



Job Services

22.01.2023

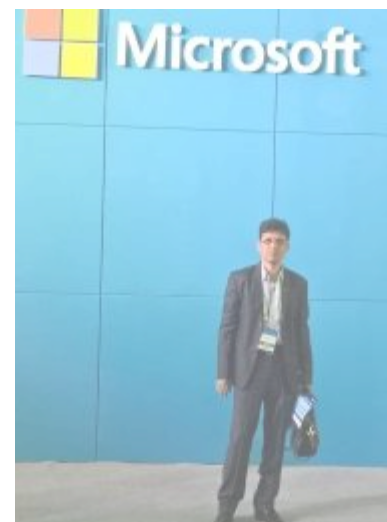
—

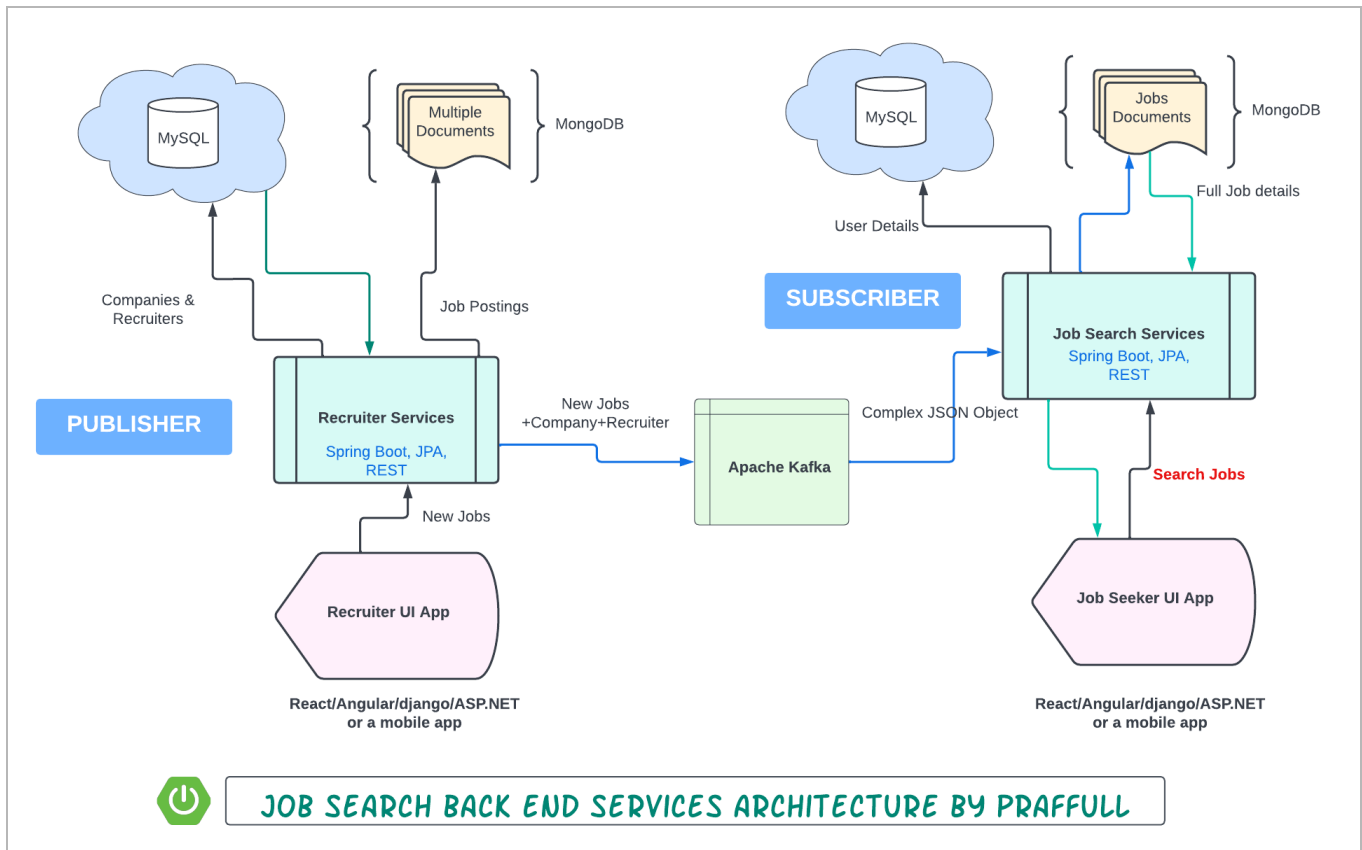
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Overview

This **cloud-ready** application is a collection of spring boot microservices that are used to post and search jobs. Recruiters add jobs for their respective companies and these jobs are reflected on the Job search portal for the job seekers. These application can also be containerized using

Parts and Services

1. Recruiter services - Post new jobs (Kafka publisher)
2. Search Service- Search jobs based on skills & locations (Kafka subscriber)
3. MongoDB Atlas and MySQL on Cloud
4. Eureka Server & API Gateway
5. Client-side django UI applications for Recruiters (Posting) and Job seekers (Search)

Main modules & their functions

Job Publisher

- ☐ Register a company
- ☐ Register a recruiter for a company (MySQL)
- ☐ Post new jobs & store them in MongoDB
- ☐ Publish the Job, Company and Recruiter data on Kafka

Job Subscriber

- ☐ Read Complete new job details from Kafka
- ☐ Store full job data in local MongoDB database
- ☐ Search Job on Skills and Locations
- ☐ Return JSON results to the client side web UI or Mobile App

Back End Application

This is a Java back end application that can be connected to any front end tools like React, Angular, ASP.NET, django or a mobile app. This is completely based on REST services to ensure performance authenticated by Spring security (OAuth2).

The client side applications are expected to perform input validations.

Prominent Features

I. The top tools & technologies for back-end services and the basic UI

Java17, Spring Boot, JPA, REST APIs, STS, MongoDB Atlas cloud, MySQL cloud, Apache kafka, Spring Security, Eureka, HTML5, Bootstrap CSS, django, Python 3.11, JavaScript & AJAX

II. Based on modular Spring boot **Microservices** architecture

III. Cloud databases - MongoDB & MySQL

IV. Live embedded Data analysis & Visualization with MongoDB charts

V. Ready to containerize using Docker and host on AWS/Azure

Screenshots

1] Zookeeper & Kafka server running

```

C:\Windows\System32\cmd.exe - zookeeper-server-start.bat zookeeper.properties
[2023-01-21 14:51:21,873] INFO Configuring NIO connection handler with 10s sessionless connection timeout, 1 selector th
read(s), 8 worker threads, and 64 kB direct buffers. (org.apache.zookeeper.server.NIOServerCnxnFactory)
[2023-01-21 14:51:21,878] INFO binding to port 0.0.0.0/0.0.0.0:2181 (org.apache.zookeeper.server.NIOServerCnxnFactory)
[2023-01-21 14:51:51,189] INFO [GroupMetadataManager brokerId=0] Finished loading offsets and group metadata from __cons
umer_offsets-36 in 0 milliseconds for epoch 0, of which 0 milliseconds was spent in the scheduler. (kafka.coordinator.gr
oup.GroupMetadataManager)
[2023-01-21 14:51:51,189] INFO [GroupMetadataManager brokerId=0] Scheduling loading of offsets and group metadata from _
consumer_offsets-6 for epoch 0 (kafka.coordinator.group.GroupMetadataManager)
[2023-01-21 14:51:51,190] INFO [GroupCoordinator 0]: Elected as the group coordinator for partition 43 in epoch 0 (kafka
.coordinator.group.GroupCoordinator)
[2023-01-21 14:51:51,190] INFO [GroupMetadataManager brokerId=0] Finished loading offsets and group metadata from __cons
umer_offsets-6 in 0 milliseconds for epoch 0, of which 0 milliseconds was spent in the scheduler. (kafka.coordinator.gr
oup.GroupMetadataManager)
[2023-01-21 14:51:51,191] INFO [GroupMetadataManager brokerId=0] Scheduling loading of offsets and group metadata from _
consumer_offsets-43 for epoch 0 (kafka.coordinator.group.GroupMetadataManager)
[2023-01-21 14:51:51,192] INFO [GroupCoordinator 0]: Elected as the group coordinator for partition 13 in epoch 0 (kafka
.coordinator.group.GroupCoordinator)
[2023-01-21 14:51:51,192] INFO [GroupMetadataManager brokerId=0] Finished loading offsets and group metadata from __cons
umer_offsets-43 in 0 milliseconds for epoch 0, of which 0 milliseconds was spent in the scheduler. (kafka.coordinator.gr
oup.GroupMetadataManager)
[2023-01-21 14:51:51,192] INFO [GroupMetadataManager brokerId=0] Scheduling loading of offsets and group metadata from _
consumer_offsets-13 for epoch 0 (kafka.coordinator.group.GroupMetadataManager)
[2023-01-21 14:51:51,193] INFO [GroupCoordinator 0]: Elected as the group coordinator for partition 28 in epoch 0 (kafka
.coordinator.group.GroupCoordinator)
[2023-01-21 14:51:51,194] INFO [GroupMetadataManager brokerId=0] Finished loading offsets and group metadata from __cons
umer_offsets-13 in 1 milliseconds for epoch 0, of which 0 milliseconds was spent in the scheduler. (kafka.coordinator.gr
oup.GroupMetadataManager)
[2023-01-21 14:51:51,194] INFO [GroupMetadataManager brokerId=0] Scheduling loading of offsets and group metadata from _
consumer_offsets-28 for epoch 0 (kafka.coordinator.group.GroupMetadataManager)
[2023-01-21 14:51:51,195] INFO [GroupMetadataManager brokerId=0] Finished loading offsets and group metadata from __cons
umer_offsets-28 in 0 milliseconds for epoch 0, of which 0 milliseconds was spent in the scheduler. (kafka.coordinator.gr
oup.GroupMetadataManager)

```

2] Kafka topic created

```

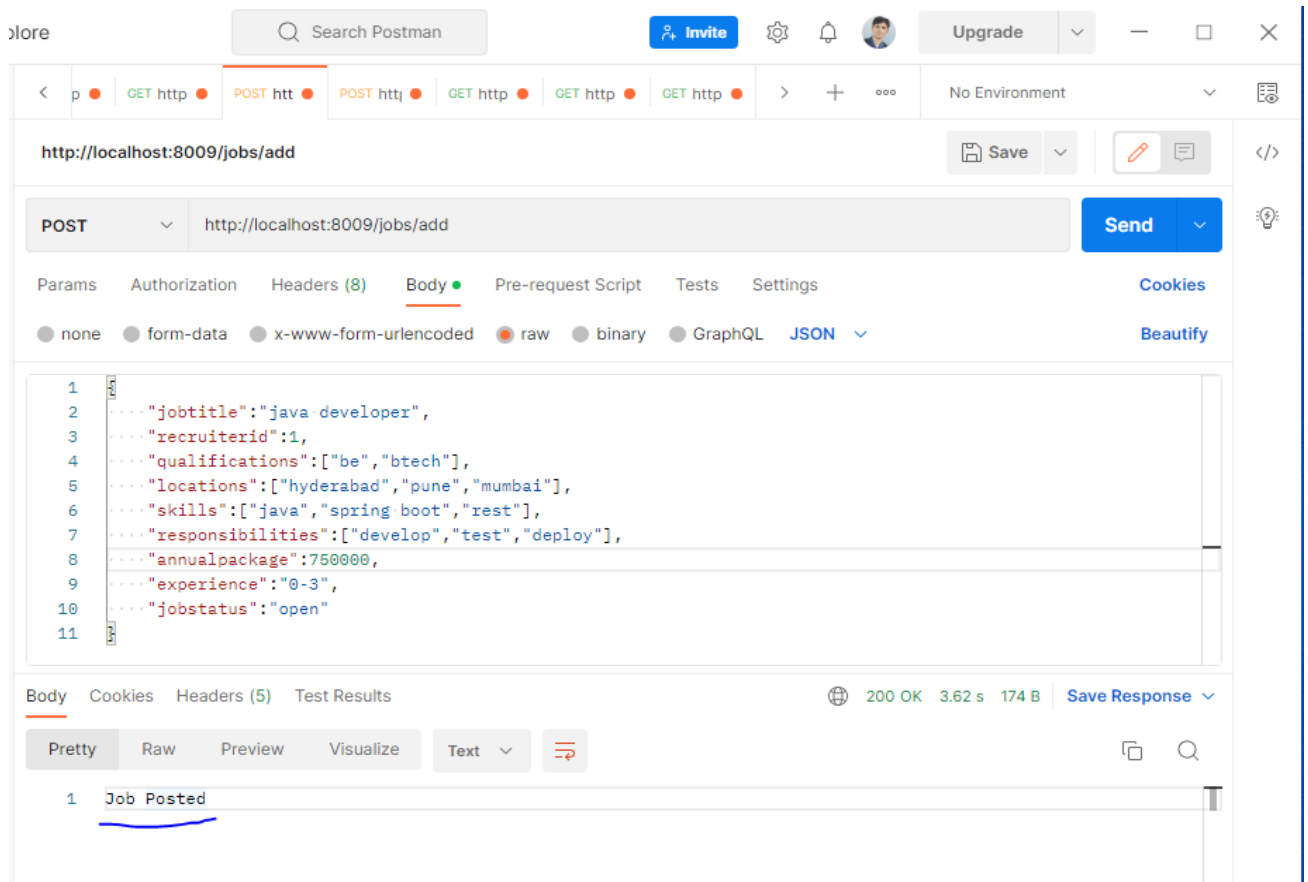
G:\kafka_2.13-3.3.1\bin\windows>kafka-topics --create --bootstrap-server localhost:9092 --replication-factor 1 --partiti
ons 6 --topic newjobs
Created topic newjobs.

G:\kafka_2.13-3.3.1\bin\windows>kafka-topics.bat --list --bootstrap-server localhost:9092
__consumer_offsets
food-orders
job-openings
newjobs
topic-spider

G:\kafka_2.13-3.3.1\bin\windows>

```

3] New Job posted by the recruiter



4] Job published on Kafka by publisher service

```

2023-01-22 11:47:09.779 INFO 80 --- [ad | producer-2] org.apache.kafka.clients.Metadata : [Producer clientId=produc
2023-01-22 11:47:09.779 INFO 80 --- [ad | producer-2] org.apache.kafka.clients.Metadata : [Producer clientId=produc
2023-01-22 11:47:09.779 INFO 80 --- [ad | producer-2] org.apache.kafka.clients.Metadata : [Producer clientId=produc
2023-01-22 11:47:09.779 INFO 80 --- [ad | producer-2] org.apache.kafka.clients.Metadata : [Producer clientId=produc
object published to kafka

```

5] Job retrieved by the subscriber service

```

2023-01-22 11:31:08.998 INFO 14116 --- [nio-8013-exec-2] o.s.web.servlet.DispatcherServlet : Initializing Servlet '
2023-01-22 11:31:08.999 INFO 14116 --- [nio-8013-exec-2] o.s.web.servlet.DispatcherServlet : Completed initializati
2023-01-22 11:39:16.132 INFO 14116 --- [ntainer#0-0-C-1] org.apache.kafka.clients.NetworkClient : [Consumer clientId=con
Job object saved in DB : JobResponseEntity(id=63ccd4e507a9d3709f5ddb0d, jobtitle=java developer, recruiterid=1, qualificati

```

6] Full job details with company and recruiter information stored on Mongo Cloud

The screenshot shows the MongoDB Atlas web interface for a project named 'Spider Projects One'. The 'Database' section is active, showing the 'openingsdb' database and the 'jobopenings' collection. The 'QUERY RESULTS' section displays a single document with the following structure:

```

{
  "_id": ObjectId("63ccd4e507a9d3709f5ddb0d"),
  "jobtitle": "java developer",
  "recruiterid": 1,
  "qualifications": [ "be", "btech" ],
  "locations": [ "hyderabad", "pune", "mumbai" ],
  "skills": [ "java", "spring boot", "rest" ],
  "responsibilities": [ "develop", "test", "deploy" ],
  "annualpackage": 750000,
  "experience": "0-3",
  "postdate": "2023-01-22",
  "jobstatus": "open",
  "recruiterResponseEntity": {
    "recruiterid": 1,
    "recruitername": "emily blunt",
    "companyid": 4,
    "mobilenumber": "9899911223",
    "emailid": "emily@outlook.com",
    "city": "london",
    "company": {
      "companyid": 4,
      "companyname": "volkswagen",
      "category": "mnc",
      "industry": "automobile",
      "country": "germany",
      "employees": 500000,
      "companydesc": "Volkswagen, is a German producer of premium and luxury motor vehicle manufacturer headquartered in Wolfsburg, Lower Saxony, Germany. Founded in 1937 by the German Labour Front under the Nazi Party and revived into a gl"
    }
  }
}

```

```

Atlas atlas-6mos0c-shard-0 [primary] openingsdb> db.jobopenings.find()
[
  {
    _id: ObjectId("63ccd4e507a9d3709f5ddb0d"),
    jobtitle: 'java developer',
    recruiterid: 1,
    qualifications: [ 'be', 'btech' ],
    locations: [ 'hyderabad', 'pune', 'mumbai' ],
    skills: [ 'java', 'spring boot', 'rest' ],
    responsibilities: [ 'develop', 'test', 'deploy' ],
    annualpackage: 750000,
    experience: '0-3',
    postdate: '2023-01-22',
    jobstatus: 'open',
    recruiterResponseEntity: {
      recruiterid: 1,
      recruitername: 'emily blunt',
      companyid: 4,
      mobilenumber: '9899911223',
      emailid: 'emily@outlook.com',
      city: 'london',
      company: {
        companyid: 4,
        companyname: 'volkswagen',
        category: 'mnc',
        industry: 'automobile',
        country: 'germany',
        employees: 500000,
        companydesc: "Volkswagen, is a German producer of premium and luxury motor vehicle manufacturer headquartered in Wolfsburg, Lower Saxony, Germany. Founded in 1937 by the German Labour Front under the Nazi Party and revived into a gl"
      }
    }
  }
]

```

7] Search jobs on Skills

The image shows the Postman application interface. At the top, there's a search bar and navigation icons. The main area displays a GET request to `http://localhost:8013/jobs/skill/java`. The request is successful, returning a 200 OK status with a response time of 78 ms and a body size of 2.49 KB. The response body is shown in JSON format, containing job details for a Java developer.

Request:

```
GET http://localhost:8013/jobs/skill/java
```

Response:

```
{
  "id": "63ccd4e507a9d3709f5ddb0d",
  "jobtitle": "java developer",
  "recruiterid": 1,
  "qualifications": [
    "be",
    "btech"
  ],
  "locations": [
    "hyderabad",
    "pune",
    "mumbai"
  ],
  "skills": [
    "java",
    "spring boot",
    "rest"
  ],
  "responsibilities": [
    "develop",
    "test"
  ]
}
```

8] Search jobs on locations

The screenshot shows the Postman application interface. At the top, there's a search bar and navigation icons. The main area displays a GET request to `http://localhost:8013/jobs/location/mumbai`. The request is saved, and the response is visible in the 'Body' tab, showing a JSON object with job details.

Request:

```
GET http://localhost:8013/jobs/location/mumbai
```

Response (JSON):

```
{
  "id": "63ccd4e507a9d3709f5ddb0d",
  "jobtitle": "java developer",
  "recruiterid": 1,
  "qualifications": [
    "be",
    "btech"
  ],
  "locations": [
    "hyderabad",
    "pune",
    "mumbai"
  ],
  "skills": [
    "java",
    "spring boot",
    "rest"
  ],
  "responsibilities": [
    "develop",
    "test"
  ]
}
```

The bottom status bar shows '200 OK', '65 ms', '5.9 KB', and a 'Save Response' button.

9] Search jobs on skills and locations

The screenshot shows the Postman interface for a POST request to `http://localhost:8013/jobs/search`. The request body is a JSON object with the following structure:

```
1 {
2   "skills": ["azure"],
3   "locations": ["mumbai"]
4 }
```

The response is a 200 OK status with a response time of 69 ms and a size of 1.05 KB. The response body is displayed in the 'Body' tab, showing a JSON object with the following structure:

```
1 [
2   {
3     "id": "63ccd7d607a9d3709f5ddb10",
4     "jobtitle": "cloud engineer",
5     "recruiterid": 3,
6     "qualifications": [
7       "be",
8       "btech"
9     ],
10    "locations": [
11      "pune",
12      "mumbai"
13    ],
14    "skills": [
15      "azure",
16      "aws",
17      "gcp"
18    ]
19  }
20 ]
```

The interface includes a search bar at the top, a list of requests on the left, and a bottom bar with navigation icons for Cookies, Capture requests, Runner, Trash, and other features.

10] A basic client-side application for new job entry by recruiters

JobsEntry Application

This django-Python application calls Java spring boot rest services to store new job postings by the recruiters.

UserID

Password

New Job Entry

Job Title	<input type="text" value="mongo developer"/>
RecruiterID	<input type="text" value="3"/>
Qualifications (separate by comma)	<input type="text" value="be,btech,bca,mca"/>
Locations (separate by comma)	<input type="text" value="mumbai,hyderabad"/>
Skills (separate by comma)	<input type="text" value="java,mongodb"/>
Responsibilities (separate by comma)	<input type="text" value="coding,use mongo cloud,test"/>
Annual Package (LPA)	<input type="text" value="750000"/>
Experience	<input type="text" value="1-3"/>

11] Job search client-side django application - RAW JSON response

Job Search Application

Skill	<input type="text" value="java"/>	Location	<input type="text" value="mumbai"/>	<input type="button" value="Search"/>
-------	-----------------------------------	----------	-------------------------------------	---------------------------------------

Search Result

Skill : ['java'] Location: ['mumbai']

Job Openings :

```
{'id': '63ccd4e507a9d3709f5ddb0d', 'jobtitle': 'java developer', 'recruiterid': 1, 'qualifications': ['be', 'btech'], 'locations': ['hyderabad', 'pune', 'mumbai'], 'skills': ['java', 'spring boot', 'rest'], 'responsibilities': ['develop', 'test', 'deploy'], 'annualpackage': 750000.0, 'experience': '0-3', 'postdate': '2023-01-22', 'jobstatus': 'open', 'recruiterResponseEntity': {'recruiterid': 1, 'recruitername': 'emily blunt', 'companyid': 4, 'mobilenumber': '9890911223', 'emailid': 'emily@outlook.com', 'city': 'london', 'company': {'companyid': 4, 'companyname': 'volkswagen', 'category': 'mnc', 'industry': 'automobile', 'country': 'germany', 'employees': 500000, 'companydesc': "Volkswagen, is a German producer of premium and luxury motor vehicle manufacturer headquartered in Wolfsburg, Lower Saxony, Germany. Founded in 1937 by the German Labour Front under the Nazi Party and revived into a global brand post-World War II by the British Army Officer Ivan Hirst, it is known for the iconic Beetle and serves as the flagship brand of the Volkswagen Group, the largest automotive manufacturer by worldwide sales in 2016 and 2017. The group's biggest market is in China, which delivers 40 percent of its sales and profits. Its name is derived from the German-language terms Volk and Wagen, translating to people's car when combined."}}}
```

```
{'id': '63cce63a07a9d3709f5ddb12', 'jobtitle': 'software developer', 'recruiterid': 2, 'qualifications': ['be', 'btech'], 'locations': ['pune', 'mumbai', 'hyderabad'], 'skills': ['oracle', 'mysql', 'java', 'spring'], 'responsibilities': ['code', 'develop', 'test'], 'annualpackage': 900000.0, 'experience': '1-4', 'postdate': '2023-01-22', 'jobstatus': 'open', 'recruiterResponseEntity': {'recruiterid': 2, 'recruitername': 'jos buttler', 'companyid': 2, 'mobilenumber': '9028291145', 'emailid': 'buttler@accenture.com', 'city': 'manchester', 'company': {'companyid': 2, 'companyname': 'Accenture', 'category': 'mnc', 'industry': 'it services', 'country': 'ireland', 'employees': 300000, 'companydesc': 'Accenture is an Irish-American professional services company based in Dublin, specializing in information technology (IT) services and consulting. A Fortune Global 500 company, it reported revenues of $61.6 billion in 2022. Accentures current clients include 91 of the Fortune Global 100 and more than three-quarters of the Fortune Global 500. As of 2022, Accenture is considered the largest consulting firm in the world by number of employees.'}}}
```

Job Search Application

Skill	<input type="text" value="azure"/>	Location	<input type="text" value="pune"/>	<input type="button" value="Search"/>
-------	------------------------------------	----------	-----------------------------------	---------------------------------------

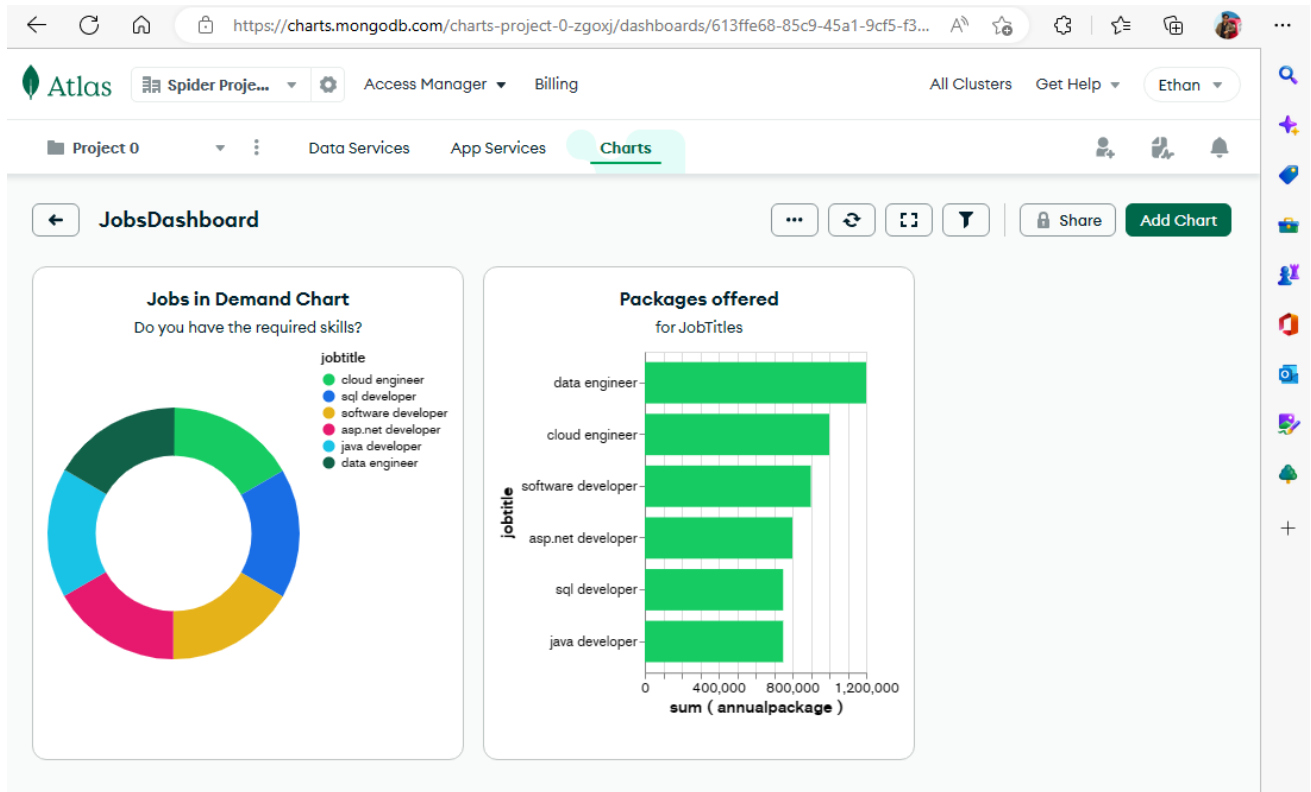
Search Result

Skill : ['azure'] Location: ['pune']

Job Openings :

```
{'id': '63ccd7d607a9d3709f5ddb10', 'jobtitle': 'cloud engineer', 'recruiterid': 3, 'qualifications': ['be', 'btech'], 'locations': ['pune', 'mumbai'], 'skills': ['azure', 'aws', 'gcp'], 'responsibilities': ['admin', 'provision'], 'annualpackage': 1000000.0, 'experience': '2-4', 'postdate': '2023-01-22', 'jobstatus': 'open', 'recruiterResponseEntity': {'recruiterid': 3, 'recruitername': 'steve smith', 'companyid': 3, 'mobilenumber': '9890955667', 'emailid': 'smith@tcs.com', 'city': 'sydney', 'company': {'companyid': 3, 'companyname': 'tcs', 'category': 'mnc', 'industry': 'it services', 'country': 'india', 'employees': 600000, 'companydesc': 'Tata Consultancy Services (TCS) is an Indian multinational information technology (IT) services and consulting company with its headquarters in Mumbai. It is a part of the Tata Group and operates in 150 locations across 46 countries. In July 2022, it was reported that TCS had over 600,000 employees worldwide.'}}}
```

12] Embed Data Analysis & Visualization anywhere



Temporarily disabled for easier testing -

- Eureka dependencies
- Google OAuth2 security
- Logging
- Actuators

These tools, Exception Handling, Validations and UI formatting with React can be easily added anytime if required as part of the projects. Missing code is also uploaded on github separately.

Developed by

Prafull Manekar