



# CANTILEVER AIML PROTERNSHIP 2025

## ABSTRACT

### Project Title:

AI-Powered Resume Screening and Candidate Matching System

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**Abstract:**

AI-powered resume screening and candidate matching systems utilize Natural Language Processing (NLP), Machine Learning (ML), and data analytics to automatically evaluate candidate resumes and match them with job descriptions. These technologies enhance recruitment efficiency, reduce human bias, and improve the quality of hiring decisions. Key Aspects of AI-Powered Resume Screening and Candidate Matching: Resume Parsing and Feature Extraction NLP techniques analyze resumes to extract structured data such as skills, work experience, education, certifications, and accomplishments. Techniques used include Named Entity Recognition (NER), keyword extraction, and semantic similarity models. Candidate-Job Matching Algorithms ML models assess compatibility between candidate profiles and job requirements. Methods such as vector embeddings, cosine similarity, and BERT-based models evaluate relevance and contextual fit. Ranking and Scoring Candidates are scored based on how well they meet the job criteria. Metrics include skill match percentage, experience alignment, and domain relevance. Bias Mitigation Fairness-aware algorithms reduce unconscious bias related to gender, age, ethnicity, or location. Techniques include blind screening, fairness constraints, and demographic parity audits. Real-Time Shortlisting and Recommendations AI generates shortlists and provides recommendations in real time. Recruiters can be alerted to high-potential candidates dynamically.

**Challenges and Considerations:**

Accuracy and Reliability Ensuring models correctly interpret resumes, especially non-standard formats or domain-specific jargon. Privacy and Ethics Compliance with data protection laws like GDPR. Transparency in AI-driven decisions. Bias and Fairness Regular audits and retraining required to prevent algorithmic bias. Transparency and Explainability Candidates and recruiters should understand why decisions are made. Implementation of Explainable AI (XAI) techniques is vital. Scalability and Customization System must adapt to different job roles, industries, and regional contexts. Human Oversight Final hiring decisions must involve human judgment.

**Conclusion:** AI-powered resume screening and candidate matching systems have the potential to transform recruitment processes. By combining accuracy, fairness, and personalization, they enable more informed hiring decisions while improving the candidate experience. However, ethical use, transparency, and human oversight remain critical to their successful deployment