sustainable career opportunities in the ever-evolving job markets.

ADVANTAGES

- The proposed system for correlation and matching of skills for careers offers several advantages.
- It enhances the alignment between an individual's skill set and the requirements of future job roles, increasing the likelihood of successful career transitions.
- By providing personalized recommendations based on skills analysis, it enables individuals to discover new opportunities and pathways for growth.
- Additionally, the system facilitates better workforce planning and talent development strategies for organizations by identifying skill gaps and strengths within their workforce.
- Overall, the system contributes to a more agile and resilient workforce equipped to thrive in dynamic career landscapes.

II.REQUIREMENT ANALYSIS

FUNCTIONAL REQUIREMENTS

- Data Collection:Collect sufficient data samples and legitimate software samples.
- Data Preprocessing:Perform effective data processing on the sample and extract the features.
- Train and Test Modelling: Split the data into train and test data Train will be used for training the model and Test data to check the performace
- Feature Selection:Further select the main features for classification
- Modelling: GenAI the training using machine learning algorithms

NON-FUNCTIONAL REQUIREMENTS

User Interface and Human Factors

To insert the data set and to test and train the data we require human factor. Humans are required to insert the image. This is achieved through a user interface to interact with human factor for insertion of resume scanning for training and testing on the data.

USABILITY

The system must be simple to use in terms of user interface and must avoid any complexity. It should be capable of having minimum interaction with the user to avoid much manual work, but at the same time should provide the best results possible. It should not take much time on processing or should stuck at many moments. In simple terms it should satisfy user needs with simplicity in terms of usability.

RELIABILITY

The system must be reliable, it should not lead to unnecessary crashes and shouldn't stuck at most cases of errors when occur, it should have good exception handling mechanisms. The system should perform well in critical situations to provide user most friendly experience in terms of handling the system with little or less failures.

PERFORMANCE

The system or software designed shouldn't slow down while performing. The system should be fast enough to produce results. Additionally, it should be able to perform well in case of more workloads. This attribute determines the overall functionality of the system in terms of resource consumption, response time and efficiency.

SUPPORTABILITY

This type of non-functional is concerned with characteristics such as maintainability, scalability of the solution. This includes considerations for the ability of the solution to be easily modified to accommodate enhancements and repairs.

PHYSICAL ENVIRONMENT

The environment includes external factors that impact how your system performs. For example, light condition, background, etc., may affect the speed or reliability of an application.

SECURITY REQUIREMENTS

Security is one of the most important non-functional requirements while building a system. Application handling user data or some other sensitive data should be responsible to handle and store it in most secure manner so that it should not fall in nefarious minds. It can be achieved by using passwords, key generations, account locking or biometric requirements.

RESOURCE REQUIREMENTS

Resource Requirements should be defined by the Project manager to establish the resources needed to execute work on the project

III.LITERATURE SURVEY

[1] An Intelligent Career Guidance System using Machine Learning:

Vignesh S, Shivani Priyanka C, Shree Manju H, Mythili K Information Technology

Most of the students across the world are always in confusion after they complete higher secondary and the stage where they have to choose an appropriate career path. At the age of 18, the students don't have adequate maturity to accurately know about what an individual has to follow in order to choose a congenial career path. As we pass through the stages, we realize that every student undergoes a series of doubts or thought processes on what to pursue after 12th which is the single tallest question. Then comes the next agony whether they have essential skills for the stream they've chosen. Our computerized career counselling system is used to predict the suitable department for an individual based on their skills assessed by an objective test. If one completes

their online assessment which we have created in our system, then automatically they will end up in choosing an appropriate course which will also reduce the failure rate by choosing a wrong career path.

[2] Information Technology Roadmap: A Strategic Business Tool

Cross functional companies with a complex organizational structure as for example matrix companies face with many challenges. To survive the intense competitive market environment an organization needs to have a permanent focus on business performance towards achieving targets under the stress of daily operations and dynamics. Even within one company, business units' targets may not be aligned in terms of resources, deadlines, competencies, and needs for IT systems, including digitalization, automation and analytics supported by Big data. Moreover, the needs for information technologies for particular functions can rise conflicts for other strategic themes and projects. High pace of changes can impact negatively alignment and communication among business units. In some cases, information technologies still can be considered just a supportive function instead of being a vital leverage for business maturity. The current paper suggests IT Roadmap as leverage for business maturity growth through improving business process transparency, inventing clarity in business expectations and establishing communication among business units.

[3] Influence of Digital Technology on Roadmap Development for Digital Business Transformation

In a highly competitive information economy, business structures require continuous introduction of innovation, effective information technology to ensure sustainable long-term market benefits, as well as their rational functioning. The implementation of the digital business model is one of the promising areas, which makes it possible to realize the activity of enterprises even more productively. The digital business model allows businesses to react more responsibly to the needs of potential buyers and customers, and also helps adapt and optimize business processes over a certain period of time to certain market conditions. That is why, the purpose of the article is to identify the peculiarities of the influence of digital technology on the transformation of existing business models of organizations. In view of this, an in-depth analysis of the main stages of the development of a roadmap for the digital transformation of business has been carried out; business process management software products and the most suitable ones have been examined. The article studies digital technologies in the context of enterprise business groups and reflects how relevant technologies affect the transformation of the existing linear business model into the digital business model and reflects the most significant effects for business.

[4] AI-Based Personalized E-Learning Systems: Issues, Challenges, and Solutions

A personalized e-learning system is effective in imparting enhanced learning to its users. As compared to a conventional e-learning system, which provides similar contents to each learner, a personalized learning system provides specific learning contents and assessments to the learners. Personalization is based on Artificial Intelligence (AI) based techniques in which appropriate contents for each learner are determined using the level of comprehension of the learner and the preferred modes of learning. This paper presents requirements and challenges for a personalized e-learning system. The paper is focused in elaborating four research questions, which are related to identifying key factors of personalized education, elaborating on state of the art research in the domain, utilizing benefits of AI in personalized education, and determining future research directions. The paper utilizes an in-depth survey of current research papers in answering these questions. It provides a comprehensive review of existing solutions in offering personalized e-learning solutions. It also elaborates on different learning models and learning theories, which are significant in providing personalized education. It proposes an efficient framework, which can offer personalized e-learning to each learner. The proposed framework includes five modules i.e Data Module, Adaptive Learning Module, Adaptable Learning Module,

Recommender Module, Content and Assessment Delivery Module. Our work also identifies significant directions for future research. The paper is beneficial for academicians and researchers in understanding the requirements of such a system, comprehending its methodologies, and identifying challenges which are needed to be addressed.

[5] RESUME SCREENING USING MACHINE LEARNING - MUNGI NAGA VENKATA SAI RAGHAVENDRA

Resume screening is the process of analyzing the resumes where the candidates apply for the different types of jobs where the company feel the tedious job to find the appropriate candidate due to the complexity in resumes formats since it has different styles. As a result, selecting applicants for the appropriate job within a company is a difficult task for recruiters. We can extract the key information from the CV using NLTK, Natural Language Processing (NLP) techniques to save time and effort. This system could work with a large number of resumes for classifying the right categories using different classifiers like KNN, SVM, MLP, LR. Furthermore, this system attempts to find the accuracy and performance of the proposed methodology and incorporate it in the IT firms and other regulations for the prevention of manual screening and establish a safe allocation of resources for the companies.

[6] REAL TIME RESUME SCREENING USING NLP AND TOKEN BASED INDEXING - 1Bussa Sai Sweshika, 2Golla DivyaSri, 3Madapati Aishwarya, 4K. PhaniSree

The goal of resume screening is to find the best candidates for a position. Our system is a resume ranking software, Input would be resumes and job descriptions, output is highly ranked candidate's resume and acquired instantly in real-time. We will be using Mong for string matching, Cosine Similarity, TF-IDF. The existing systems are simple and effective but are not robust in terms of accuracy, efficiency, and processing and could lead to inaccurate assumptions and loss of human potential. We propose a web application that aims to order the resumes, by intelligently reading job descriptions as input and comparing the resumes which fall into the category of given Job Descriptions. In order to match and rate candidates in real-time, the software provides a ranking after filtering and recommends the better resume for a given textual job description. The Advantages of the proposed system are Secured, Interpretability, High accuracy, Lightweight model & fast processing. It could be used in MNC's where multiple resumes must be screened every single day for multiple jobs.

[7] Resume Evaluation through Latent Dirichlet Allocation and Natural Language Processing for Effective Candidate

Selection - Vidhita Jagwani, Smit Meghani, Sudhir Dhage, Krishna Pai

With the increasing number of job applicants, automated resume rating has become a necessity for recruiters. In this paper, we propose a method for resume rating using Latent Dirichlet Allocation (LDA) and entity detection with SpaCy. The proposed method first extracts relevant entities such as education, experience, and skills from the resume using SpaCy's Named Entity Recognition (NER). The LDA model then uses these entities to rate the resume by assigning topic probabilities to each entity. Furthermore, we conduct a detailed analysis of the entity detection using SpaCy's NER and report its evaluation metrics. Using LDA, our proposed system breaks down resumes into latent topics and extracts meaningful semantic representations. With a vision to define our resume score to be more content-driven rather than a structure and keyword match driven, our model has achieved 77% accuracy with respect to only skills in consideration and an overall 82% accuracy with all attributes in consideration. (like college name, work experience, degree and skills).

[8]Smart Resume Analyser - Ms. Y. Sowjanya |Mareddy Keerthana |Pulluri Suneeksha | Dorgipati Sai Sri Harsha

The goal of resume screening is to identify the top applicants for a position and to inform users of their resume score and areas for improvement. The literature on existing approaches has been

analyzed, and it has been discovered that the traditional systems like manual screening may result in false assumptions and the wasting of human potential, but they lack robustness in terms of processing, accuracy and efficiency. To acquire accurate results, software must use machine learning and natural language processing techniques to match and rate the candidates in real-time by ranking their resumes. The input would be the applicants resumes and output would be a ranked candidate's resumes list on the admin side and suggestions on the user side. Instantaneous real-time output results are acquired by employing natural language processing techniques. In the proposed system authors used Cosine Similarity, TF-IDF and Mong techniques of NLP for string matching. This system has the following benefits: security, interpretability, high accuracy, lightweight model, and quick processing. It could be utilized in Multi national companies, government organizations, and administrative agencies where numerous resumes must be reviewed daily for several openings.

According to experimental findings, this system has a text parsing accuracy of 85% and a ranking accuracy of 92%.

[9]Automated Resume Screening Using Natural Language Processing - Dr. D. Lakshmi Padmaja1 , Ch. Vishnuvardhan2 , G. Rajeev3 , K. Nitish Sanjeev Kumar

The most qualified applicant for a position must be found through careful consideration of job applications, which is done during the Automated Evaluation of Resumes Using NLP stage of the hiring process. [1] Automated resume screening is now a practical alternative to the manual screening procedure because to developments in deep learning and natural language processing (NLP) [7]. In this paper, we examine a few contemporary methods for screening automated resumes. To increase the precision and effectiveness of the screening process, these approaches employ a variety of methods including hybrid deep learning frameworks, transfer learning, genetic algorithms, and multisource data. Also, some research investigates the use of job descriptions to improve resume screening precision. These research' experimental findings show that the suggested strategies are more effective than conventional ones. The results of this study can help human resource managers and recruiters automate the hiring process and efficiently and impartially identify viable applicants.

[10]Information Extraction From Free-Form CV Documents in Multiple Languages -DAVOR VUKADIN, ADRIAN SATJA KURDIJA , GORAN DELAČ AND MARIN ŠILIĆ .

This paper proposes two natural language processing models for extracting useful information from multilingual, unstructured (free form) CV documents. The model identifies the relevant document sections (personal information, education, employment, etc.) and the corresponding specific information at the lower hierarchy level (names, addresses, roles, skill competences, etc.). Our approach employs the transformer architecture and its multilingual implementation of the encoder part in the form of the BERT language model. The models are trained and tested on a large, manually annotated CV dataset, achieving high scores on standard accuracy measures. The proposed models exhibit important properties of end-to-end training and interpretability, which was investigated by visualizing the model attention and its vector representations.

[11]Recommendation for Jobs and Resume Analyzer Using NLP - Jasmit Gharat

Nowadays companies use ATS to scan resumes of the applying candidates. Thousands or even lakhs of candidates apply to the same position every time. With the help of ATS the company shortlists some candidates based on their relevant skills. Now the HR or the Recruiting team has to manually look at these resumes. This can be a tedious job for an HR after all he or she is also a human being. This system can be used to overcome this tedious task. Hr can just upload the resumes and this will extract all the relevant skills or data of the candidate and after which the HR can choose the best candidates suitable for the position. This will save a lot of time of the recruiting Team and can seriously eliminate the additional headache of reviewing the

resumes manually thereby increasing the efficiency of the company.

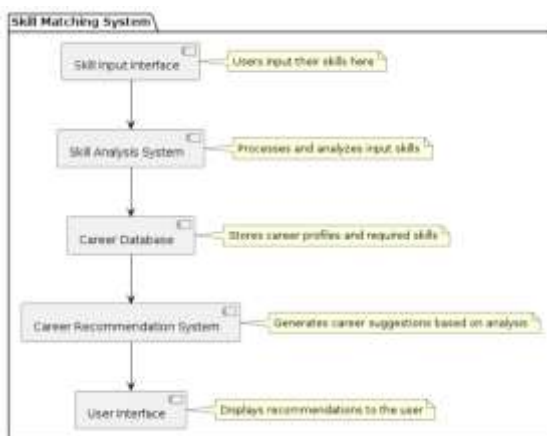
[12]AI Resume Analyzer - Ashvini Chavan, Nikita Tatewar, Pavina Naicker

In the contemporary landscape of employment, where the intersection of technology and workforce dynamics continually evolves, the "AI Resume Analyzer" emerges as a pioneering tool aimed at simplifying and enhancing the job-seeking process. With an emphasis on professionalism and innovation, this project represents a significant step forward in the domain of career placement and human resources. User engagement initiates with a robust registration and authentication process, ensuring security to our platform.

The crux of our AI Resume Analyzer is its job recommendation engine. With an intricate blend of collaborative filtering, content-based filtering, and hybrid recommender systems, it presents job opportunities that are a seamless fit with a candidate's skills and experience. This recommendation system operates dynamically to adapt to the everchanging job market, ensuring that the job opportunities presented remain relevant and reflective of the contemporary industry landscape. In light of the increasing emphasis on data security and privacy, we have implemented a robust framework to safeguard sensitive user information, complying with stringent data protection regulations.

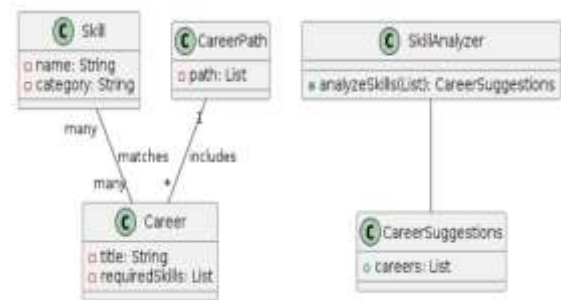
SYSTEM DESIGN

In System Design has divided into three types like GUI Designing, UML Designing with avails in development of project in facile way with different actor and its utilize case by utilize case diagram, flow of the project utilizing sequence, Class diagram gives information about different class in the project with methods that have to be utilized in the project if comes to our project our UML Will utilizable in this way The third and post import for the project in system design is Data base design where we endeavor to design data base predicated on the number of modules in our project.



SYSTEM OBJECT MODEL

System Object Model was intended to be used as a solution to many of the interoperability and reuse problems that occur while sharing class libraries between object-oriented and non-object-oriented languages. SOM allows for the creation of portable shrink-wrapped libraries. The class libraries can be created in a particular language, which can be accessed and used by other languages.



CLASS DIAGRAM

TECHNOLOGY/ALGORITHM USED:

Machine Learning (ML) and Natural Language Processing (NLP)

- Analyze skill-related data
- Extract meaningful information from text

Data Mining and Data Analytics

- Discover patterns and correlations
- Derive actionable insights

Graph Theory and Network Analysis

- Model relationships between skills, occupations, and industries
- Identify skill clusters and pathways

Recommendation Systems

- Match individuals with suitable career paths
- Hybrid approaches for personalized recommendations

IV.CONCLUSION

In conclusion, the correlation and matching of skills for careers is essential for individuals to thrive in the rapidly changing job market.

By identifying and developing skills that are in high demand and adaptable to new technologies, individuals can secure their career trajectory.

Leveraging tools like skills assessments and industry trends can help individuals align their skill sets with future job opportunities.

It is crucial for individuals to continuously upskill and reskill to remain relevant and competitive in an ever-evolving workforce landscape

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