Project Report

404: Job Not Found

ABSTRACT

Job search is very stressful, especially for international students. We apply to many jobs, tailor our resumes, and follow advice from others, but still face rejection without knowing the reason. Most rejections are just system-generated emails with no feedback. This project presents a tool that uses AI to check resume quality, match with job descriptions, and give helpful feedback. It also helps generate personalized cover letters and offers job-fit suggestions to improve the application process and further utilize the same tool for future applications.

PROBLEM STATEMENT

Job hunting is hard, especially for students like us who are on F-1 visa in the US. We apply to many jobs, tailor resumes, ask for referrals, and follow advice from counselors, recruiters, and the internet. Still, we get rejection mails, and most of the time these mails give no reason. There is no clue what went wrong or what we can do better next time. It feels confusing and disheartening. Many students just keep applying blindly without learning from the last rejection. This creates more stress, especially when there are visa deadlines and fewer companies willing to sponsor international candidates.

Our team saw this problem and converted it into a product called as “404: Job Not Found”. That’s when we thought — what if AI can help us understand what’s missing and how to improve? This idea led us to build a product which is assisted by AI that doesn’t just score a resume, but also gives feedback and helps match with better jobs.

OBJECTIVE

The goal of this project is to build an AI-powered assistant that helps job seekers improve after rejections and apply to jobs that are a better match.

SYSTEM DESIGN

Our product first starts with checking the formatting and parsing errors in the resume and then checks if a resume can pass through Applicant Tracking Systems (ATS), gives a match score for each job, and suggests changes to improve the resume. It also writes custom cover letters and offers career help using a chatbot. We want to reduce blind applications and save time for users. Instead of sending the same resume everywhere and getting no feedback, our system shows what’s missing and how to fix it. It also recommends other jobs that may be a better fit based on the resume content. This is important because the hiring market is large and competitive. As shown in Figure 1, the global recruitment tech market is expected to reach $2.4 billion by 2027. The average monthly number of job seekers is 24 million. The use of ATS systems by companies is already at 80%, and it continues to grow. The industry is growing at a Compound Annual

Growth Rate (CAGR) of 18%, which means the market is increasing by 18% every year. Many resumes get filtered before a human even sees them. Our tool tries to fix that problem by helping users make resumes that are ATS-safe and matched to the job.

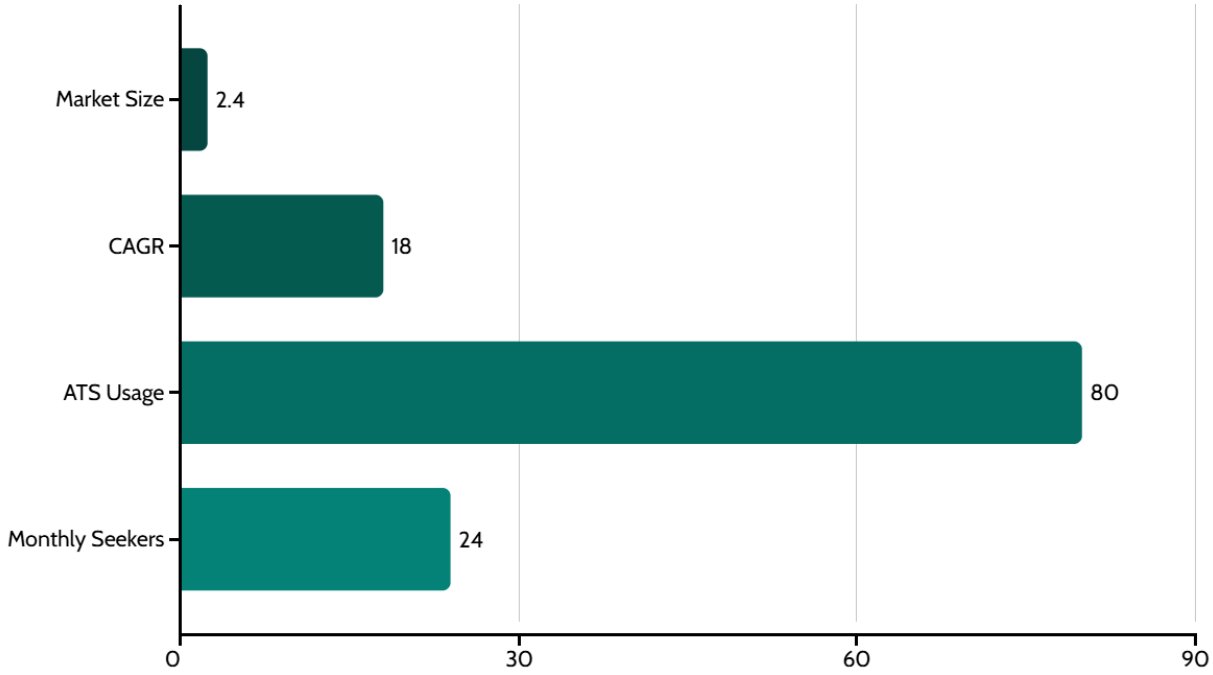

Figure 1. Key hiring tech trends: ATS usage, market size, and monthly job seeker stats highlight the growing need for smarter career tools.

METHODOLOGY

Our product works like an AI-powered assistant that helps users with every step of their job search. The user starts by uploading a resume and a job description. Then, the system checks the formatting and parsing errors in the resume and then checks if the resume is compatible with ATS. It gives a score out of 100 that shows how well the resume matches the job. If the match is low, the system shows which keywords are missing and what can be improved. The user also gets personalized feedback on layout, grammar, structure, and overall quality of the resume. After that, the system gives top 5 job listings that are a good fit and ranks them. For each job, it also writes a tailored cover letter that the user can download directly. If users are confused or need help, they can chat with an AI chatbot that answers career-related questions.

Behind the scenes, when the user uploads a resume, the system extracts both formatted and plain text. The formatted version is stored in MongoDB and used to check visual layout and structure. The plain version is stored in ChromaDB and used for matching and scoring. These are saved separately because ATS systems mostly read plain text, but formatting is still important for human reviewers. After storing, the system activates multiple agents. One agent checks formatting compliance, another one gives feedback, one compares the resume with the job description and gives a matching score, and another one looks for top 5 jobs online that fit the

resume content. For each matched job, the system creates a separate cover letter and gives the user a button to download it. At the end, the chatbot agent is always active, ready to give guidance about resume writing or job search questions.

This way, the system supports job seekers from beginning to end. The aim is to give users not only tools to apply better, but also confidence and clarity throughout the process. The whole approach is designed to make the job hunt less confusing and more effective.

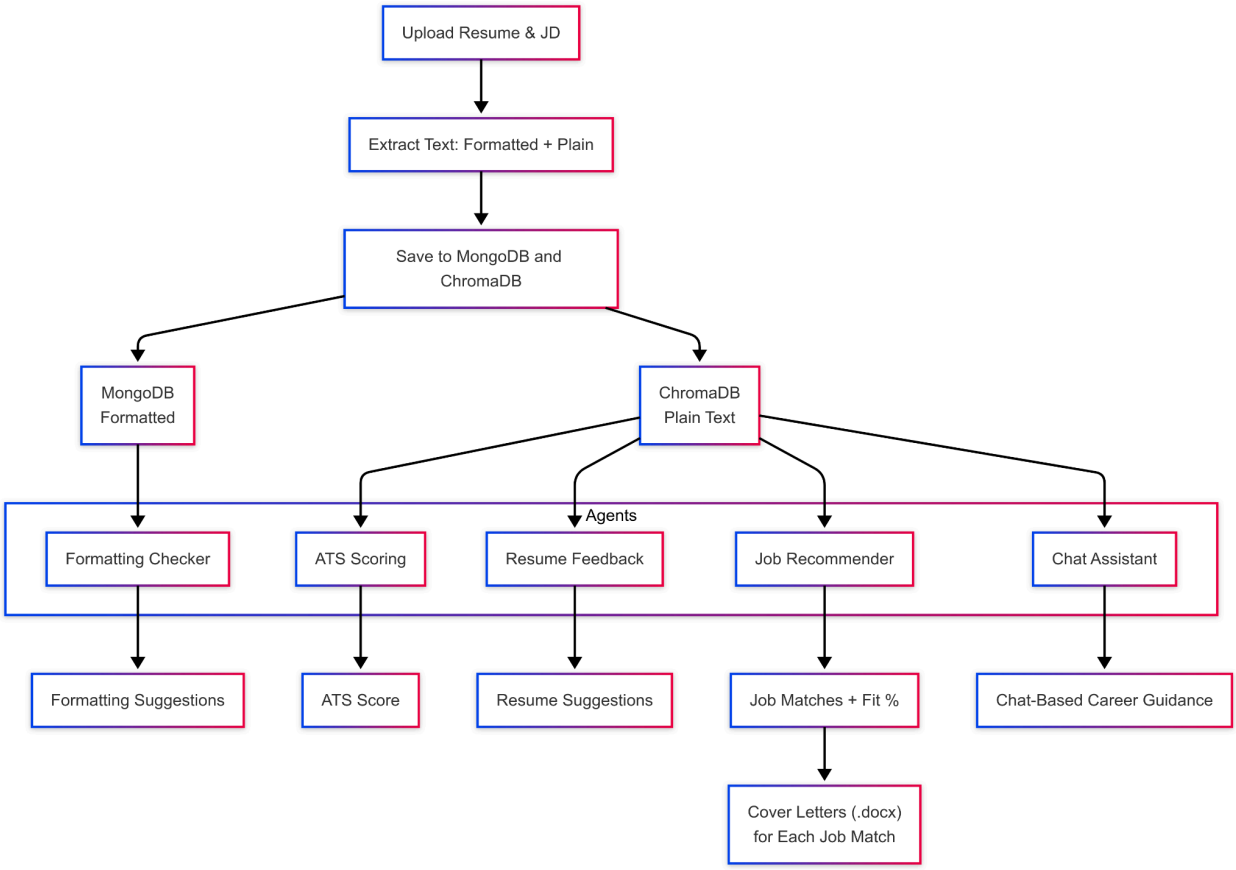

Figure 2: System workflow showing how resumes and job descriptions are processed to generate feedback, scores, and job matches.

RESULTS, INSIGHTS AND EVALUATION

Once we built the system, we tested it using real resumes and job descriptions. The user first uploads their resume and pastes a job description. The system then shows how well the resume matches using an ATS score and gives clear feedback. One screenshot (Figure 3) shows this upload screen where users begin the process.

After the upload, the tool shows an ATS score. For example, one result gave 67%, with a list of matched and missing keywords. This helped users quickly see which important words from the job post were missing. These missing terms often caused lower scores and rejection.

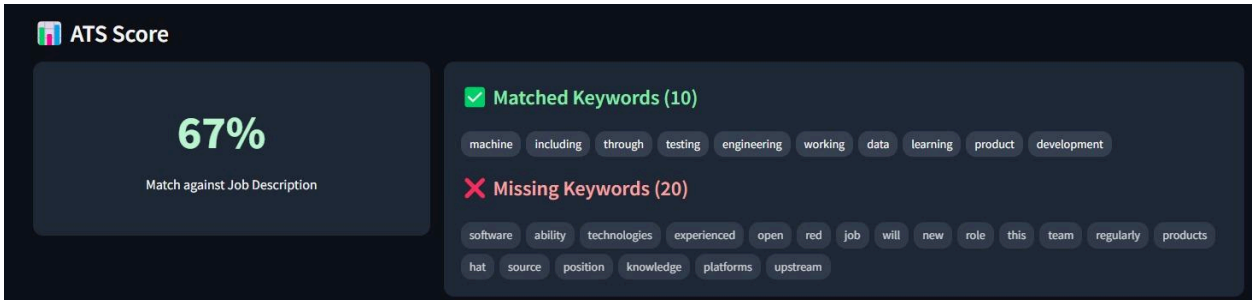

Figure 3: ATS Score with matched and missing keywords shown after resume evaluation.

Along with the score, the tool gives detailed resume feedback. This includes improvements for layout, content clarity, grammar, and even repetition of words. Many suggestions are small but helpful, like spacing between sections or making bullet points clearer.

Another feature is the format checker. This checks if the resume follows ATS-safe formatting like correct font sizes, no images, and good section headings. For example, it warns if font sizes vary too much or if summary is missing.

One of the most useful features is the cover letter generator. It creates a unique letter for every job. The letter uses the user's resume and the job description to highlight matching skills. It also avoids generic text and focuses on the job being applied for.

The chatbot is also available any time. Users can ask questions like how to improve resumes or what ATS systems check. It replies with simple suggestions that help students who are unsure.

Finally, users get a list of job recommendations. These jobs are selected based on resume content. Each job shows a match percentage and comes with a cover letter download button. This helps users apply fast with tailored content.

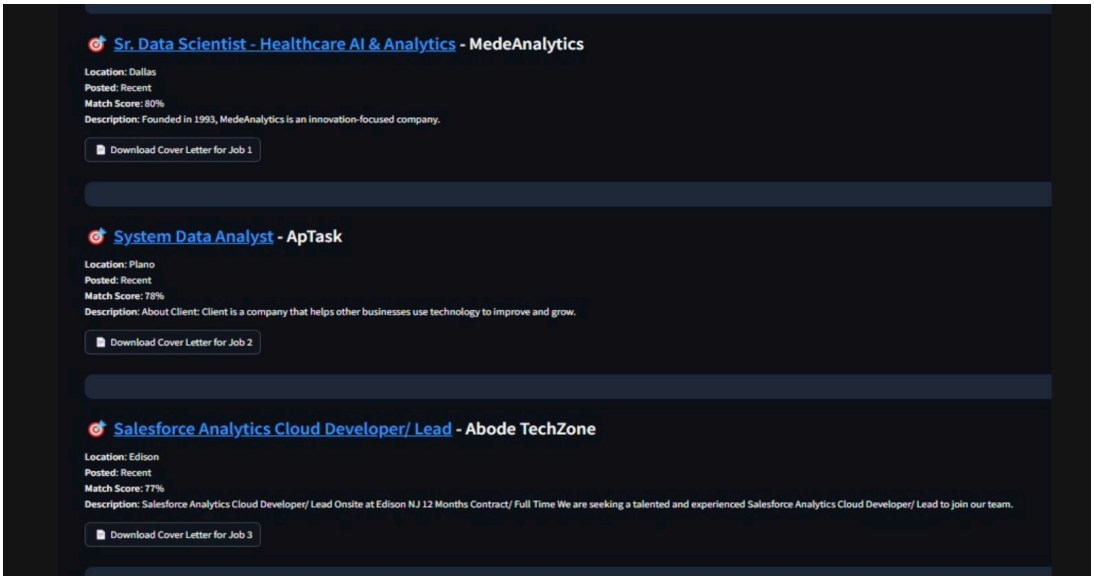

Figure 4: Job recommendations with match score and individual downloadable cover letters.

This makes the process faster and more personalized. Each part of the tool works together to guide job seekers, improve their documents, and build confidence.

RESULTS, INSIGHTS AND EVALUATION

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