JobCore: AI Agent To Get Your Job

Make Your Job Application Process Smooth & Faster

CSE499A — Section 15 — Project Group 03
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***Abstract*—Searching for a job is still a fragmented and time-consuming process for candidates, with the hassle of multiple online applications, multiple postings, and minimal interview preparation. This project outlines the design and development of an Artificial Intelligence-enabled agent that will improve and streamline the whole job application process, from job searching all the way through interview preparation.**

The suggested system combines various job portals, including LinkedIn, to aggregate and expose opportunities related to user-defined job positions and skills. Using sophisticated natural language processing and machine learning algorithms, the agent matches jobs intelligently - presenting granular jobs and listings based on individual candidate profiles. The system includes an auto-resume analysis module that recommends improvements before applications are submitted, as well as intelligent form-filling features that automatically fill in and submit a job application on behalf of a user with prior entered user information. In addition to application management, the assistant fully supports students' interview preparation with curated YouTube and other educational platform learning resources. One of the advancements that emerged is implementing an AI-driven mock interview system that utilizes voice interaction technology to generate performance reports with extensive personal feedback. The system also includes a company-specific interview process feature and is able to integrate with Google Calendar for interviews.

***Index Terms*—job search automation, resume optimization, AI interviewing, ATS, OAuth, mock interview, job apply automation, automatic report generation.**

I. Introduction

The global job market has undergone a dramatic change in the digital era. The online platforms have become the major interface for job searching and recruiting. According to recent statistics, 80% of all job searches are done online as of 2022. Roughly 50% of job applications come from job boards. [1] 70 % of global employers prioritize speed of hire via online recruitment platforms. [2] For those who are unemployed, dedicating 20-30 hours a week to your job search is recommended. This not only keeps you actively engaged but also helps meet the active job search requirements for unemployment benefits in many states. [3] Also, the job search ecosystem is fragmented. That's why candidates must maintain profiles on a multitude of platforms, re-enter the same information across each site, and manually track the status of their applications across systems that are not interconnected.

II. Problem Statement

The key problems user faces to other systems and motivates to use JobCore are:

- **Time-consuming job search:** searching and applying across multiple portals is repetitive and slow.
- **Multiple platforms:** a user needs to use multiple platforms to find the right opportunity.
- **Manual applications process:** user needs to go through the almost same application process many more times.
- **Lack of personal feedback:** candidates rarely receive concrete, tailored resume or interview guidance.

III. Related Work

There are some platforms like JobCopilot, Loopcv, BulkApply.ai, LazyApply, AI Apply — automate application submission, resume tailoring, and tracking.

There are some resume optimization platforms like Jobscan, VMock — provide ATS-aware resume and cover-letter analysis.

Interviewing.io, Pramp, Knockri, HireVue, Big Interview, Final Round AI — provide AI or peer-based mock interviews, structured scoring, and improvement recommendations.

IV. Objectives

Primary objectives of the project are:

1) Build a multi-source job discovery pipeline with semantic matching to user resumes.
2) Retrieve and recommend job listings based on semantic similarity and skill alignment.
3) Implement a robust resume parser and ATS-aware optimizer that generates candidate-approved rewrites.
4) Provide a secure, auditable application flow (preferred via provider).
5) Provide targeted interview prep recommendations based on job type and past performance.
6) Deliver an AI mock-interview module (voice I/O).

V. System Overview

Figure 1 provides an overview of the system components. JobCore follows a modular, API-first architecture to enable incremental development and safe integration with third-party providers.

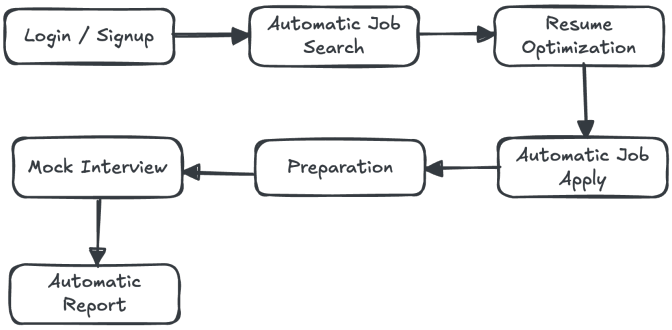

Fig. 1: High-level overview of JobCore (modules and flow).

A. Core Components

Frontend: React/Next.js for profile, job listing, resume upload and interview UI.
Backend API: FastAPI or Node/Express for orchestration, ML inference and integrations.
Job Connectors: Normalizers for LinkedIn Jobs API and other partner APIs.
Resume Service: Parsing, NER, embedding generation, ATS scoring and LLM-based rewrite suggestions.
Application Engine: We will use official apply APIs when available; otherwise, we will provide a browser extension for client-controlled autofill (explicit consent required).
Mock Interview Module: STT $\rightarrow$ LLM evaluation $\rightarrow$ report generation + TTS for interviewer.
Storage: Mongodb and Firebase for using database.

VI. Features Breakdown

A. User Authentication

Provides robust Login and Signup functionalities for new and returning users. This feature serves as the foundational data source for all subsequent modules.

B. Automated Job Sourcing

Utilizes API connections and web assemblies to collect job advertisement listings in real-time from numerous online sources. Curates and ranks job listings based on the user's profile, skills, and preferences that have been programmed in the user's profile, to ensure relevance and lessen the amount of time spent searching for opportunities.

C. Resume Optimization

Employs Natural Language Processing (NLP) to review job descriptions for important skills, qualifications, and keywords that employers look for. It compares the job requirements to a user profile and suggests targeted data-driven updates to the user's resume. It transforms the resume into an optimized version based on the job you are targeting, drastically increasing the likelihood of passing Applicant Tracking Systems (ATS).

D. Automated Application Submission

Fills in the fields of the online application forms, based on the information contained in the user's profile. Provides an opportunity for the user to apply to multiple jobs that have been shortlisted with minimal manual input.

E. Personalized Interview Preparation

Consolidates key information about the company, relating to the job description and current industry trends. Recommends articles, videos, and tutorials so the user can work on any weak areas that have been identified.

F. AI-Powered Mock Interview

An AI agent carries out a mock interview, propounding questions from the generated question bank in a conversational style. It captures and analyzes the user's spoken responses and evaluates clarity of communication, confidence, and use of keywords.

G. Performance Analytics

As soon as the mock interview concludes, a thorough performance report is generated by the system. The report offers a detailed summary of a candidate's strengths and weaknesses, including specific instances and details for development.

VII. Implementation Plan (MVP)

We propose a 12-week MVP schedule:

- **Week 0:** Project setup, OAuth app registrations, infra provisioning.
- **Weeks 1–2:** UI + resume upload and parser + persistence.
- **Weeks 3–4:** Job connector using official APIs; job listing and match scoring.
- **Weeks 5–6:** ATS scoring and LLM-driven resume suggestions; user approval UI.
- **Weeks 7–8:** Application engine (Apply with LinkedIn or guided autofill via extension) and audit trail.
- **Weeks 9–10:** Mock interview prototype (text-based then voice) and calendar integration.
- **Week 11:** Performance analytics and automatic report generation from mock interviews.
- **Week 12:** Final end-to-end testing, bug fixes, and deployment preparation.

VIII. Risks and Mitigation

API limits & provider TOS: Mitigate with caching, exponential backoff, and API-first design.
AI hallucination: Use conservative prompting; show edits and require user approvals.
Security breaches: Harden services, regular audits, key rotation, and least-privilege access.

IX. Future Work

To connect candidates with employers, we intend to create a separate portal for recruiters. This module will enable recruiters to communicate and reach out to qualified candidates on the site, privately and securely. Additionally, by analyzing the pooled anonymized data of users in the system, the module can provide valuable information and insight into the candidate pool to recruiters, thus creating a very efficient new option for talent acquisition.

We will improve the user experience through a flexible and personalized dashboard. This dashboard will be more than simply tracking applications, as users will gain access to dynamic data visualizations of progress related to their job search, trends in performance on mock interviews over time, and AI-enhanced interpretations of their strengths and weaknesses. The dashboard will also produce personalized career path suggestions based on the user's profile and pathways to successful careers.

In addition to resume optimization, we will be integrating a feature that allows for the complete personalization of resume generation. This will take advantage of generative AI internally to create different and distinct resume templates / styles (i.e., chronological, functional, modern, traditional) from the core profile of a user. The AI will automatically adjust the content, tone and formatting based on industries and roles, thus allowing a user to create a their own unique professional resume from scratch with a single click.

To enhance our service to candidates who are applying for technical roles (including software engineers and data analysts), we will add screen sharing capabilities to the mock interview module. This will allow the AI mock interviewer to display coding problems or case studies, the user will then be able to share their screen and work on those problems as if they were in a live technical interview. The system would then review not just the ultimate answer, but the candidate's entire approach to solving the problem, their efficiency in coding, and their ability to articulate their thought process.

X. Conclusion

JobCore intends to facilitate the job experience lifecycle by integrating semantic job discovery, ATS-friendly optimization, consent-provided automation, and AI-enhanced interview coaching. The initial MVP will prioritize features that benefit users, such as increased match relevance, improved resume performance, expedited application flow, and increased interview preparedness. This product will help job seekers automate the application, preparation, and testing process faster and smoothly, which might increase the chance of getting the job.

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