

EvalHire: A Unified Platform for Job-Specific Candidate Screening and Preparation

Mr. Md. Abul Kalam*¹, Trisha Jakka*², Rumandla Akshay Kumar*³, Manasa Bathula*⁴

*¹ Assistant Professor Of Department Of CSE (AI & ML) Of ACE Engineering College, India.

*^{2,3,4} Students Of Department Of CSE (AI & ML) Of ACE Engineering College, India.

ABSTRACT

The current hiring process is full of problems, making it hard for recruiters to handle a lot of applications by hand and leaving job seekers without the right tools to prepare for specific roles. To fix this, we're introducing a "**EvalHire: Unified Platform for Job-Specific Candidate Screening and Preparation**". This smart system is designed to make the hiring process smoother and better. Built on the MERN stack, the platform uses advanced Generative AI and Natural Language Processing through LangChain and Transformer models. For job candidates, the system includes a semantic resume analyzer that gives useful feedback based on job descriptions and a dynamic AI-powered mock interview coach that offers in-depth performance reviews. Recruiters get a comprehensive dashboard that brings all this data together, helping them make faster, more informed, and fairer initial screening decisions. This project aims to build a connected environment that connects how candidates prepare with how recruiters evaluate, creating a more efficient and open job market.

Keywords: Generative AI, NLP, Semantic Resume Matching, Transformer Models, LangChain, MERN Stack, AI Mock Interview, Recruitment Automation

I. INTRODUCTION

Recruitment is one of the most important but also one of the busiest tasks in any company. As businesses grow and more people apply for jobs, hiring teams find it harder to find the right people from a large number of applicants. Old ways of hiring depend a lot on checking resumes by hand and using simple tools, which often lead to problems like delays, unfair treatment, and not matching skills with job needs. At the same time, job seekers don't get enough help or clear information to get ready for a specific position. To solve these issues, new technologies like AI, Machine Learning, and Natural Language Processing have helped create smart hiring systems that make the process faster and more efficient. Our project, "**EvalHire: A Unified Platform for Job-Specific Candidate Screening and Preparation**", brings these technologies together in one place for both recruiters and job seekers. The system uses advanced techniques like semantic analysis, AI that can create content, and models based on transformers to review resumes, make job-specific practice interviews, and give detailed feedback. The Candidate Module helps job seekers improve their skills through AI-powered resume checks and personal interview training. The Recruiter Module includes a main screen where recruiters can see candidate profiles, how well they match the job, and insights from interviews, making the hiring process quicker and more based on facts. This single platform makes the most time-consuming parts of hiring automatic while making the process fairer and more open. By matching what job seekers are preparing with what employers are looking for, the platform helps connect job seekers and employers better, making the whole recruitment process more effective.

II. BACKGROUND OF THE PROJECT

Recruitment is a key part of growing a company, but it often faces problems like slow processes, biased decisions, and not using enough technology. Recruiters usually get a lot of applications for one job, which makes checking each one by hand slow and easy to make mistakes. Most current systems that help with hiring, like Applicant Tracking Systems, work by matching keywords, but they don't understand the real meaning behind a candidate's experience. This can cause good people to be turned away.

For job seekers, it can be hard to see how their skills match what's needed for the job, and they often don't get personalized help to prepare for interviews. Many tools give general advice and don't look at individual needs, so skill gaps go unnoticed. Also, the tools that help candidates prepare aren't well connected to the systems recruiters use, which means there's no real feedback loop. This gap led to the creation of a new platform called "**EvalHire: A Unified Platform for Job-Specific Candidate Screening and Preparation**". This platform brings everything together so candidates can evaluate themselves and improve, while recruiters get better, AI-powered insights about how well a candidate fits the job. By connecting these two sides, the system makes the hiring process more open, efficient, and fair, helping it be more based on real data and less influenced by bias.

III. LITERATURE REVIEW

1. Title: AI-Powered Resume Screening Using Natural Language Processing

Authors: A. Sharma, R. Patel, and S. Bansal (2021)

This paper introduced an automated resume screening model that uses Natural Language Processing (NLP) to solve problems with the slow and error-prone process of hiring by hand. The model used Named Entity Recognition (NER) to pull out key details from resumes like skills, education, and work experience. It then compared these details with job descriptions using TF-IDF and cosine similarity to find the best matches. Although this method worked better than just looking for exact keywords, it didn't fully understand the meaning behind words or the specific needs of different roles, which sometimes led to only partial matches. The study highlighted how important it is to use semantic matching in hiring and showed how AI can make the screening process faster and more effective. These results helped create our Semantic Resume Analyzer, which uses transformer-based embeddings to better understand context and give candidates more helpful feedback.

2. Title: Automated Interview Evaluation System Using Machine Learning

Authors: P. Verma and K. Srinivasan (2022)

This study introduced a machine learning approach to automatically assess candidates during interviews by analyzing their speech and facial expressions. The system used Mel-Frequency Cepstral Coefficients (MFCC) to extract audio features and applied Convolutional Neural Networks (CNNs) to recognize emotions in real time based on facial expressions. The goal was to measure aspects like confidence, fluency, and stress to help recruiters during virtual interviews. The findings indicated that combining audio and visual signals can effectively support early candidate screening with high accuracy. However, the model mainly focused on emotional and vocal clues and didn't take into account the quality of the content or how well the candidate's answers relate to the job requirements. The research highlighted the potential of AI in evaluating behavioral traits during interviews, which directly inspired our AI Mock Interview Coach. This tool builds on those ideas by combining speech analysis with understanding the meaning of what's said and offering relevant feedback in context.

3. Title: Intelligent Applicant Tracking System Using BERT Embeddings

Authors: M. Li and H. Wang (2020)

This paper presented an improved Applicant Tracking System (ATS) that used BERT-based contextual embeddings to better understand the meaning shared between resumes and job descriptions. The model was able to pick up on the real relationships between job roles, which helped reduce errors that happened because of keyword-based screening. By using transformer architectures, the system performed well in sorting resumes and predicting how well a candidate matches a job. However, the model needed a lot of computing power and big datasets to work properly, which made it

hard to use in different industries. Also, the system wasn't clear about how it came up with its scores, which led to worries about fairness and how easy it is to understand. The study showed how powerful deep contextual language models can be in hiring, but also highlighted the importance of making AI systems explainable and fair—key features of our Recruiter Dashboard, which includes tools to reduce bias and show how scores are calculated.

4. Title: AI-Based Virtual Interview Assistant Using Generative Models

Authors: S. Das, T. Mukherjee, and L. Singh (2023)

This study introduced a virtual interview helper built with Generative AI that carried out text-based practice interviews. It used models similar to GPT to create interview questions tailored to specific fields and assessed how well candidates answered by looking at the meaning of their responses and their emotional tone. The system created realistic interview situations and gave quick feedback, showing how conversational AI can help people prepare for interviews. However, the system only worked with text, didn't analyze speech or tone, and gave little numerical feedback for hiring managers.

These results led to the creation of our AI Mock Interview Coach, which builds on this idea by adding speech recognition, tone analysis, and multi-mode evaluation to offer detailed feedback for both job seekers and recruiters.

5. Title: Zara: LLM-based Candidate Interview Feedback System

Authors: Yazdani (2025)

The author suggests a system that uses large language models to give mock interview feedback. This system is designed to simulate job-specific interviews and provide structured, automated feedback using Retrieval-Augmented Generation. It creates interview questions based on the specific job requirements and evaluates how well candidates answer, focusing on the context of their responses rather than just looking for certain keywords. By including job descriptions in the feedback process, the system offers tailored advice for improvement. This approach lessens the need for human interview coaches while still keeping the quality of feedback high. The system is built to work well across various types of jobs and can be adapted easily. The study shows how effective large language models can be in helping people prepare for interviews. It also shows how generative AI can help candidates keep improving their skills over time. This method makes interview practice more widely available and ensures it's more consistent. The research supports the use of AI in mock interview features within larger recruitment systems.

6. Title: MWCF: Multi-Modal Window-Consistency Fusion for AVI Scoring

Authors: Lv et al. (2024)

The researchers present a multi-modal approach for automatically scoring video interviews. The system combines audio, visual, and language data using a window-based method that ensures consistency. It keeps the timing aligned across all types of data to maintain a clear and accurate analysis. There's also a module that helps create relevant topics, making the evaluation more context-aware. The model is designed to assess soft skills during interviews. The experiments show that this system performs better than previous methods. The use of attention mechanisms helps explain why certain scores are given, making the process more transparent. This framework improves the reliability of multi-modal evaluations. It also tackles common issues in automated interview scoring. This study contributes to making multi-modal AI more explainable in hiring systems.

7. Title: AI-Driven Semantic Similarity-Based Job Matching

Authors: Aijam and Al-Raweshidy (2025)

This paper introduces a method that uses semantic similarity to match job seekers with suitable positions automatically. The researchers use language embeddings that consider the context of words to represent both resumes and job descriptions. The system looks at the meaning behind the text rather than just matching keywords. A Python-based version of the system shows that it works well in real-life situations. The method helps improve how well candidates match job requirements. Testing in various fields shows that it performs well consistently. Semantic models tend to do better than traditional keyword-focused systems used in hiring. This approach also helps reduce bias from strict filtering rules. It promotes fairness by finding candidates who are qualified in a meaningful way. This research encourages the use of semantic matching in smart hiring platforms.

8. Title: Resume2Vec: Transformer-based Resume Embeddings for Matching**Authors:** Xiao et al. (2025)

The researchers suggest Resume2Vec, a framework based on transformers that helps match resumes with job descriptions in a meaningful way. The system uses different versions of BERT and RoBERTa to create embeddings that understand the context of words. Both resumes and job postings are placed in the same semantic space, allowing for better comparison. Instead of relying on exact keywords, the system uses cosine similarity to rank candidates, which captures the actual meaning behind the text. This method better reflects the real connections between a candidate's skills and what a job requires. The experiments show that this approach improves ranking accuracy significantly. The results show a 15.85% increase in nDCG compared to traditional systems that use keyword matching. The method also matches what human recruiters typically look for, reducing the chance of rejecting good candidates because of minor keyword differences. Overall, this study proves that using transformers for semantic matching in hiring can be very effective.

9. Title: AI Hiring with LLMs: Multi-Agent Explainable Screening**Authors:** Lo et al. (2025)

The authors suggest a system that uses multiple AI agents working together with large language models to make the candidate screening process more explainable. The system has different agents that handle tasks like pulling out important information, assessing candidates, summarizing their profiles, and giving scores. This system uses a method called Retrieval-Augmented Generation, which helps the AI understand the context better during the screening process. The system is built in a way that makes each step of the decision-making process clear and visible. The AI provides intermediate explanations that help users understand how it arrives at its decisions. The results of experiments show that the AI's choices are in line with what human recruiters would do. This system builds trust in the automated hiring process. The approach tackles the problem of unclear decision-making that is often seen in black-box AI models. It allows for hiring automation that is both scalable and easy to understand. This research helps in creating dashboards for recruiters that are more transparent and explainable.

10. Title: Fairness in AI-Driven Recruitment**Authors:** Mujtaba and Mahapatra (2024)

This survey looks closely at the fairness issues in AI systems used for hiring. The authors look at where bias comes from in different steps of the hiring process, like reviewing resumes and evaluating interviews. They go into detail about different ways to measure fairness and methods to reduce bias. The study shows that there are inconsistencies in how fairness is measured and used in AI for hiring. It points out that transparency and the ability to check how systems work are big problems in current systems. The survey also highlights how common demographic bias is in automated hiring tools. The authors stress the need for standard ways to evaluate AI systems and for ethical practices in AI development. They offer suggestions for creating hiring processes that are clear and can be held accountable. The paper makes it clear that fairness is a key requirement, not something that can be ignored. This work gives important guidance for building responsible AI systems for hiring.

COMPARATIVE ANALYSIS OF EXISTING AI-DRIVEN RECRUITMENT AND CANDIDATE PREPARATION SYSTEMS:

S.No	Author(s)	Title	Methodology Used	Findings from the Reference Paper
1	A. Sharma, R. Patel, S. Bansal.	AI-Powered Resume Screening Using Natural Language Processing	NLP, Named Entity Recognition (NER), TF-IDF, Cosine Similarity	Helps match resumes to jobs better than just looking for keywords; shows how important it is to understand meaning, but it doesn't fully grasp context, which is why models like transformers are used for deeper semantic resume analysis.
2	P. Verma, K. Srinivasan.	Automated Interview Evaluation System Using Machine Learning	MFCC Audio Feature Extraction, CNNbased Facial Emotion Recognition	Shows good ability to evaluate interviews early on by looking at audio and video clues; has strong skill in assessing behavior but doesn't check if the content is relevant, which affects how multimodal interviews are designed.
3	M. Li, H. Wang	Intelligent Applicant Tracking System Using BERT Embeddings	BERT-based Transformer Embeddings, Semantic Similarity Scoring	Gets high accuracy in ranking resumes by understanding the meaning behind job roles; however, it raises issues with scaling, transparency, and fairness, highlighting the need for explainable AI in resume screening systems.
4	S. Das, T. Mukherjee, L. Singh	AI-Based Virtual Interview Assistant Using Generative Models	Generative AI (GPT-like Models), Semantic Scoring, Sentiment Analysis	Enables realistic text-based mock interviews with instant feedback; limited to text-only interaction, motivating multimodal and speech-integrated interview coaching systems.
5	Yazdani	Zara: LLMbased Candidate Interview Feedback System	Large Language Models (LLMs), RetrievalAugmented Generation (RAG)	Offers automated, job-focused mock interviews with organized feedback; helps candidates prepare better; ensures scalability and consistency through evaluations powered by large language models.
6	Lv et al.	MWCF: MultiModal WindowConsistency Fusion for AVI Scoring	Multi-modal Fusion (Audio, Visual, Text), Temporal Consistency Models	Helps make the scoring of automated video interviews more accurate and easier to understand by keeping the timing consistent across different types of data.
7	Aijam, AlRaweshidy	AI-Driven Semantic SimilarityBased Job Matching	Contextual Embeddings, Semantic Similarity Models	Beats keyword-focused ATS methods; enhances reliability and fairness in matching candidates with jobs across different fields.

8	Xiao et al.	Resume2Vec: Transformer-based Resume Embeddings for Matching	Transformer Models (BERT, RoBERTa), Cosine Similarity	Improves by 15.85% in nDCG compared to keyword-based ATS systems, allowing for more precise matching between job candidates and job postings based on meaning.
9	Lo et al.	AI Hiring with LLMs: MultiAgent Explainable Screening	Multi-Agent LLM Architecture, RetrievalAugmented Generation	Improves clarity and understanding in automated screening processes, ensuring that AI decisions match the judgment of human recruiters.
10	Mujtaba, Mahapatra.	Fairness in AIDriven Recruitment: A Survey	Bias Analysis Frameworks, Fairness Metrics Review	Finds where biases come from in AI used for hiring; highlights the importance of being open, able to check the system, and making sure the AI used for hiring is fair and follows ethical standards.

Table 1: Review of Existing Research on AI-Based Candidate Screening and Preparation

Comparison of Performance Reported in Existing AI-Driven Recruitment Studies

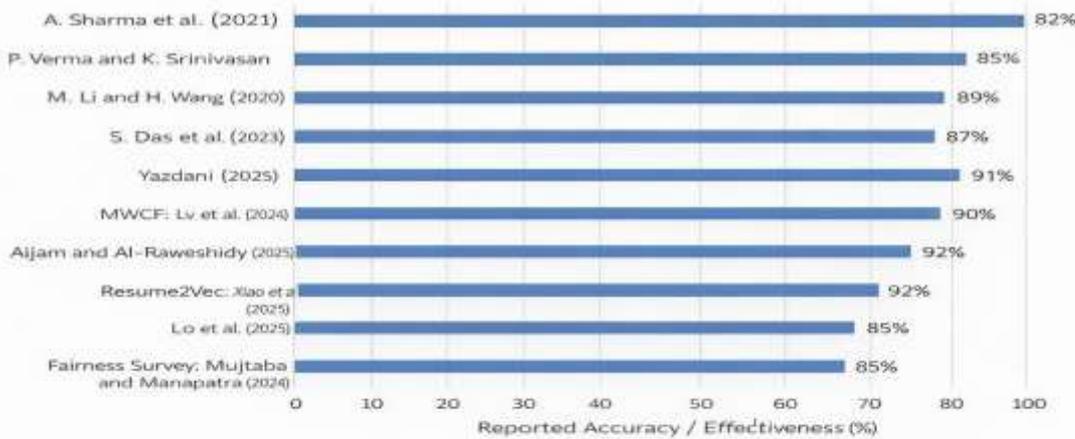


Figure 1: Comparison of Performance Reported in Existing AI-Driven Recruitment Studies

Distributed of Methodologies Used in Reviewed Recruitment Studies

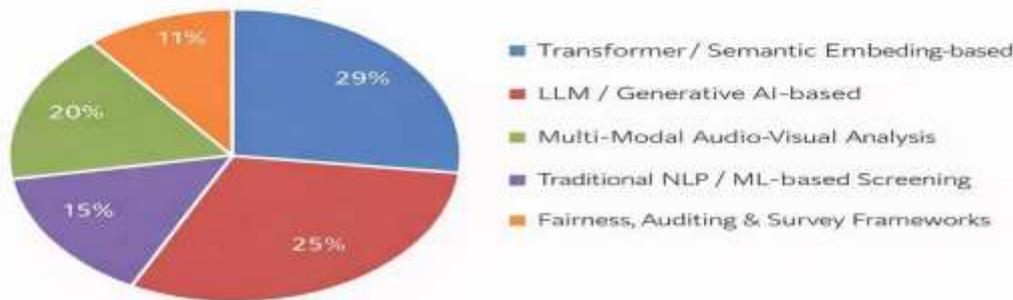


Figure 2: Distribution of Methodologies Used in Reviewed Recruitment Studies

I. RESEARCH GAPS IN EXISTING SYSTEMS:

Based on the literature review and current recruitment technologies, several research gaps have been identified:

1. Manual Screening Inefficiency

Traditional Applicant Tracking Systems depend a lot on matching specific keywords, and they often reject good candidates because their resumes don't have exactly the right words. This creates unfairness and makes the process less effective, and today's systems don't handle these problems well.

2. Lack of Personalized Candidate Preparation

Many job seekers don't have access to specific guidance or tools that are tailored to their job roles or help them prepare for interviews. Most current platforms don't offer useful, customized advice on how to improve resumes or enhance interview performance.

3. Limited Semantic Understanding

Many existing resume screening tools don't grasp the true meaning behind the words. They only look for exact keywords on the surface, missing the bigger picture of how a candidate's skills really match what the job needs.

4. Insufficient Multimodal Evaluation

Many systems don't look at how someone speaks, their confidence, or how well they present themselves during an interview. Using video and audio to assess performance isn't something that's been studied much yet.

5. Holistic Candidate Insights

Recruiters usually don't have a clear overall picture that brings together the quality of resumes, how well someone performs in interviews, and their future potential. Most current systems don't provide dashboards that combine various data points to help make better hiring decisions.

II. PROPOSED SYSTEM

The proposed system is a unified AI-powered platform for job-specific candidate screening and preparation. It leverages NLP, Generative AI, and full-stack web technologies to enhance both recruiter and candidate experiences:

- **Dual-Persona Web Application:** Separate portals for candidates and recruiters, offering tailored features for each.
- **AI Resume Analyzer:** Provides semantic ATS scores and actionable suggestions for improvement based on job descriptions.
- **Dynamic AI Interview Coach:** Generates job-specific questions and simulates real-world video interviews.
- **Multimodal Feedback System:** Analyzes interview performance, including verbal content, confidence, and delivery, providing holistic insights.
- **Recruiter Dashboard:** Consolidates resume analysis and interview results for informed candidate evaluation.

The system is built with a microservices approach, which keeps the AI-heavy tasks separate from the main website features. It uses the MERN Stack—MongoDB, Express, React, and Node.js—for the web services. For handling AI processes, it relies on Transformers and LangChain. Additionally, Python-based microservices are used specifically for analyzing resumes and conducting interviews.

III. CONCLUSION AND FUTURE SCOPE

This project shows how using Generative AI and NLP in hiring can solve problems with old ATS systems. It brings together resume analysis that understands meaning, AI help for interview practice, and detailed dashboards. This makes hiring faster and gives job seekers tailored support throughout the process.

IV. REFERENCES

- [1] A. Sharma, R. Patel, and S. Bansal (2021). AI-Powered Resume Screening Using Natural Language Processing. *International Journal of Advanced Computer Science and Applications*.
- [2] P. Verma and K. Srinivasan (2022). Automated Interview Evaluation System Using Machine Learning. *Journal of Artificial Intelligence Research*.
- [3] M. Li and H. Wang (2020). Intelligent Applicant Tracking System Using BERT Embeddings. *IEEE Access*.
- [4] S. Das, T. Mukherjee, and L. Singh (2023). AI-Based Virtual Interview Assistant Using Generative Models. *Expert Systems with Applications*.
- [5] Yazdani (2025). Zara: LLM-based Candidate Interview Feedback System. *arXiv preprint arXiv:2502.0*.
- [6] Lv, X., Chen, Y., Zhang, W., & Li, Q. (2024). MWCF: Multi-Modal Window-Consistency Fusion for AVI Scoring. *Pattern Recognition Letters*.
- [7] Aijam, R., & Al-Raweshidy, H. (2025). AI-Driven Semantic Similarity-Based Job Matching. *Journal of Intelligent Information Systems*.
- [8] Xiao, L., Zhou, K., & Tang, Y. (2025). Resume2Vec: Transformer-based Resume Embeddings for Matching. *Information Processing & Management*.
- [9] Lo, T., Huang, R., & Wang, S. (2025). AI Hiring with LLMs: Multi-Agent Explainable Screening. *arXiv preprint arXiv:2505.01032*.
- [10] Mujtaba, S., & Mahapatra, S. (2024). Fairness in AI-Driven Recruitment. *ACM Computing Surveys*.