



# Job Matching – A Neural Network Approach

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Situation

The job market is highly competitive, with both job seekers and recruiters facing challenges in accurately matching resumes to job descriptions. Traditional methods like keyword and semantic matching often fall short due to their inability to handle the task's complexity efficiently.

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Task

The project aimed to develop a novel neural network approach utilizing natural language processing (NLP) and deep learning algorithms. This approach seeks to automate the resume-job description matching process, reducing manual effort and increasing the accuracy of matches.

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Action

A dataset of job descriptions and resumes was compiled, and a neural network algorithm was trained to match resumes to job descriptions.

Various models (CNN, RNN, LSTM, BILSTM) were evaluated, with a focus on NLP techniques for feature extraction and classification.

The algorithm's effectiveness was assessed using metrics like accuracy, precision, recall, and F1 score.

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Results

The neural network approach demonstrated a significant improvement in matching efficiency, with accuracy rates increasing from 84% to 96%.

This method streamlined the hiring process, benefiting both job seekers by improving their chances of being matched to suitable positions and recruiters by reducing the time required for manual matching.

## • Leveraged Knowledge •

Natural Language Processing (NLP): Used to analyze the text data of resumes and job descriptions.

Deep Learning Algorithms: Specifically CNN, RNN, LSTM, BiLSTM for model training and evaluation.

Data Preprocessing: Including cleaning, tokenizing, and lemmatizing the dataset.

Feature Extraction : Utilized Word Embedding, TF-IDF, and Word2vec techniques.

Model Evaluation: Employed accuracy, precision, recall, and F1 score as metrics.

Software Development: Implementation of neural network models and algorithm optimization.

# Project Analysis

	POSITIVE	NEGATIVE
INTERNAL	<b>STRENGTH</b> <ul style="list-style-type: none"><li>› Innovative use of neural network and NLP techniques.</li><li>› High accuracy in matching, significantly improving over traditional methods.</li><li>› Custom Word2vec model tailored to project needs.</li></ul>	<b>WEAKNESS</b> <ul style="list-style-type: none"><li>› Dependency on quality and quantity of the dataset for training.</li><li>› Complexity of neural network models can make them difficult to interpret and adjust.</li></ul>
EXTERNAL	<b>OPPORTUNITY</b> <ul style="list-style-type: none"><li>› Expansion to different industries and job markets.</li><li>› Potential for real-time matching applications and integrations with job boards or HR software.</li></ul>	<b>THREAT</b> <ul style="list-style-type: none"><li>› Rapid evolution of technology in NLP and AI could require frequent model updates.</li><li>› Competition from established HR tech companies with more resources for development and marketing.</li></ul>



**Thank You**