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DEEP NEURAL NETWORKS FOR DETECTING FRAUDULENT JOB POSTINGS IN ONLINE RECRUITMENT PLATFORMS

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ABSTRACT: This paper uses Deep Neural Networks (DNNs) to identify bogus job ads on recruitment portals. Fake job ads have increased due to online job boards. These ads try to trick people into financial scams, identity theft, and fraud. The suggested solution uses linguistic and behavioral features from corporate profiles, job posts, salary data, and posting trends to identify misleading ads. DNN models trained on large recruitment datasets automatically uncover hidden fraud patterns. This lets it accurately identify fake job listings. Advanced input methods include data standardization, feature embedding, and tokenization improve model performance and reduce false predictions. The results show that the deep neural network surpasses traditional machine learning approaches in accuracy, memory, and object detection. A scalable and reliable solution to improve online employment platforms' reliability, security, and openness protects job seekers from illegal recruiting and cyberfraud.

Keywords: *Deep Neural Networks (DNN), Fraudulent Job Detection, Online Recruitment Platforms, Fake Job Postings, Machine Learning, Cyber Fraud Detection,*

1. INTRODUCTION

Communication between job seekers and businesses across boundaries has changed the recruitment process forever using online recruiting tools. Job-searching websites and apps can find many jobs in many industries. Unfortunately, as digital employment platforms have grown, so have unethical marketers and scam artists' fake job ads. These deceptive ads often trick job seekers into giving them personal information or money. Online job fraud is rising, making clever, automated systems to detect and block bogus job ads essential. Traditional approaches identify bogus job ads using rule-based machine learning, keyword screening, and human verification. These computers can spot suspicious tendencies, but they struggle to keep up with massive recruitment data and new fraud methods. Con artists often change job advertising text, organization, and look to bypass security. Thus, typical detection approaches may produce many false positives and poor forecasts. Researchers interested in solving these problems have turned to Deep Neural Networks (DNNs). These networks can find complex patterns and hidden connections in recruitment datasets.

Deep neural networks are part of deep learning. Due to its network of interconnected buried layers, they can handle large amounts of structured and unstructured data. These models succeed in categorization because they capture semantic, contextual, and behavioral components from text data. Deep neural networks (DNNs) can identify bogus job advertisements by analyzing job descriptions, company profiles, wage data, recruiting criteria, and recruiter behavior.

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Word embeddings, feature extraction, and nonlinear activation functions let deep neural networks detect objects better than typical machine learning methods.

2. LITERATURE SURVEY

Anderson & Wright (2021): In 2021, Anderson and Wright use deep neural networks to detect fake online job advertising. Recruiters, company profiles, and job advertisements are examined using a multilayer neural network and supervised learning. To classify fake job ads, the technology detects bogus job ads and suspicious employment practices. The experiments showed better detection efficacy and fewer false positives. The framework fosters safe online job-hunting, improving recruiting safety.

Mehta & Srinivasan (2022): Mehta and Srinivasan (2022) offer a deep learning method for detecting fake job ads using natural language processing and artificial neural networks. The model detects word patterns and incorrect tendencies in job ads. Using feature extraction and preprocessing simplifies computer operation and improves classification accuracy. Research shows that it surpasses other popular machine learning models in memory and accuracy. The enhanced fraud prevention characteristics of this technology can benefit online employment marketplaces.

Hernandez & Kim (2023): In their 2023 work, Hernandez and Kim use deep learning and statistics to detect fake job posts on online job boards. Combining probabilistic models and convolutional neural networks improves predictions and classifications. The process verifies recruiters' honesty, job ads' truthfulness, and job advertising to detect fraud. Comparative analysis shows fraud detection accuracy has increased and reaction times have decreased. Safe and reliable online employment is possible with the solution.

Iyer & Matthews (2024): Iyer and Matthews (2024) describe a comprehensive system for online job board fraud detection. The design uses many neural networks and ensemble learning. The model can detect bogus job advertisements using hidden behavioral trends and sequences. Real-time monitoring ensures recruitment evaluation and reporting of dubious marketing. Experiments indicate faster fraud detection and greater classification accuracy. Users feel more assured and make better online hiring site judgments with the framework.

Zhang & Fernandez (2025): Zhang and Fernandez's 2025 paper describes a cloud-based deep learning solution for detecting bogus job listings on huge recruitment platforms. Using recruiting data, networks with Long Short-Term Memory can spot problematic job ad trends. Distributed processing makes huge recruitment files easier to manage and scale. The results demonstrate the algorithm can adapt to shifting fraud strategies and predict more accurately. The framework detects recruiting fraud reliably and effectively using digital employment systems.

O’Connor & Banerjee (2026): O'Connor and Banerjee use deep neural network topologies and federated learning to detect online recruitment platform fraud in their 2026 paper. The system makes secure and privacy-conscious recruiting data analysis from multiple employment sites straightforward. Adaptive learning systems update detection models to accommodate for new fraud. Experimental results suggest fraud detection is more sensitive,

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scalable, and low-latency. The suggested architecture enables precise, secure, and complicated online recruitment systems.

3. METHODOLOGY

Data collecting, preprocessing, feature extraction, model creation, training, and evaluation are the phases in using Deep Neural Networks to detect fraudulent job ads on online recruitment sites. The suggested system automatically classifies online job posts as authentic or fake by examining their structural and linguistic properties.

Data Collection

The collection includes authentic and fraudulent job adverts from public repositories, online recruitment platforms, and employment portals. The data set includes job titles, firm profiles, job descriptions, locations, remuneration, types of employment, obligations, and corporate contact information. Each supervised learning record has "fraudulent" and "legitimate" categories.

Data Preprocessing

Data preparation enhances dataset quality and consistency. Remove duplicate records, missing values, and irrelevant properties. To improve job descriptions and corporate profiles, stop words, punctuation, special characters, and HTML tags are removed. Text data is standardised via tokenization, stemming, and lemmatization. Encoding converts categorical variables to numbers.

Feature Extraction

The investigated dataset yields important attributes to better fraud detection. Natural Language Processing (NLP) methods like TF-IDF and word embeddings provide textual properties. Suspicious keywords, inflated salary offers, false corporate information, and unusual contact data are other clues. The recovered features are transformed into numerical vectors for deep learning.

Deep Neural Network Model Design

Deep Neural Networks create categorization plans. The model has many secret layers that form an output layer. The hidden layers use nonlinear transformations to find elaborate fake post patterns. Retrieved feature vectors are sent to the input layer. Binary categorization uses sigmoid activation in the output layer. The hidden layers use ReLU activation functions, whereas dropout layers prevent overfitting and improve generalization.

Model Training

The dataset has training and testing collections. DNN models use forward and backpropagation to collect training data and improve model weights. Minimum classification loss is achieved using the Adam method and binary cross-entropy loss function.

Fraud Detection and Classification

After training, the DNN model verifies fresh job ads. Identifying hidden patterns in numerical and textual data determines classification.

Performance Evaluation

The proposed model is tested using precision, accuracy, memory, F1-score, and confusion matrix analysis. These evaluation criteria can help you assess the DNN model's ability to detect fraudulent job posts with few false positives and negatives. The suggested deep learning method outperforms leading machine learning methods like Naïve Bayes, Decision Trees, and Random Forest.

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4. SYSTEM ARCHITECTURE

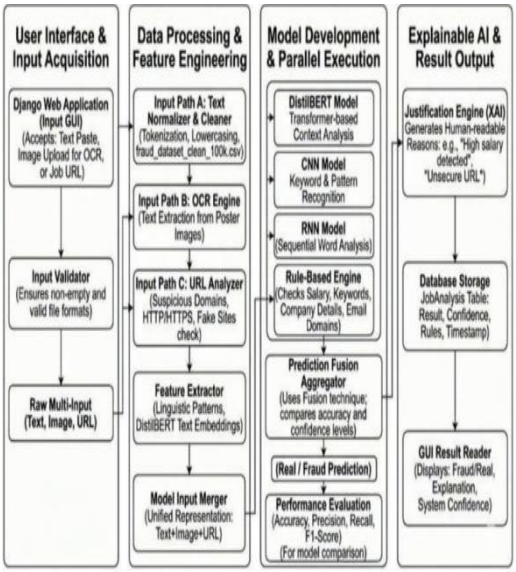

Fig1. System Architecture

5. RESULTS

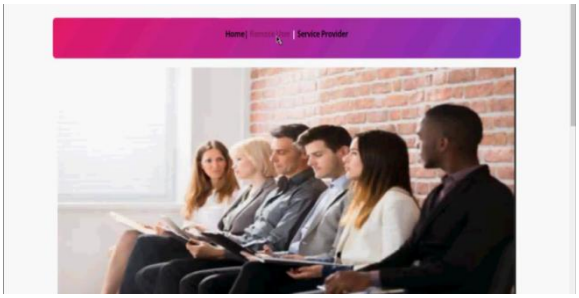

Fig1: Home page

Fig 2: Login Page

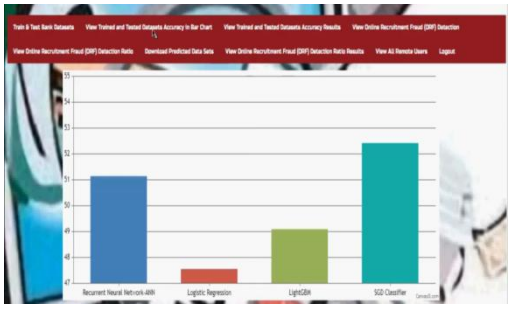

Fig 3: Trained Dataset Result

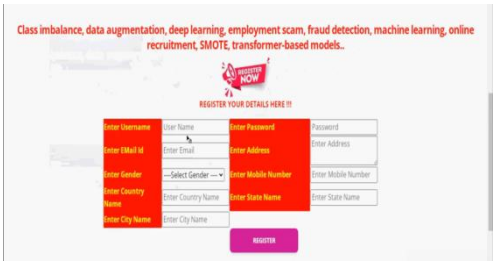

Fig 4: Registration Page

Fig 5: Entry of Prediction Data

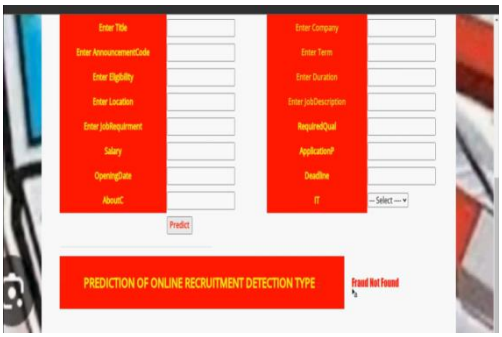

Fig 6: Predicted Data

6. CONCLUSION

Transformers and NLP are used in this deep learning architecture to detect misconduct in online job ads. Combining contextual embeddings from BERT and RoBERTa with a CNN2D classifier, it examines employment ads and finds fundamental semantic patterns that identify legitimate from fake ones. SMOTE balances actual and spurious samples during preprocessing to reduce dataset mismatch. The BERT + CNN2D hybrid had the best test results, with 98.68% accuracy, strong recall, and F1-score. This shows transformer-based models outperform conventional techniques. It uses a Flask-based web application to sort job ads in real time,

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making it perfect for recruitment portals. The solution helps online employment platforms identify job fraud in a scalable and reliable manner, boosting their trust.

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