

Overview of the Job Search and AI-Powered Ranking System

The provided FastAPI application serves as a **job search and recommendation system** that helps users find job listings tailored to their specific needs and preferences. It works in two main stages: **fetching jobs** and **ranking them using AI**.

1. Job Fetching Process

When a user sends a request, the API first collects job listings from the **Indeed Scraper API**, an external job search service.

The user can specify various search parameters such as:

- **Job title or keyword** (e.g., Software Engineer)
- **Location** (e.g., New York)
- **Job type** (Full-time, Part-time, etc.)
- **Experience level**
- **Remote or on-site preference**
- **Salary range**, and more.

Using these filters, the API fetches a list of jobs that match the basic criteria provided by the user. After fetching, the job details are cleaned and formatted to extract essential information like:

- **Job title and company name**
- **Location**
- **Salary details**
- **Remote option**
- **Required skills and qualifications**
- **Company rating**
- **Benefits and job type**

2. AI-Based Job Ranking and Filtering

Once the job data is collected, the system uses **Artificial Intelligence (AI)**, specifically a **Large Language Model (LLM)**, to analyze and rank the jobs based on **user-specific preferences**.

These preferences may include:

- **Relevant skills and experience level**
- **Preferred work mode (remote, hybrid, onsite)**
- **Minimum expected salary**
- **Preferred company size**
- **Important benefits (e.g., health insurance, flexible hours)**

The AI model processes both the job descriptions and the user's preferences to understand how well each job aligns with what the user is looking for. It then:

- Assigns a **relevance score (0-100)** to each job.
- Provides a **short explanation** for each score, detailing why a particular job is considered a good or poor match.
- Sorts the jobs from most relevant to least relevant.

3. Purpose and Value of AI in This System

The AI model plays a crucial role by **intelligently analyzing and ranking** jobs based on deeper understanding, beyond simple keyword matching. It can assess whether job responsibilities align with the user's skills, if the salary meets expectations, whether the benefits match user needs, and if the job type (remote, hybrid, onsite) fits the user's lifestyle.

A Sample Example

Input JSON:

```
{
  "job_search_params": {
    "query": "software engineer",
    "location": "New York, NY",
    "job_type": null,
    "level": "senior_level",
    "radius": "25",
    "sort": "date",
    "from_days": "7",
    "remote": "remote",
    "country": "us",
    "max_rows": 15
  },
  "user_preferences": {
    "skills": ["Python", "AWS", "Docker"],
    "experience_years": 5,
    "remote_preference": "required",
    "min_salary": 120000,
    "company_size": "large",
    "important_benefits": ["Health insurance", "401(k) matching"]
  }
}
```

Output (Some jobs):

```
{
```

```
"jobs": [  
  {  
    "id": null,  
    "title": "Senior Staff Software Engineer, eCommerce",  
    "company": "Block",  
    "rating": 3.6,  
    "location": "New York, NY",  
    "salary": "$263,600 - $395,400 a year",  
    "salary_range": "263600-395400 (yearly)",  
    "is_remote": true,  
    "job_type": [],  
    "benefits": [  
      "Health insurance",  
      "Retirement plan"  
    ],  
    "requirements": [],  
    "urgent_hire": false,  
    "posted": "7 days ago",  
    "url": "https://www.indeed.com/viewjob?jk=de0f8fafd57a0255",  
    "apply_url": "",  
    "score": 55,  
    "explanation": "Matches on remote preference and location. Salary range (Not specified)  
does not meet the minimum requirement. Missing benefits: 'Health insurance', '401(k) matching'.  
Missing skills: none."
```

```
},  
  
{  
  
  "id": null,  
  
  "title": "Senior Staff Software Engineer, eCommerce",  
  
  "company": "Block",  
  
  "rating": 3.6,  
  
  "location": "New York, NY",  
  
  "salary": "$263,600 - $395,400 a year",  
  
  "salary_range": "263600-395400 (yearly)",  
  
  "is_remote": true,  
  
  "job_type": [],  
  
  "benefits": [  
  
    "Health insurance",  
  
    "Retirement plan"  
  
  ],  
  
  "requirements": [],  
  
  "urgent_hire": false,  
  
  "posted": "7 days ago",  
  
  "url": "https://www.indeed.com/viewjob?jk=de0f8fafd57a0255",  
  
  "apply_url": "",  
  
  "score": 55,  
  
  "explanation": "Matches on remote preference and location. Salary range (Not specified)  
does not meet the minimum requirement. Missing benefits: 'Health insurance', '401(k) matching'.  
Missing skills: none."
```

},.....

]

Conclusion

In summary, this system helps users:

- **Search for jobs easily** using custom filters.
- **Receive personalized job recommendations** ranked by AI.
- **Save time** by seeing the most relevant jobs first, along with reasons for their ranking.

Thus, AI significantly enhances the job search experience by ensuring users are presented with opportunities that are not only relevant but also aligned with their unique preferences and career goals.