Job Recommendation Algorithm Explanation

# Introduction

This document provides an explanation of the job recommendation algorithm used in the Flask API. The purpose of the algorithm is to filter job postings based on the skills provided by the user, returning only the most relevant jobs that match the user's skills.

# Algorithm Logic

## 1. Input Data

The input for the recommendation system is a JSON object containing the user's skills, which are sent through a POST request. An example input could be:  
{  
 "skills": ["Python", "Machine Learning", "SQL"]  
}

## 2. Querying the Database

Once the user's skills are received, the algorithm queries the database to retrieve job postings that match those skills. The relevant skills for each job are stored in the 'required\_skills' column of the 'JobPosting' table. The algorithm checks whether any of the user's skills are contained in the 'required\_skills' field.

## 3. Filtering Logic

The filtering logic uses SQLAlchemy's `contains` and `or\_` operators. For each skill provided by the user, the algorithm checks if that skill is present in a job's 'required\_skills'. Jobs that contain at least one of the user's skills are selected. The logic can be summarized as:  
  
query = query.filter(or\_(\*[JobPosting.required\_skills.contains(skill) for skill in skills]))  
  
In this case, `or\_` creates a disjunction (OR condition) for multiple skills, and `contains` checks whether a specific skill exists in the job's 'required\_skills' field.

## 4. Output Data

The output is a list of job postings that match the user's skills. The output is returned as a JSON response, which contains details about each job posting, such as:  
{  
 "job\_title": "Software Engineer",  
 "company": "Tech Solutions Inc.",  
 "required\_skills": ["JavaScript", "React", "Node.js"],  
 "location": "San Francisco",  
 "job\_type": "Full-Time",  
 "experience\_level": "Intermediate"  
}

# Conclusion

The job recommendation algorithm efficiently filters job postings based on the user's skills by leveraging SQLAlchemy's filtering capabilities. It allows users to find relevant jobs that match their skills, helping them make informed decisions in their job search.