

# Smart Detection of Fraudulent Online Job Posting Using Machine Learning

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**Abstract:** The rapid growth of online recruitment platforms has significantly simplified the hiring process but has also led to a sharp rise in fraudulent job postings. Such deceptive advertisements exploit job seekers by extracting sensitive information or financial payments under false pretenses. Manual verification of job postings is impractical at scale, necessitating automated detection mechanisms. This paper proposes a machine learning-based framework for the intelligent detection of fraudulent online job advertisements. The Employment Scam Aegean Dataset (EMSCAD) is used as the benchmark dataset. Natural Language Processing (NLP) techniques with Term Frequency-Inverse Document Frequency (TF-IDF) are employed for textual feature extraction. To address class imbalance, SMOTE and ADASYN oversampling techniques are applied. Multiple classifiers including Random Forest, Gradient Boosting, XGBoost, and K-Nearest Neighbors are trained and evaluated. Experimental results show that Random Forest combined with SMOTE achieves the best balance between accuracy and fraud detection capability. The proposed approach provides a scalable and reliable solution for improving the safety and trustworthiness of online recruitment systems.

**Keywords:** Fraud Detection, Machine Learning, Natural Language Processing, Online Recruitment, SMOTE, TF-IDF.