Ethical AI in Hiring: Project Report

Rohit Kandel

Department of Research

Regis University

MSDS640

Prof. G. Mujtaba

May 4, 2025

Abstract

The integration of Artificial Intelligence (AI) in hiring promises efficiency and scalability but raises critical ethical concerns, including bias, transparency, and fairness. This study examines the ethical implications of AI-driven resume screening using OpenAI's GPT-4 on a modified dataset of resumes with simulated demographic variations.

While AI enhances hiring efficiency, unchecked automation risks perpetuating systemic biases. This study highlights the need for bias audits, fairness-aware algorithms, and hybrid human-AI review systems to ensure ethical recruitment practices. Future work should expand to real-world A/B testing with diverse datasets.

Ethical AI in Hiring: Project Report

Introduction

As AI tools become integral to the recruitment process, their role in screening resumes, generating job descriptions, and evaluating candidates introduces new ethical challenges. While AI offers efficiency, speed, and scalability, it can also propagate existing societal biases if not properly designed and tested. This project investigates how AI—specifically OpenAI's GPT models—can be used ethically to support hiring practices while ensuring fairness, transparency, and accountability.

Project Objectives

Key Components:

- Automate job description generation from resumes.
- Identify potential areas of bias in AI-generated content.
- Compare outputs from different prompting and data-handling techniques.
- Propose improvements for ethical deployment in hiring systems.

Data Collection and Preparation

Dataset Source : Resume Dataset: Modified version of the Kaggle Resume Dataset.

Modifications:

- Remove duplicates and incomplete entries.
- Resumes standardized for consistency.

Preprocessing Steps: Data Cleaning:

- Locations altered to represent diverse racial/ethnic demographics (to test geographic bias).
- Resumes standardized for consistency.

Feature Extraction:

- Extract key resume components (skills, experience, education).
- Mask sensitive attributes (names, exact locations) to reduce direct bias.

Methodology

Model Used

- OpenAI's GPT-4 (via API).)
- Task: Generate job descriptions and score resumes based on predefined criteria.

Resumes are evaluated on scale: 1-5

Scoring Criteria

- Relevance to Role
- Significance/Impact
- Skill Relevance
- Achievements and Impact
- Cultural Fit and Personal Traits

Key Ethical Concerns in AI Hiring

1. Bias in AI Models AI models can inadvertently perpetuate biases present in training data. In the provided notebook:

- The dataset includes resumes with modified locations to represent different racial demographics.
- The AI scores resumes based on relevance, skill alignment, and cultural fit, which may reflect hidden biases.

2.Lack of Transparency

- The notebook uses OpenAI's GPT-4 to generate job descriptions and score resumes, but the decision-making process is a "black box."
- Applicants may not understand why they were rejected, leading to distrust in the hiring process.

3.Over-reliance on AI

- The notebook automates resume scoring without human oversight, risking errors or unfair rejections.
- AI may overlook unconventional career paths or non-traditional qualifications.

4.Privacy Concerns

- The notebook processes personal data (resumes) using an external API (OpenAI), raising questions about data security and consent.

Analysis of the Notebook's Ethical Implications

Dataset and Bias Testing

- The dataset includes modified locations to simulate racial diversity, but the AI's scoring may still reflect biases.

Scoring Methodology

- Relevance to the Role
- Significance/Impact
- Skill Relevance
- Achievements and Impact
- Cultural Fit and Personal Traits

Potential Issue: "Cultural Fit" is subjective and may disadvantage candidates from underrepresented groups.

Model Limitations

- The notebook uses gpt-4-mini, which may not be fine-tuned for fairness in hiring.
- No bias mitigation techniques (e.g., adversarial debiasing, fairness constraints) are applied.

Discussion and Conclusions

While AI can enhance efficiency in hiring, ethical risks—such as bias, lack of transparency, and privacy concerns—must be addressed. The provided notebook highlights the need for rigorous bias testing and fairness checks in AI-driven hiring systems. By implementing ethical guidelines, organizations can ensure AI supports equitable and inclusive hiring practices.

Future Work

- Conduct a full bias audit on the resume dataset.
- Integrate fairness metrics into the AI scoring model.
- Pilot the system with human oversight before full deployment