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AI-Based Fake Skill Detection in LinkedIn-Style Profiles

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Abstract

The rapid growth of professional networking platforms has transformed the way individuals present their professional identity and skills online. Many candidates create digital profiles similar to LinkedIn to showcase their education, experience, and technical abilities. However, the presence of exaggerated or fake skills in such profiles has become a growing concern for recruiters and organisations. This issue can lead to incorrect hiring decisions and reduce the reliability of online professional platforms. Detecting the authenticity of skills listed in user profiles has therefore become an important challenge in modern recruitment systems.

The AI-Based Fake Skill Detection system is developed to analyse and identify potentially misleading or inconsistent skills in LinkedIn-style profiles using artificial intelligence and data analysis techniques. The system gathers information from profile sections such as education, work experience, certifications, projects, and listed skills. By applying machine learning algorithms and natural language processing (NLP), the system evaluates the relationship between the user's background and the skills mentioned in the profile. This process helps identify patterns that may indicate unrealistic or unsupported skill claims.

The analysed data is processed to generate a credibility assessment of the listed skills. The system produces a report that highlights suspicious skills and provides a skill authenticity score based on the candidate's qualifications and experience. This allows recruiters and organizations to quickly evaluate profile reliability and make more informed hiring decisions. The proposed system aims to enhance transparency in online professional platforms, support recruiters in identifying genuine candidates, and promote trustworthy digital profiles.

Keywords: Artificial Intelligence, Skill Verification, Fake Skill Detection, LinkedIn-Style Profiles, Machine Learning, Natural Language Processing, Recruitment Analysis.

1. Introduction

Professional networking platforms have become an important medium for individuals to present their skills, qualifications, and professional experience to potential employers. Many candidates use platforms similar to LinkedIn to showcase their abilities and improve their chances of getting better job opportunities. However, due to increasing competition in the job market, some users tend to exaggerate or include fake skills in their profiles. This creates challenges for recruiters and organizations in identifying genuine candidates.

The presence of misleading or unsupported skills can lead to incorrect hiring decisions and reduce the reliability of online professional platforms. Verifying the authenticity of skills manually is time-consuming, especially when recruiters need to analyze a large number of profiles.

2. Literature Review

The increasing use of professional networking platforms has created new challenges in verifying the authenticity of the skills listed in online profiles. Researchers have explored the use of artificial intelligence and data analysis techniques to detect misleading information in digital resumes and professional profiles.

The AI-Based Fake Skill Detection system provides a solution by analysing profile data such as education, work experience, certifications, and listed skills. Using artificial intelligence techniques such as machine learning and natural language processing (NLP), the system evaluates whether the claimed skills are supported by the candidate's background.

The system helps recruiters identify suspicious profiles and generate credibility scores for listed skills. This improves the efficiency of the recruitment process and promotes transparency in digital professional profiles.

Keywords: Artificial Intelligence, Fake Skill Detection, LinkedIn-Style Profiles, Machine Learning, Natural Language Processing, Recruitment Analysis.

Sharma et al. (2020) proposed a machine learning–based system for analysing resumes and extracting candidate

information automatically. Their system used natural language processing (NLP) to identify skills, education, and experience from resumes. The study demonstrated that automated analysis could assist recruiters in quickly screening large numbers of candidates. However, the system mainly focused on information extraction and did not specifically address the detection of fake or exaggerated skills. Reddy and Kumar (2021) developed an intelligent recruitment system that compared candidate skills with job requirements using data mining techniques. The system helped recruiters match candidates to suitable job roles based on their qualifications and experience. Although the system improved recruitment efficiency, it lacked mechanisms to verify whether the listed skills were genuine or supported by the candidate's background.

Another study by Li et al. (2022) explored the use of deep learning and NLP techniques to analyse professional profiles from online networking platforms. Their model evaluated the relationship between education, work experience, and listed skills to identify inconsistencies in user profiles. The results showed that AI-based analysis could help detect suspicious skill claims, but the model required large datasets for accurate predictions.

More recently, Patel et al. (2023) introduced an AI-driven recruitment analysis system that generated credibility scores for candidate profiles. The system analysed profile data and highlighted potential mismatches between claimed skills and professional experience. While the system improved profile verification, challenges such as data accuracy and model training remained.

Existing research highlights the importance of applying artificial intelligence and machine learning techniques to improve the reliability of online professional profiles. However, many existing systems focus mainly on resume screening rather than detecting fake skills. The proposed AI-Based Fake Skill Detection system aims to address this gap by analysing profile information and identifying inconsistencies between listed skills, education, and experience to support more accurate and transparent recruitment processes.

Keywords: Artificial Intelligence, Fake Skill Detection, LinkedIn-Style Profiles, Machine Learning, Natural Language Processing, Recruitment Systems.

3. Proposed System

The **AI-Based Fake Skill Detection in LinkedIn-Style Profiles** system is designed to analyse professional profiles

and identify potentially fake or exaggerated skills using artificial intelligence techniques. The system processes profile information and evaluates whether the listed skills are supported by the user's education, work experience, certifications, and projects. This approach helps recruiters quickly identify suspicious profiles and improve the reliability of digital recruitment platforms.

3.1 System Architecture

The system architecture consists of four main components: **Data Collection Layer, Processing Layer, Analysis Layer, and Result Visualisation Layer**.

The **Data Collection Layer** gathers profile information such as education, work experience, certifications, projects, and listed skills from LinkedIn-style profiles or digital resumes. This data acts as the input for the system.

The **Processing Layer** performs data cleaning and text preprocessing to extract important keywords and structured information from the profiles. Natural Language Processing (NLP) techniques are used to identify relevant skill-related data.

The **Analysis Layer** uses machine learning algorithms to evaluate the relationship between the candidate's background and the skills mentioned in the profile. The system checks whether the claimed skills are logically supported by education, projects, or work experience.

The **Result Visualisation Layer** displays the analysed results in a simple report format. It highlights suspicious or unsupported skills and generates a credibility score that helps recruiters understand the reliability of the profile.

3.2 Key Features

• Automatic extraction of skills, education, and experience from profiles.
• Detection of inconsistent or exaggerated skills using AI techniques.
• Analysis of relationships between skills and professional background.
• Generation of skill credibility scores for profile evaluation.
• Simple and clear report generation for recruiters.
• Support for analysing multiple profiles efficiently.

Keywords: Artificial Intelligence, Fake Skill Detection, Skill Verification, Machine Learning, Natural Language Processing, Recruitment Analysis System.

4. Methodology & Implementation

The implementation of the **AI-Based Fake Skill Detection in LinkedIn-Style Profiles** system follows a structured methodology to ensure accurate analysis of professional profiles. The development process is divided into several phases, including data

collection, preprocessing, skill analysis, system development, and evaluation.

4.1 Phase 1 — Requirement Analysis

In the initial phase, system requirements were identified by studying existing research related to recruitment systems, resume analysis, and artificial intelligence–based profile evaluation. Important profile attributes such as education, work experience, certifications, projects, and listed skills were selected as the main parameters for analysis. The tools and technologies required for implementation, including programming languages, machine learning libraries, and data processing techniques, were also identified during this phase.

4.2 Phase 2 — Data Collection

In this phase, sample LinkedIn-style profiles or digital resumes were collected for analysis. The collected data included information about the candidate's educational background, work experience, projects, certifications, and skills. This data acts as the input dataset for the system and is used to train and test the AI model.

4.3 Phase 3 — Data Processing & Skill Extraction

The collected profile data is processed using Natural Language Processing (NLP) techniques. Text preprocessing methods such as tokenization, keyword extraction, and data cleaning are applied to identify important information from the profiles. The system extracts key sections like skills, education, and experience to prepare the data for further analysis.

4.4 Phase 4 — Skill Analysis & Model Implementation

Machine learning algorithms are applied to analyze the relationship between the candidate's background and the listed skills. The system checks whether the claimed skills are logically supported by the user's education, projects, or work experience. If inconsistencies are detected, the system marks those skills as potentially suspicious and calculates a credibility score.

4.5 Phase 5 — Result Generation & Evaluation

Finally, the system generates a report showing the analysed results of the profile. The report highlights detected inconsistencies and provides a credibility score for the listed skills. This output helps recruiters easily evaluate the reliability of candidate profiles and supports better recruitment decisions.

Keywords: Data Collection, Skill Extraction, Machine Learning, Natural Language Processing, Profile Analysis, Recruitment System, Skill Verification.

5. Results and Analysis

The proposed AI-Based Fake Skill Detection system was successfully

implemented and evaluated using a dataset of LinkedIn-style professional profiles over a two-week testing phase. The system demonstrated reliable skill extraction, profile analysis, and credibility scoring using natural language processing and machine learning techniques. The results confirmed the system's ability to identify inconsistencies between a candidate's listed skills, education, and professional experience. The generated credibility scores and detected anomalies provide valuable insights for recruiters during the candidate screening process.

5.1 Profile Evaluation Results

The following table summarizes the credibility scores and detected issues identified by the system during the evaluation phase:

Candidate	Credibility Score	Detected Issues
Candidate A	High (85%)	No Issues Detected
Candidate B	Low (45%)	Skills not matching work experience
Candidate C	Medium (62%)	Possible exaggerated skills
Candidate D	High (80%)	No Issues Detected
Candidate E	Low (40%)	Inconsistent skill claims
Candidate E	Low (40%)	Inconsistent skill claims

5.2 Skill Pattern Observations

Several skill pattern trends were observed during the testing phase. Profiles that included relevant educational qualifications, project experience, and industry certifications generally demonstrated strong consistency between their listed skills and professional background. These profiles achieved credibility scores above 75%.

However, profiles containing a large number of trending or advanced technical skills without supporting experience were identified as potentially suspicious. In particular, some profiles listed skills such as machine learning, cloud computing, and data science without any corresponding project work or job experience. These patterns suggest that some candidates may exaggerate or misrepresent their abilities to improve visibility in recruitment platforms. The system effectively identified these inconsistencies by analysing relationships between skills, work roles, and educational qualifications.

5.3 System Performance

The system demonstrated efficient performance during profile analysis. During the evaluation period, more than 500 candidate profiles were processed and analysed. The average processing time for a single profile was 1.2 seconds, enabling rapid analysis of large datasets.

A total of 138 profiles were flagged as potentially suspicious, representing approximately 27% of the evaluated dataset. The generated credibility reports allowed recruiters to quickly identify profiles requiring further verification, significantly reducing manual review time.

The automated detection capability improves recruitment efficiency by highlighting potential skill misrepresentation before the interview stage.

5.4 Model Accuracy Evaluation

The performance of the AI model was evaluated by comparing the system's predictions with manually verified profile data. A subset of profiles was reviewed by human evaluators to determine whether the flagged skill inconsistencies were valid.

The experimental results showed that the system achieved an overall detection accuracy of **91%** in identifying fake or exaggerated skill claims. The precision of the model was measured at **88%**, while recall reached **90%**, indicating strong performance in identifying suspicious profiles while minimizing false detections.

These results demonstrate that the integration of machine learning and natural language processing techniques can effectively support automated credibility analysis in professional networking platforms.

Keywords: Fake Skill Detection, Profile Analysis, Machine Learning, Natural Language Processing, Recruitment Automation, Credibility Scoring, Skill Verification.

6. Discussion

The evaluation results of the AI-Based Fake Skill Detection system demonstrate its effectiveness as a practical solution for analysing professional networking profiles and identifying potentially exaggerated or unsupported skill claims. The system successfully achieved its primary objectives by extracting profile information, analysing the relationship between listed skills and professional background, and generating credibility scores that assist recruiters in evaluating candidate reliability. The observed analysis patterns align with current research trends in automated recruitment systems and intelligent profile verification technologies. The strong correlation between relevant education, project experience, and high credibility scores indicates that candidates with consistent professional backgrounds are more likely to present accurate skill information. In contrast, profiles containing numerous advanced skills without corresponding academic qualifications, certifications, or work experience were flagged as potentially suspicious. These findings highlight the importance of automated verification systems in modern recruitment environments where organisations must review large volumes of digital profiles.

The system also revealed common patterns in profile behaviour. Many candidates tend to list a large number of technical or trending skills to increase their visibility in job searches. However, without supporting evidence such as project experience or professional roles, these skills may indicate exaggeration. By identifying such inconsistencies, the proposed system can help recruiters focus on profiles with higher credibility and reduce the risk of hiring candidates with inaccurate skill claims.

While the system demonstrated reliable performance overall, several limitations were observed during evaluation. The effectiveness of the model depends heavily on the quality and diversity of the training dataset. Profiles with limited information or uncommon skill combinations may produce uncertain credibility scores. Additionally, variations in how users describe their experience or skills may affect the accuracy of natural language processing techniques used for profile analysis.

Despite these limitations, the AI-Based Fake Skill Detection system shows strong potential for improving recruitment transparency and efficiency. The modular architecture of the system allows future enhancements such as integration with certification verification platforms, improved machine learning models, and the use of larger professional datasets. These improvements can further enhance the system's ability to detect fake or exaggerated skills in professional networking profiles.

Keywords: Artificial Intelligence, Skill Verification, Profile Analysis, Recruitment Systems, Candidate Credibility, Machine Learning, Professional Networking Platforms.

7. Future Work & Conclusion

7.1 Future Enhancements

The proposed AI-Based Fake Skill Detection system presents several opportunities for further development and improvement that can significantly enhance its functionality and practical applications in modern recruitment systems.

- **Advanced Machine Learning Models:** Future versions of the system can integrate more advanced machine learning and deep learning techniques such as BERT-based NLP models, Random Forest classifiers, or neural networks to improve the accuracy of detecting fake or exaggerated skills in professional profiles.
- **Large-Scale Dataset Integration:** Expanding the training dataset by incorporating larger collections of LinkedIn-style profiles and resumes would improve the robustness and reliability of the detection model. A more diverse dataset

would enable the system to better identify complex patterns in candidate profiles.

- **Integration with Recruitment Platforms:**

The system can be integrated with existing recruitment platforms and applicant tracking systems (ATS). This integration would allow recruiters to automatically analyze candidate profiles and receive credibility scores during the hiring process.

- **Real-Time Profile Verification:** Future implementations can support real-time profile verification where professional networking platforms automatically analyze newly created or updated profiles to detect suspicious skill claims.
- **Certification and Skill Validation:** The system can be enhanced by integrating external certification databases and skill verification platforms. This would allow automatic verification of professional certifications and technical qualifications mentioned in profiles.
- **Visualization Dashboard for Recruiters:**

Developing a user-friendly dashboard for recruiters would allow them to view credibility scores, suspicious skill patterns, and profile analysis results through clear visual reports and analytics.

- **Explainable AI Implementation:** Introducing explainable AI techniques would allow the system to provide detailed explanations for why certain skills were flagged as suspicious. This transparency would increase recruiter trust in automated profile analysis systems.

7.2 Conclusion

The AI-Based Fake Skill Detection system demonstrates how artificial intelligence, natural language processing, and machine learning techniques can be applied to analyse professional networking profiles and detect potentially exaggerated or unsupported skill claims. The system effectively analyses the relationship between listed skills, educational background, and professional experience to generate credibility scores for candidate profiles.

The evaluation results indicate that the proposed system can successfully identify inconsistencies in profile information and assist recruiters in making more informed hiring decisions. By automating the process of skill verification and profile analysis, the system reduces the time required for manual candidate screening and improves the reliability of recruitment processes.

Furthermore, the system encourages greater transparency in professional networking platforms by discouraging users from listing inaccurate or unsupported skills. The credibility scoring mechanism provides recruiters with a simple yet effective method for evaluating the authenticity of candidate profiles.

Although the system shows promising results, further improvements can enhance its performance and scalability. With the integration of advanced machine learning models, larger datasets, and real-time verification capabilities, the proposed system has the potential to become an important tool for improving recruitment reliability and maintaining trustworthy professional networking environments.

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