

Job Search Engine

CAPSTONE PROJECT PRESENTATION
May 9, 2025

Chris Pappelis
cfp4@hood.edu

Matthew Smith
mps3@hood.edu



[github.com/msmithp/
job-search-engine](https://github.com/msmithp/job-search-engine)



Project Overview

- What is the Job Search Engine?
- Objectives:
 1. Streamline CS job searching
 2. Present in-demand CS skills

Previous Work & Project Plan

- Existing solutions
- Problems with job searching
 - Amount of information
 - Inaccurate results
- Our plan

**Automation Software Engineer**
Deloitte  3.9 ★ 500 E Pratt St Ste 500, Baltimore, MD 21202
You must create an Indeed account before continuing to the company website to apply

[Apply now](#)  

Full job description

In this age of disruption, organizations need to navigate the future with confidence by tapping into the power of data analytics, robotics, and cognitive technologies such as Artificial Intelligence (AI). Our Strategy & Analytics portfolio helps clients leverage rigorous analytical capabilities and a pragmatic mindset to solve the most complex of problems. By joining our team, you will play a key role in helping to our clients uncover hidden relationships from vast troves of data and transforming the Government and Public Services marketplace.

Work you'll do

We are seeking an energetic and highly skilled Software Automation Developer to join our dynamic team. The ideal candidate will have a strong foundation in software engineering practices and extensive experience with Python, as well as other foundational languages such as .NET, Java, JavaScript, PowerShell, Ruby, Pearl, and additional languages commonly associated with automation. This role requires the ability to conduct end-to-end processes, design the best automation solution, and develop the solutions. The successful candidate will also be eager to learn and implement other automation tools like Robotic Process Automation (RPA) and explore AI solutions such as Agentic AI.

The team

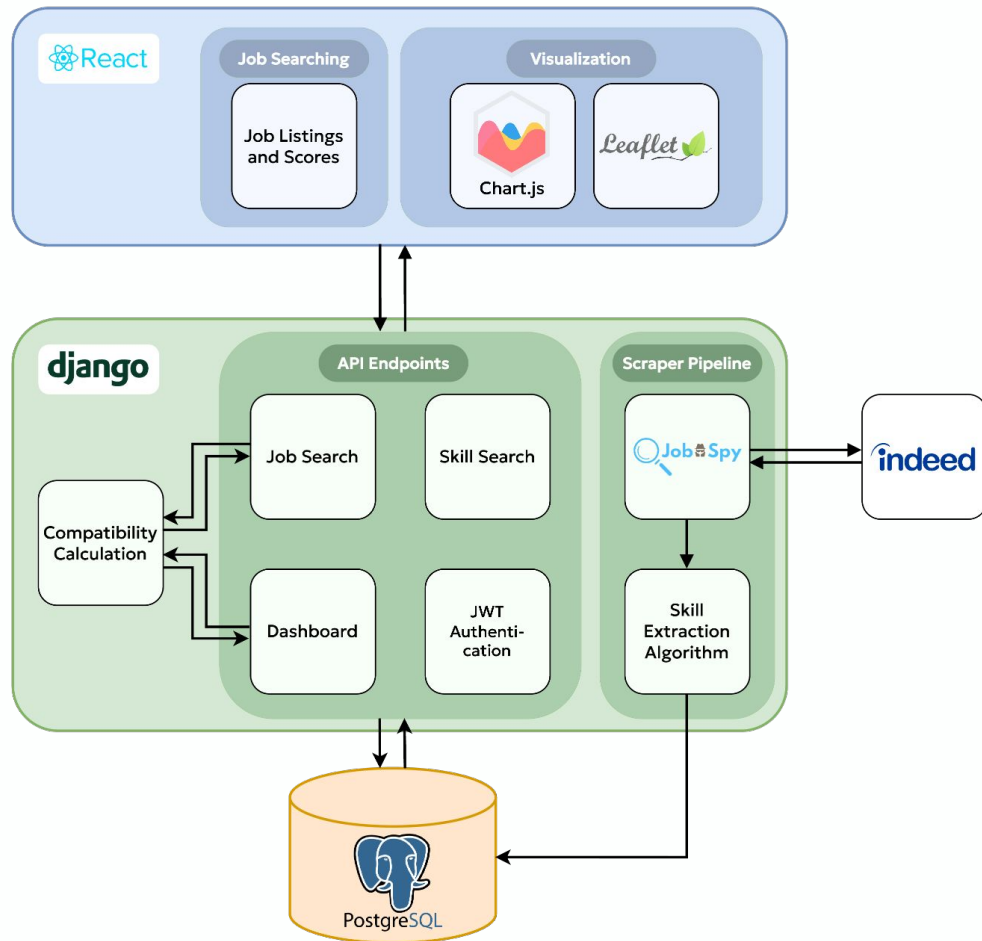
Technical Description

- Languages
 - Python
 - TypeScript
- Libraries
 - JobSpy
 - Leaflet
 - Chart.js
- Size
 - 4,600 lines of code
 - 9 database tables
 - 7,000+ jobs

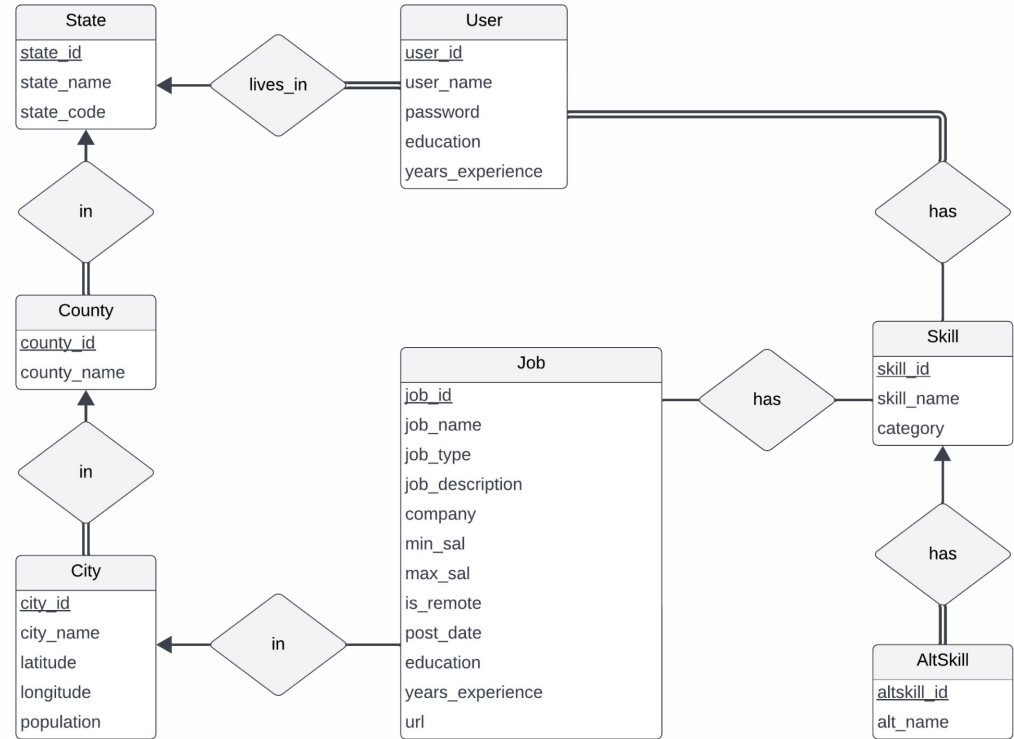
Tech stack:



System Architecture



Database Schema



Accomplished Work

- Web scraper
- Skill and requirement extraction
- Skill visualization
- Job search functionality
- Compatibility calculation
- Authentication system
- Dashboard

Example Usage

The screenshot displays a job matching interface. On the left, a sidebar lists categories: Data Science, Software Development, Database Administration, and Object-Oriented. Below these are filters for 'Show jobs you' and 'Import my skills'. The main content area features a job listing for 'Software Engineer' at 'Visionist, INC' in 'Columbia, MD' with a salary range of '\$100,000 - \$160,000'. To the right of the job title is a large green circle containing the number '96', with the word 'COMPATIBILITY' underneath. Below the job details, there are sections for 'Experience' (4 years) and 'Education' (Bachelor's degree). The 'Skills' section is divided into four categories: 'Fields' (Data Science, Database Administration, Software Development), 'Languages' (Java), 'Tools' (Git), and 'Web Development' (REST). Each skill is enclosed in a colored rounded rectangle. On the far right, a partial view of another job listing shows a '94' compatibility score.

Software Engineer

Visionist, INC
Columbia, MD
\$100,000 - \$160,000

96
COMPATIBILITY

Experience
4 years

Education
Bachelor's degree

Skills

- Fields**: Data Science, Database Administration, Software Development
- Languages**: Java
- Tools**: Git
- Web Development**: REST

94
COMPATIBILITY

Lessons Learned

- Interface planning
- Type safety
- Compatibility calculation
 - Overcomplication and penalization

Future Work

Component	Future Improvements
Scraper	Handle expired job listings, filter irrelevant jobs
Skill Extraction	Consider case sensitivity
Back-end	More modular functions, optimized queries
Front-End	Job search result pages, score breakdown by category
UI/UX	Sorting, filtering, better skill selection

Demo

Questions?

Presentation files can be found at
[github.com/msmithp/job-search-engine/tree/main/
documentation/final_presentation](https://github.com/msmithp/job-search-engine/tree/main/documentation/final_presentation)