**MODOO2602 TRI2 FO1CAM  
Computing Research Methodologies**

**AI-Powered Resume Screening for Job Recruitment**

**Weekly Contribution Report**

Element 010-3

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## **1. Project Title**

***AI-Powered Resume Screening for Job Recruitment***

## **2. Background, Challenges, and Market Needs**

#### **Background**

Legacy resume screening methods are time-consuming, erratic, and prone to human bias, although hiring new workers is a key corporate activity. Shortlisting is not efficient as numerous companies get hundreds of candidates responding to a single recruitment advert. Artificial intelligence (AI) and natural language processing (NLP) deliver an automated technique of extracting essential information from application forms, scoring applicants based on job specifications, and reducing hiring time.

#### **Challenges in Traditional Resume Screening**

* **Large Number of Applications:** HR teams find it difficult to screen thousands of applications manually.
* **Prejudice in Hiring:** Unconscious prejudice can influence the choices made based on a candidate's name, gender, or background.
* **Inconsistent Evaluations:** Various recruiters may assign candidates a different rank.
* **Problems with Keyword-Based Filtering:** Most application tracking systems (ATS) employ elementary keyword matching, which could filter out good applicants who describe their abilities in another manner.

#### **Market Need**

* **Increasing Demand for AI in HR:** The demand for AI-based hiring solutions is anticipated to grow enormously in the HR technology space.
* **Improved Efficiency:** AI-powered screening shortens the hiring process by streamlining resume processing.
* **Fair and Unbiased employment:** AI could assist in eradicating discrimination, thereby promoting diverse and equal employment practice.
* **Cost Savings:** The cost of manual HR processes is reduced by automating the screening process.
* **enhanced Candidate Experience:** AI may deliver enhanced feedback loops and reduced response times to candidates.

## **3. Aim and Objectives**

#### **Aim**

The main objective of this project is to create an AI-based resume screening system that will use machine learning and natural language processing to automatically shortlist applicants, making accurate, efficient, and unbiased hiring decisions.

#### **Objectives**

1. **Develop an NLP-based model** to identify key resume information, such as qualifications, experience, and skills.
2. **Build an AI-based rating system** that applies relevant criteria to match resumes with job postings.
3. Implement **bias detection and mitigation strategies** to ensure fair hiring practices.
4. To compare the effectiveness, accuracy, and effectiveness of AI-based resume screening, **compare it with human recruitment.**
5. **Offer an easy-to-use interface** so that HR staff can effectively interact with the AI screening system.
6. **To avoid bias and enhance transparency,** ensure recruiting practices meet ethical and legal standards.
7. Provide **real-time feedback mechanisms** so that hiring managers can improve AI decision-making over time.
8. **AI screening** can be easily introduced in companies by integrating it with existing HR management systems.

## **4. Research Questions**

1. How effective is AI in automating resume screening compared to traditional methods?
2. Which NLP approaches are most powerful in extracting experience and skill from resumes?
3. How can AI mitigate bias during resume screening, and what ethical considerations must be answered?
4. What factors affect the precision and fairness of AI-powered resume screening tools?
5. How can AI-powered resume screening enhance recruitment efficiency and decision-making?
6. What are the challenges that come about in integrating traditional HR management systems with AI-based screening?
7. How can AI resume screening be optimized to ensure transparency and compliance with labor regulations?
8. What is the impact of AI-powered screening on business brand and candidate experience?
9. How can AI-powered recruiting platforms be configured to accommodate diverse industries with dissimilar hiring needs?
10. How can explainability in machine learning promote greater trust in AI-driven employment decisions?