CS614 Gen AI with LLM

Project Proposal

Smart ATS Resume Analyzer with RAG-based FAQ Assistant

G1 Group 3

Introduction

Nowadays, most resumes are first processed by an Applicant Tracking System (ATS). These systems scan resumes, compare them to job descriptions, and automatically rank candidates. Only a few resumes ever reach a recruiter.

But this approach has some flaws:

- Traditional ATS tools rely heavily on keyword matching.
- They often ignore great candidates who have the right skills but use different terms.
- At the same time, weaker candidates who use the "right" keywords may be selected.
- This causes companies to miss out on top talent before a human even reviews a resume.

Hiring today requires more than just speed and automation. It needs intelligent systems that can:

- Understand context and intent, not just keywords
- Recognize real skills and experience
- Provide a human-like understanding of a candidate's fit for the job

With this project, we will try to solve this problem using LLM based Resume Anayzer.

Target Audience and Impact

This project is aimed at Applicant (Job seeker), Recruiter (Job consultant) and Hiring Organisation.

Project Goal

To build an intelligent, LLM-powered Applicant Tracking System (ATS) that:

- Accurately analyses resumes using NLP and LLMs
- Matches resumes with job descriptions more meaningfully
- Supports applicants and recruiters with a smart, FAQ-style AI assistant using RAG (Retrieval-Augmented Generation)
- Offers role-based views for Applicants, Recruiters, and Hiring Companies

Key Features/ Distribution of Work

1. **User Interface (Primary (P) – Ekjot, Secondary (S) - Ayush)**

- Built using some lightweight framework
- Users can:
    - Upload resumes (PDF/DOCX)
    - Paste or auto-fetch job descriptions (with or without LinkedIn integration)
    - View analysis reports, scores, and visual insights

- Chat with an AI assistant for job-specific queries

2. **Resume Parsing & Scoring (LLM/NLP) (P – Ayush, S - Vishal)**

- Extracts: **Skills, Experience, Education, Certifications**
- Matches this data against job descriptions
- Summarizes the resume with respect to job role
- Generates **improved resumes** and **custom cover letters**

3. **RAG-based FAQ Assistant (P – Vishal, S - Arindom)**

- Users can ask questions like:
  - *"What skills am I missing for this job?"*
  - *"Does this resume suit the role?"*
  - *"What are the core responsibilities for this job title?"*
- Powered by:
  - **LangChain RAG pipeline**
  - **Vector Store (e.g., FAISS, Chroma, or Pinecone)** for fast, semantic retrieval
  - **LLM (OpenAI, GROQ, Mistral, etc.)** for intelligent answers

4. **System Evaluation (P – Varun, S - Ekjot)**

- Define Quality Metrics (subject to change during change):
  - **Relevance score** of answers (BLEU, ROUGE or semantic similarity)
  - **Resume match accuracy** (% of actual matches vs predicted)
  - **User satisfaction** (feedback forms or click-through)
  - **Response latency** and **token efficiency**

5. **Role-Based Personas (P – Arindom, S - Varun)**

Design different views and functionalities for each user type:

Role	**Features**
Applicant	Upload resume, get analysis report, updated resume & cover letter, ask questions via FAQ Assistant
Recruiter	View top-matching candidates for a job, send assessments, compare applicants
Hiring Company	Post multiple job roles, attach assessments (HR, psychometric), view aggregate applicant insights