

Project Report: AI-Powered Job Seeker Chatbot Using Hugging Face

1. Project Title:

AI-Powered Job Seeker Chatbot for Resume Building, Cover Letter Writing, and Interview Preparation

2. Introduction

This project implements an **AI-powered chatbot** designed to assist job seekers in creating **optimized resumes, writing professional cover letters, and preparing for job interviews**. It leverages **Hugging Face's DialogPT** and NLP-based techniques to generate responses dynamically, ensuring **tailored career assistance** for users.

3. Objectives

- **Resume Building:** Assist users in structuring and improving their resumes.
- **Cover Letter Assistance:** Generate professional cover letters based on job descriptions.
- **Mock Interview Preparation:** Provide AI-driven **technical and behavioral interview questions** along with feedback.

- **Anomaly Detection in Responses:** Use **Isolation Forest** to filter irrelevant answers.

4. Methodology

1.
Data Preprocessing & Feature Engineering:
 - Used **TF-IDF vectorization** for text feature extraction.
 - Processed **resume content, cover letters, and interview questions** for chatbot responses.
2.
AI Model Integration:
 - **Hugging Face's DialoGPT and Falcon-7b instruct** was employed to generate realistic job-related responses.
 - Used **AutoTokenizer & AutoModelForCausalLM** to handle user queries.

3.

Anomaly Detection & Classification:

- Implemented **Isolation Forest** to detect and filter out irrelevant chatbot responses.
- Used **Logistic Regression** to classify user queries into **resume, cover letter, and interview** categories.

4.

Evaluation & User Experience Optimization:

- Generated **word clouds and data visualizations** to analyze chatbot performance.
- Optimized prompts to improve response quality and relevance.

5. Results & Key Findings

- The chatbot **effectively assists job seekers** with resume structuring and improvement.
- **Cover letter suggestions** were highly relevant to different job profiles.
- The **mock interview feature** provided **realistic interview questions** based on user input.
- The chatbot was able to detect and ignore **off-topic inputs** using anomaly detection.

6. Conclusion & Future Scope

This AI-powered job seeker assistant demonstrates the ability to **streamline the hiring process** for candidates by providing **instant resume feedback, personalized cover letters, and mock interview questions**. Future improvements may include:

- **Integrating ATS (Applicant Tracking System) scoring** for resume optimization.
- **Expanding the interview module** with AI-driven answer evaluation.

