# Vel Tech Multi Tech dr.Rangarajan dr.Sakunthala Engineering college

(An Autonomous Institution)

#42, Avadi – Vel Tech Road, Poonamallee - Avadi High Rd, Vel Nagar, Chennai, Tamil Nadu 600062

## **PROJECT**

**Skill / Job Recommender Application** 

**DONE BY TEAM ID: PNT2022TMID22461** 

Prakash A

Shanmugarajan M

Keerthivasan JV

**Sudheer** 

### **INDEX**

#### 1. INTRODUCTION

**Project Overview** 

Purpose

#### 2. LITERATURE SURVEY

Existing problem

References

**Problem Statement Definition** 

#### 3. IDEATION & PROPOSED SOLUTION

**Empathy Map Canvas** 

Ideation & Brainstorming

**Proposed Solution** 

Problem Solution fit

#### 4. REQUIREMENT ANALYSIS

Functional requirement

Non-Functional requirements

#### 5. PROJECT DESIGN

**Data Flow Diagrams** 

Solution & Technical Architecture

**User Stories** 

#### 6. PROJECT PLANNING & SCHEDULING

Sprint Planning & Estimation

Sprint Delivery Schedule

Reports from JIRA

#### 7. CODING & SOLUTIONING (Explain the features added in the project along with code)

Feature 1

Feature 2

Database Schema (if Applicable)

#### 8. TESTING

**Test Cases** 

**User Acceptance Testing** 

#### 9. RESULTS

Performance Metrics

#### 10. ADVANTAGES & DISADVANTAGES

#### 11. CONCLUSION

#### 12. FUTURE SCOPE

#### 13. APPENDIX

Source Code

GitHub & Project Demo Link

### 1. INTRODUCTION

## 1.1 Project Overview

People can follow a healthy lifestyle through eating healthy food. The food we eat must contain nutrients which are essential for proper nourishment, growth and immunity for the human body. In today's world, most of the people are living under uncertainty to decide on which foods are healthy and if healthy how much of it can be consumed. The nutritional facts label is printed on food products all over the world and they are represented using a similar structure but these labelling of nutritional information is difficult to understand by the common people. Another issue is that these labels are only for processed and manufactured foods which can be bought in the stores. To make this information accessible in an easier way by classifying these food products into five levels of healthiness ranging from very healthy to very dangerous is the aim of this project work. This is done by a sequential process of data retrieval, data cleaning, data labelling and supervised learning.

## 1.2 Purpose

The idea of this application is that the user can capture the images of different fruits and vegetables, and then the image will be sent to the trained model. The model analyses the image and detects the nutrition based on the fruits like (Sugar, Fibre, Protein, Calorie intake, etc.).

### 2. LITERATURE SURVEY

## 2.1 Existing problem

- Job recommender systems have become popular since they successfully reduce information overload by generating personalized job suggestions. Although in the literature exists a variety of techniquesand strategies used as part of job recommender systems, most of them fail to recommending job vacancies that properly to the job seekers profiles.
- Formal job search and application typically involves matching one's profile or curriculum vitae (CV) with the available job descriptions (JD), and then applying for those job opportunities whose JDs are the closest match to one's CV, and also considering his/her needs, constraints, and aspirations. The fundamental premise this paper builds upon is that skills are one of the most important aspects while matching CVs to JDs, and play a major role in recommending JDs which are the best match for a CV
- The Internet-based recruiting platforms become a primary recruitment channel in most companies. While such platforms decrease the recruitment time and advertisement cost, they suffer from an inappropriateness of traditional information retrieval techniques like the Boolean search methods. Consequently, a vast amount of candidates missed the opportunity of recruiting. The recommender system technology aims to help users in finding items that match their personnel interests; it has a successful usage in e-commerce applications to deal with problems related to information overload efficiently. In order to improve the e-recruiting functionality, many recommender system approaches have been proposed.

### 2.2 References

- L. Jiang, B. Qiu, X. Liu, C. Huang and K. Lin, "DeepFood: Food Image Analysis and Dietary Assessment via Deep Model," in IEEE Access, vol. 8, pp. 47477-47489, 2020, doi: 10.1109/ACCESS.2020.2973625.
- J. Aravind and J. D. Sweetlin, "Nutrient facts analysis using supervised learning approaches," 2017 Conference on Information and Communication Technology (CICT), 2017, pp. 1-6, doi: 10.1109/INFOCOMTECH.2017.8340604.
- M. -L. Chiang, C. -A. Wu, J. -K. Feng, C. -Y. Fang and S. -W. Chen, "Food Calorie and Nutrition Analysis System based on Mask R-CNN," 2019 IEEE 5th International Conference on Computer and Communications (ICCC), 2019, pp. 1721-1728, doi: 10.1109/ICCC47050.2019.9064257.

Gerald F. CombsJrProfessor Emeritus, in The Vitamins (Fourth Edition), 2012 Mirjana Gurinović, ... Maria Glibetić, in Reference Module in Food Science, 2017

## 2.3 Problem Statement Definition

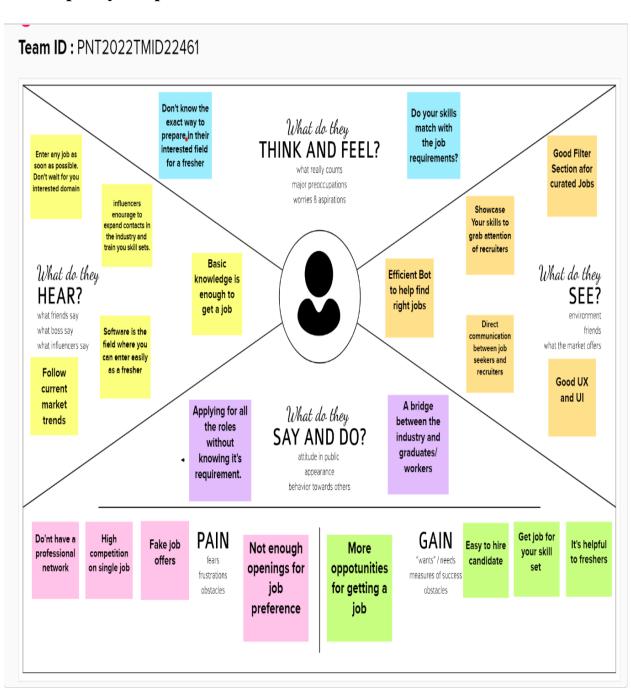
In the ultimate years, job recommender systems have emerged as famous for the reason that they correctly minimize data overload by using producing customized job suggestions. Although in the literature exists a variety of strategies and techniques used as part of job recommender systems, most of them fail to recommending job

vacancies that healthy proper to the job seekers profiles. Thus, the contributions of this work are threefold, we:

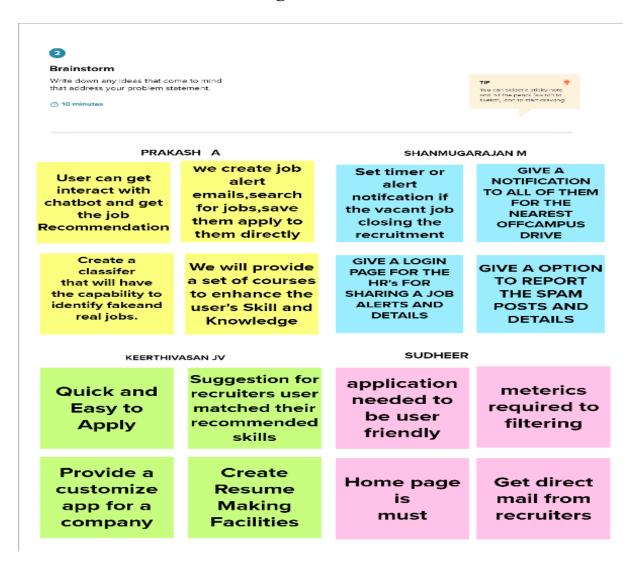
- i)made publicly accessible a new dataset formed by a set of job seekers profiles and a set of job vacancies amassed from distinctive job search engine sites
- ii) put ahead the proposal of a framework for job suggestion based totally on expert competencies of job seekers
- iii) carried out an assessment to quantify empirically the advice competencies of two state of-the-art methods, thinking about special configurations, inside the proposed framework. Thus, we current a familiar panorama of job suggestion project aiming to facilitate lookup and realworld utility sketch regarding this necessary issue

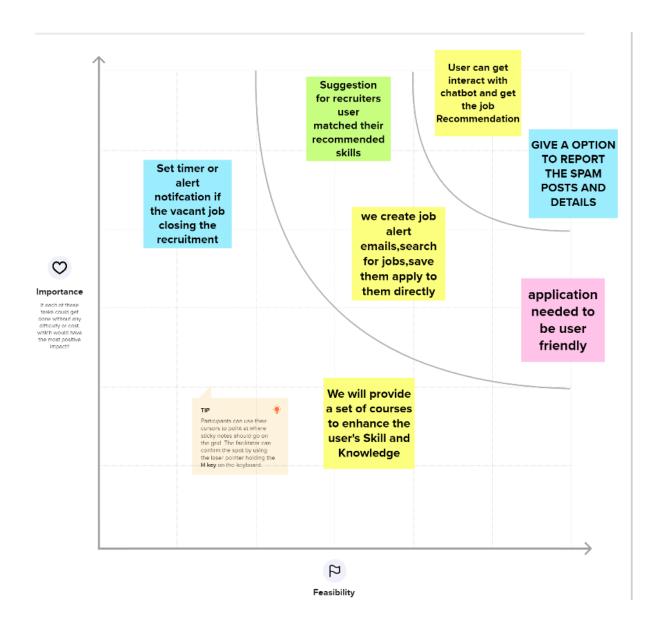
### 3. IDEATION & PROPOSED SOLUTION

## 3.1 Empathy Map Canvas



## 3.2 Ideation & Brainstorming





# 3.3 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ul> <li>For job seekers, it is time-consuming to search for which job suits them based on their skill set.</li> <li>Job seekers have to check each recruiter's website in order to search for any job vacancies.</li> <li>Recruiters facing difficulties in advertising their job vacancies.</li> <li>Recruiters also find it difficult to verify that the person with the right skill set has applied for the job.</li> </ul>
2.	Idea / Solution description	<ul> <li>Recruiters can post for the job openings in our application.</li> <li>Use a job search API to get the current job openings in the market which will fetch the data directly from the webpage.</li> <li>User can interact with the chatbot via entering skills to the bot, it suggests some job based on entered skills.</li> <li>lists of jobs are uploaded into the database and the chatbot is also connected with the database once the user enters skills into the chatbot it will search for related jobs in the database then it displays various jobs related to skills.</li> <li>By using this web application job seekers directly choose their job related to their skills without needing help from someone.</li> </ul>
3.	Novelty / Uniqueness	<ul> <li>Search-based recommendation.</li> <li>Chatbot-based interaction, built using IBM Watson assistant</li> </ul>

		<ul> <li>Send notifications to users regarding job-based courses to enhance their skills.</li> <li>Customize the recommendation based on the experience, location and salary expectations of the users.</li> </ul>
4.	Social Impact / Customer Satisfaction	<ul> <li>The main aim of the project is to build an application that recommends jobs for job seekers.</li> <li>The user can search using a chatbot and the chatbot recommends the job. Even the application can send notifications based on matching jobs or upcoming jobs through e-mail.</li> </ul>
5.	Business Model (Revenue Model)	<ul> <li>Users who have bought the subscription can get job alerts prior to others.</li> <li>we can generate revenue by offering subscription-based applications to jobseekers.</li> </ul>
6.	Scalability of the Solution	<ul> <li>Even if the number of users increases, the system will perform well.</li> <li>Need to be responsive and able to react to changes as fast as possible.</li> </ul>

# 3.4 Problem Solution fit

Problem-Solution Fit canvas		Recommender Application Version: TMID22461
1. CUSTOMER SEGMENT(S)  Customers who are searching jobs with suitable skills	6. CUSTOMER LIMITATIONS EC. BUDGET, DEVICES  Not having enough money for survival  Do not have place to show their skills to recuriters	Using online sites for searching jobs which only includes their qualifications not showing their skills and also taking interviews in offcampus will not provide enough opportunities to be hired at their desired company
2. PROBLEMS / PAINS *ITS FREQUENCY  Existing job searching websites not provide enough opportunities to be hired by reputed companies  Not enough opening for job preferences	Existing solution will not provide enough opportunities for our customer to be hired, and show their skills to recruiters and this leads to poverty and also causing to lose dignity in society due to unemployment	When Users apply for fraudulent jobs, they get unhappy due to wasted time  When candidates with inadequate qualifications apply for a position, employers become irritated.
getting a job  Get job for your skill set  4. EMOTIONS EFFORE / AFTER  BEFORE AFTER  Stressed Felling Connected Unsatisfaction Connected to the society	Recruiters can post for the job openings in our application. Use a job search API to get the current job openings in the market which will fetch the data directly from the webpage. User can interact with the chatbot via entering skills to the bot, it suggests some job based on entered skills.  lists of jobs are uploaded into the database and the chatbot is also connected with the database once the user enters skills into the chatbot it will search for related jobs in the database then it displays various jobs related to skills.  By using this web application job seekers directly choose their job related	8. CHANNELS of BEHAVIOR ONLINE Apply for jobs Review job applications  OFFLINE Final level interview Checkout location and infrastructure of company Finalize paperwork

# 4. REQUIREMENT ANALYSIS

# 4.1 Functional requirements

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Sign up page.
FR-2	User Confirmation	Confirmation via Email
FR-3	Create a profile and upload a resume	Insert the resume in a website and other details.
FR-4	Search a job and filter section	Search job by location, qualification, categories, company location, experience and keywords
FR-5	Apply for a job	After registering confirm the email and apply for the job
FR-6	Chat bot	Resolve User Simple queries
FR-7	Admin dashboard	Through admin dashboard update job posts, change the status of jobs active or inactive, Update and delete the jobs

# **4.2 Non-Functional requirements**

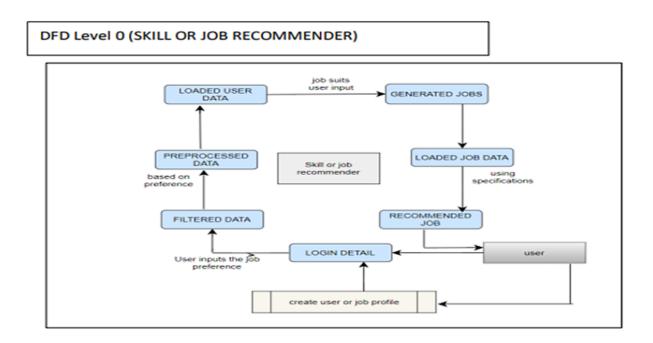
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	This application can be used by job seekers to log in and search for a job based on their Skill set. User-Friendly Application.
NFR-2	Security	using python flask to cloud connect will project security to the project. The database will be safe.
NFR-3	Reliability	To make sure the webpage doesn't go down due to network traffic.
NFR-4	Performance	Focus on loading the webpage as quickly as possible irrespective of the number of users/integrator traffic
NFR-5	Availability	Job seekers should have a dashboard to find out which jobs are suitable for you on our website. You can use our website anytime 24*7
NFR-6	Scalability	The website must be scalable enough to support 1000+ job seeker visits at the same time while maintaining optimal performance.

### 5. PROJECT DESIGN

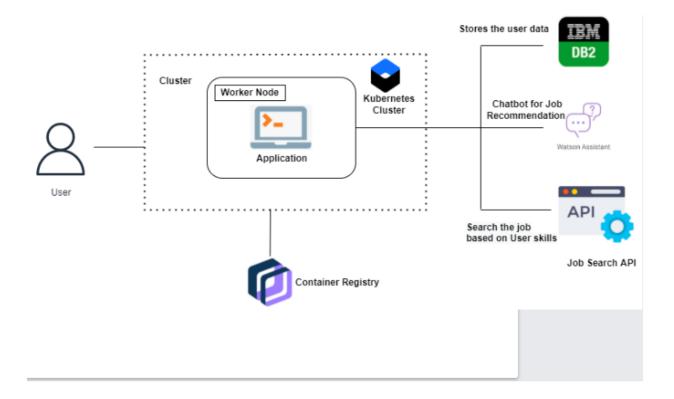
## **5.1 Data Flow Diagrams**

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



### 5.2 Solution & Technical Architecture

Solution architecture (SA) is an architectural description of a specific solution. SAs combine guidance from different enterprise architecture viewpoints (business, information and technical), as well as from the enterprise solution architecture (ESA). A technical solutions architect is somebody who helps companies design and delivers a range of solutions to their problems. Technical solutions architects need to have the skills and the knowledge to create solutions that fit in with company strategy.



## **5.3 User Stories**

Use the below template to list all the user stories for the product.

User Type	Functiona I Requirem ent (Epic)	User Story Numb er	User Story / Task	Acceptance criteria	Priorit y	Releas e
Customer (Web user)	Registratio n	USN-1	As a user, I can register for the application by entering my email, and password, and confirming my password.	I can access my account/dashbo ard	High	Sprint- 1
		USN-2	As a user, I will receive a confirmation email once I have registered for the application	I can receive a confirmation email & click confirm	High	Sprint- 2
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Mediu m	Sprint- 3
		USN-4	As a user, I can register for the application through Gmail	I can register & access the	Mediu m	Sprint- 3

User Type	Functiona I Requirem ent (Epic)	User Story Numb er	User Story / Task	Acceptance criteria	Priorit y	Releas e
				dashboard with Gmail Login		
	Login	USN-5	As a user, I can log into the application by entering email & password	I can access the dashboard	High	Sprint- 1
	Dashboard	USN-6	Genera Dashboard for job seekers through this dashboard see the jobs applied and the status of jobs.	Job seekers: I can see the job status	High	Sprint- 1
		USN-7	The UI which more flexible in large and small devices	Access through all devices	High	Sprint- 1
	Search or Filter	USN-8	The filter section gives more flexibility to a searching job and time saver.	As a user, I can search for the desired company's	Mediu m	Sprint- 2
	Apply	USN-9	As a user, I can apply for a company and submit the application	Able to ably jobs	High	Sprint- 2
Customer Care Executive	Bot or Virtual Assistant	USN-1 0	As an executive to provide a quality-based service chatbot is important for assisting if any assistance is needed for the user	Able to handle user queries	Mediu m	Sprint- 3
Administr ator	Admin Dashboard	USN-1 1	Admin can make change the job posts and able to update the job is active or inactive.	Able to update, delete and change the status of the posts.	High	Sprint- 1

# 6. PROJECT PLANNING & SCHEDULING

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	5	High	Prakash, shanmugar ajan
Sprint-3		USN-2	As a user register instantly using Gmail	4	Low	Sudheer Keerthivas an
Sprint-1	Login	USN-3	As a user, I can log in to the application by entering my email & password	5	High	Sudheer Keerthivas an
Sprint-1	Dashboard	USN-4	As a user I can access the dashboard there able to see jobs and filter the jobs using keywords.	6	High	Prakash, shanmugar ajan
Sprint-3		USN-5	A dashboard which shows applied for jobs	6	Medium	Prakash, shanmugar ajan
Sprint-2		USN-6	As a user I can see my profile	4	Medium	Sudheer Keerthivas an
Sprint-2		USN-7	As a user I can update my profile	4	Medium	Sudheer Keerthivas an
Sprint-1	Apply	USN-8	As a user view and apply for the job successfully	4	Medium	Sudheer Keerthivas an
Sprint-3		USN-9	track the status of the jobs through a dashboard or email services	4	Medium	Sudheer Keerthivas an
Sprint-3	Email	USN-10	As a user get an email about new jobs	6	High	Prakash, shanmugar ajan
Sprint-2		USN-11	A user noticed after successfully applied job	6	Medium	Prakash, shanmugar ajan
Sprint-2	Bot	USN-12	A bot is embedded in the webpage it' help to users instant matched skill jobs active	6	High	Prakash, shanmugar ajan
sprint-4	deploy	USN-13	Creating Docker image	5	Medium	4
Sprint-4		USN-14	Making Ui more interactive	5	Low	Prakash, shanmugar ajan
sprint-4		USN-15	upload image to IBM container Registry	5	Medium	4
sprint-4		USN-16	Deploy on Kubernetes	5	Medium	4

# **6.2 Sprint Delivery Schedule**

## **Project Tracker, Velocity & Burndown Chart:**

Sprint	Total Story Points	Duratio n	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

### **Velocity:**

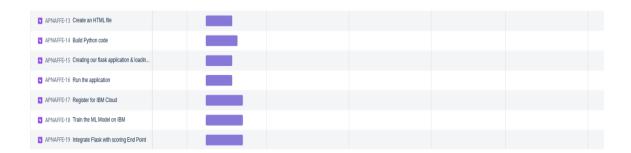
Imagine we have a 6-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

Milestones	Activity	Priority	Team Members
	1 Design the UI for Registration page	Medium	Prakash A Shanmugarajan M
Registration	2. Complete the registration page by placing the required fields.	High	Sudheer Keerthivasan
	3.Write the functionality for the buttons using Python Flask	High	Prakash A Shanmugarajan M

	4. Validate the email id and password uing Js	High	Prakash A Shanmugarajan M
Login	1. Design the UI for Login Page	Medium	Sudheer Keerthivasan
	2. Complete the login page and its functionality (redirect to the homepage)	Medium	Prakash A Shanmugarajan M
	Find Jobsearch API and connect to the job portal	Low	Prakash A Shanmugarajan M
Search	2. the job details and company all details are shown in card	High	Prakash A Shanmugarajan M
	3. Create a Profile section for entering user details	Medium	Sudheer Keerthivasan
Bot	1. Created bot for creating an instant account and finding jobs querry of job title	Low	Prakash A Shanmugarajan M
Deployment	1. Upload the web app to Docker	Medium	Sudheer Keerthivasan
	2. Deploy the Docker image into a Kubernetes Cluster	Medium	Sudheer Keerthivasan

## 6.3 Reports from JIRA



### 7. CODING & SOLUTIONING

The Source code is provided in the GitHub repository

https://github.com/IBM-EPBL/IBM-Project-20991-1659768892/tree/master/Final%20Deliverables

## The detailed Documentation and feature of code

- Click here to view documentation of App.py file
- Click here to view documentation of fetch.py file
- Click here to view documentation of jobDetailsLoad.py file
- Click here to view documentation of jobLoad.py file
- Click here to view documentation of jobadd.py file
- Click here to view documentation of Profile Update.py file

### **API Reference**

Use this API to search for jobs posted across the web in real-time from many major and minor job sites - LinkedIn, Indeed, Glassdoor, ZipRecruiter, BeBee and others using the largest and most comprehensive job aggregate on the web - powered by Google Jobs.

### Request Api format

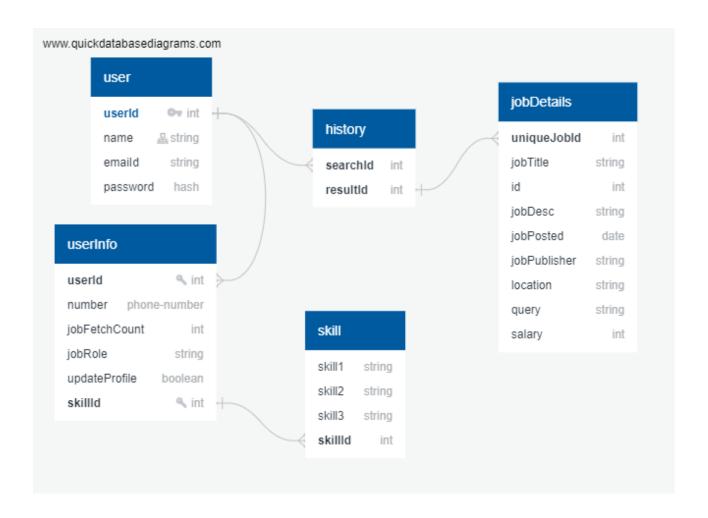
request("GET", url, headers=headers, params=querystring)

Parameter	Type	Description
job title	string	Required. Job title of job
Location	string	Required. Location of job

### **Response Schema**

- type:"object"
- properties:
  - o status:
    - type:"string"
  - o request\_id:
    - type:"string"
  - o data:
    - type:"array"
    - items:
      - type:"object"

## 7.2 Database Schema



# 8. TESTING

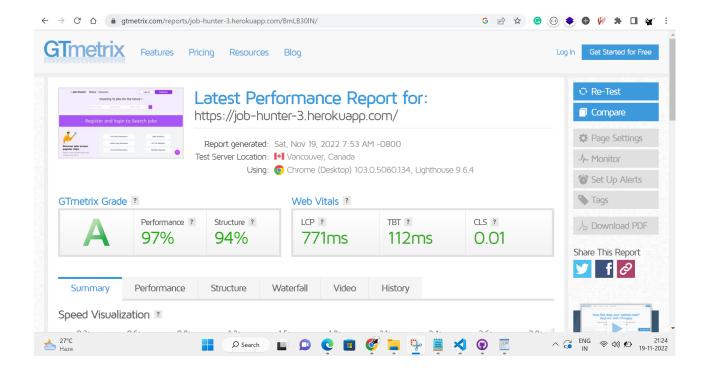
## **8.1 Test Cases**

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data
LoginPage_TC_00	Functional	Home Page	Verify user is able to see the Login/Signup when user clicked on My account button		Enter URL and click go     Click on register and login button     3.verify redirect when login	https://job-hunter-3.herokuapp.com/
LoginPage_TC_00 2	UI	Home Page	Verify the UI elements in Login/Signup		1.Enter URL and click go 2.Click on register button 3.Verify login/Singup popup with below UI elements: a.name text box b.email text box c.password text box d.login button e.New customer? Create account link f.Last password? Recovery password link	https://job-hunter-3.herokuapp.com/
LoginPage_TC_OO 3	Functional	Home page	Verify user is able to log into application with Valid credentials		1.Enter URL(https://job-hunter-3. herokuapp.com) and click go 2.Click on register button 3.Enter Valid username/email in Email text box 4.Enter valid password in password text box 5.Click on signin button	Username: prakash@gmail.com password: 123456
LoginPage_TC_00 4	Functional	Login page	Verify user is able to log into application with InValid credentials		1.Enter URL(https://job-hunter-3. herokuapp.com) and click go 2.Click on login button 3.Enter InValid username/email in Email text box 4.Enter valid password in password text box 5.Click on login button	Username: prakash@gmail.com password: 123456

				Sychick on loght parroll	
dashboard-page4	UI	Dashboard page	Verify user is able to see jobs in dasboard	1,User able to see the jobs listed in dashboard bage	Username: prakash@gmail.com password: 123456
LoginPage_TC_00	Functional	Dashboard page	verify user is able to search jobs in search bar	1, The user able to search skill based jobs	Username: prakash@gmail.com password: 123456
history page	Functional	History page	verify the user are getting the serached jobs in history	1, go to history page	Username: prakash@gmail.com password: 123456
Log out	Functional	.ogout buttor	Verify when logout the session is pop out	1, login the page and click log out	Username: prakash@gmail.com password: 123456
Profile	Ui	Profile page	Verify the user are able to see the user information	1, login the page and see the profile ta	Username: prakash@gmail.com password: 123456
uddate profile	Functional	profile page	verify the user update the profile the ui change	1, login and move to profile update tab and update the user information	Username: prakash@gmail.com password: 123456
course page	Ui	course page	verify the user are able to see course page	1, login and see the course page	Username: prakash@gmail.com password: 123456

# 8.2 performance Testing

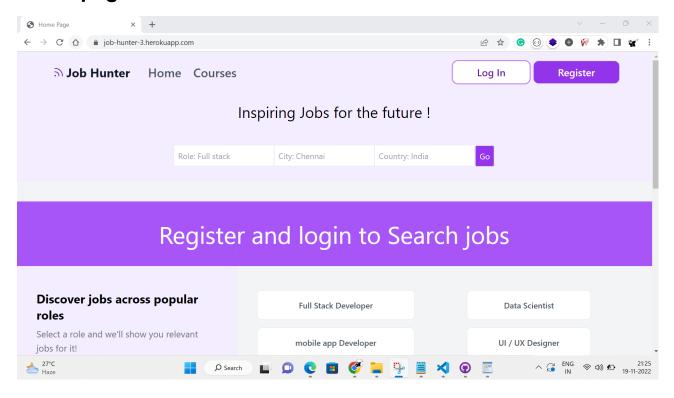
			NFT - Risk Assessment						
S.No	Project Name	Scope/feature	Functional Changes	Hardware Changes	Software Changes	Impact of Downtime	Load/Voluem Changes	Risk Score	Justification
	Skills and job Recommendation	Existing	No Changes	No Changes	No Changes	No Downtime imapct seen	No Changes	GREEN	As we have seen the changes



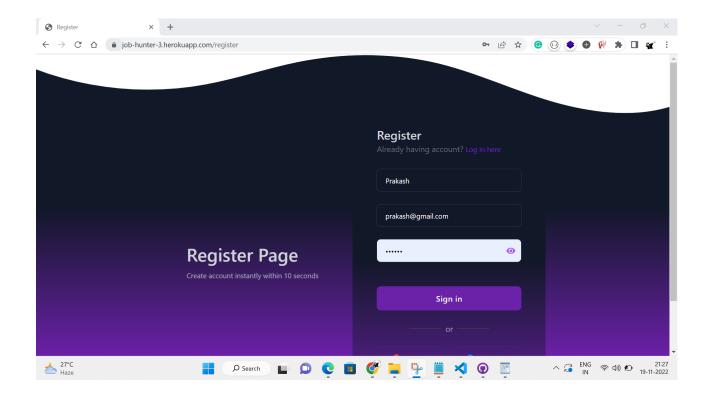
## 9. RESULTS

### **Screenshots:**

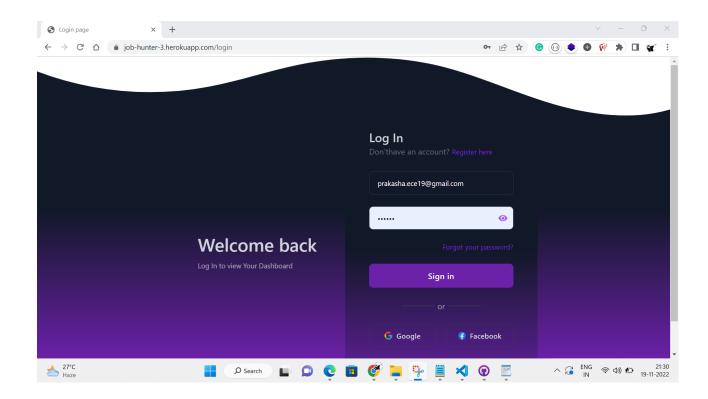
• Home page



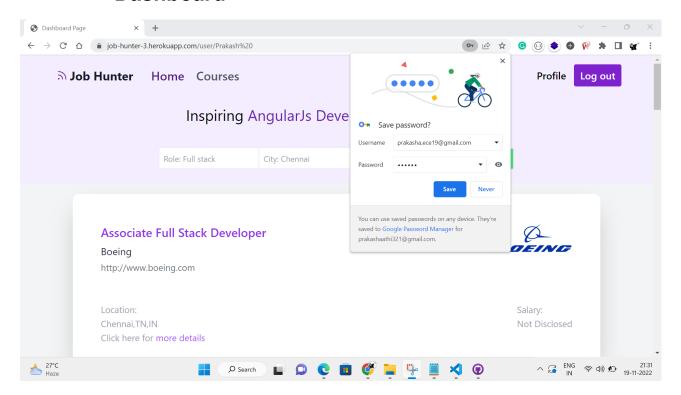
• Register Page



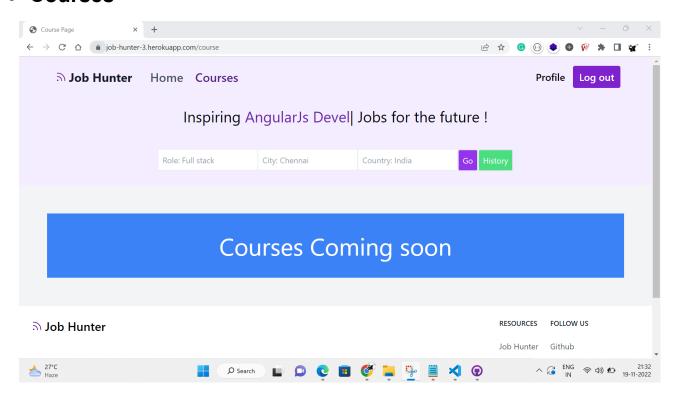
# • Login page



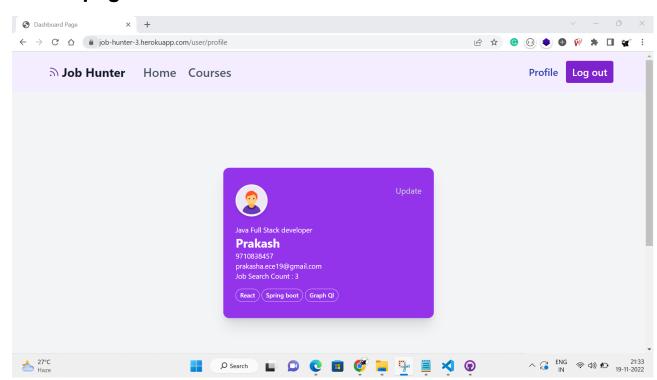
## Dashboard



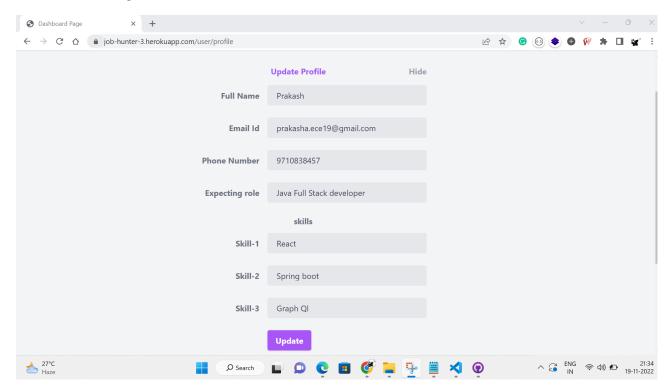
## Courses



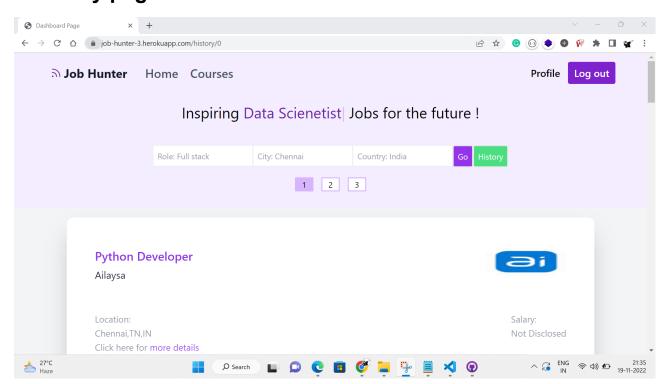
# Profile page



# • Profile Update



# History page



### 10. ADVANTAGES & DISADVANTAGES

## 10.1 Advantages

- ♦ Adaptive system
- ♦ Use many attributes
- Use ontology to categorise jobs and as a knowledge base to define features
- ♦ Various information retrieval techniques are used ♦ Effective matching methods

## 10.2 Disadvantages

- Keyword search method
- ♦ One-way recommendation
- ♦ Knowledge acquistion and knowledge engineering problems
- ♦ No relational aspects are included

### 11. CONCLUSION

We have seen from our literature review and from from the challenges that faced the holistic e-recruiting platforms, an increased need for enhancing the quality of candidates / job matching. The recommender system technologies accomplished significant success in a broad range of applications and potentially a powerfuk searching and recommending techniques.

#### 12. FUTURE SCOPE

In conclusion, the Next level's approach is novel and offers several advantages over prior job/skill recommendation systems. This approach turns a simple skill/job recommender into a discovery tool for relevant skills and jobs. It empowers the users to make informed decisions about their job-related plans and to discover exactly what is expected from them to get the job of their dreams.

### 13. APPENDIX

### 13.1 Source Code

https://github.com/IBM-EPBL/IBM-Project-20991-1659768892/tree/master/Final%20Deliverables

## 13.2 Github and Project demo link

Github

https://github.com/IBM-EPBL/IBM-Project-20991-1659768892

Docker-hub

https://hub.docker.com/repository/docker/prakoo/job-hunter

Live Demo link

job-hunter