SKILL / JOB RECOMMENDER APPLICATION

TEAM ID: PNT2022TMID29835

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1. INTRODUCTION

The world has seen an important increase in the demand for Cloud-based applications. This has in turn increased the demand for Cloud application development. As a result, the past few years have had a consolidation of the Cloud computing market. Cloud apps and services are used, directly or indirectly, by almost everyone. Businesses have also increased their use of Cloud-based applications and services, even if they sometimes don't know it. If you use SaaS tools, you are surely using a Cloud app. However, Cloud apps are more than just that. Cloud-based applications, also known as Cloud apps, seem to be taking over. In theory, a Cloud app is one that uses Cloud-based services. So, whether an app is mobile or web, they probably use some sort of Cloud service. What really differentiates a Cloud app from a native one is the extent to which they use Cloud services. Increased dependence on the Cloud's processing power is the result of companies building innovative and creative solutions to all sorts of problems that use technology to do things that were previously impossible. Thanks to the ability to process large amounts of data (Big Data) through third party-owned IT infrastructure, companies can perform massive calculations and deliver top services. Cloud services have opened the possibility for many web-based Cloud applications, also known as web apps. A web app is one where most of the computation occurs in the Cloud, not on the device itself, and is usually built with the use of Cloud application development services. A new form of a web app, known as a Progressive Web App (PWA), is also seeing an increase in popularity. Cloud application development is the process through which a Cloud based app is built. It involves different stages of software development, each of which prepares your app to go live and hit the market. The best Cloud app development teams use DevOps practices and tools like Kubernetes. However, an experienced app development company should ideally be technology agnostic, which means being able to build your Cloud app using any technology you prefer. Most apps built using the Cloud are highly dependent on the Cloud to operate.

1.1 PROJECT OVERVIEW

With an increasing number of cash-rich, stable, and promising technical companies/start-ups on the web, which are in much demand right now, many candidates want to apply and work for these companies. They tend to miss out on these postings because there is an ocean of existing systems that list millions of jobs which are generally not relevant at all to the users. There is an abundance of choices and not much streamlining. On the basis of the actual skills or interests of an individual, job seekers often find themselves unable to find the appropriate employment for themselves. This system, therefore, approaches the idea from a data point of view, emphasizing more on the quality of the data than the quantity.

1.2 PURPOSE

The purpose of Skill / Job Recommender Application is to provide information that can be used to apply for the job. In today world, Increases in population results of demand for goods and services. When there is an increase in these goods and services there is a need for workers to make or manufacture or to create the goods and services that are really a need for human habitat. So, there are lot of employment opportunities in every industry. There is unemployment only because of lack of skill set in their domain or fear of missing out on a job. When a job seeker is afraid of getting the desired job, he might losses the job which he really deserved for it. The main purpose of the job recommender application is to provide job opportunities for each and every single person. The only thing the job seeker wants to do is just to approach the application and apply for the job. He will be provided with the login credentials with the confirmation email. There he can find numerous job opportunities. He will be guided with the in-built chat bot, which guides the job seekers to apply for the job and recommends the availability of jobs based on their interest. The chat bot is built with IBM Watson Assistant that is very much helpful in collecting the job seeker interests and also guides them to apply for it.

2. LITERATURE SURVEY

Title: Students / Job seekers find their desired job based on their Skillset

Reference link: https://www.researchgate.net/publication/272802616_A_survey_of_job_recommender_systems

Description:

The Internet-based recruiting platforms become a primary recruitment channel in most companies. The recommender system technology aims to help users in finding items that match their personnel interests. This article will present a survey of e-recruiting process and existing recommendation approaches for building personalized recommender systems for candidates/job matching

Title: Integrating Intelligent CHATBOT for Job recommendation application

Reference link: https://www.researchgate.net/publication/360820692_Intelligent_Chatbot Description

Description:

A Chatbot is a software application that replaces a live human agent to conduct a conversation via text or text to speech. In this system, we demonstrate a chatbot that uses Artificial Intelligence to produce dynamic responses to online client enquiries. This web-based platform provides a vast intelligent base that can help humans to solve problems. The Chatbot recognizes the user's context, which prompts an intended response. Its objective is to reduce human dependency in every organization and reduce the need for different systems for different processes.

Title: A Study of LinkedIn as an Employment Tool for Job Seeker & Recruiter

Reference link: Journal homepage: www.ijrpr.com ISSN 2582-7421

Description:

LinkedIn has become one of the most known social networking portals in terms of global professional connections, networking, job postings, hiring and much more in relevance to employment opportunities. This research was an attempt to identify the utility of Linked in on selection and recruitment. Also, this study has taken the employers' and the prospective candidates for job and employees' perspective, including factors such as recruitment, selection, job opportunities, internal official communication on Linked-in, professional networking, ease of access, less expensive communication tool etc.

Title: CLOUD STORAGE AND SHARING SERVICES

Reference link: https://www.ijresm.com/

Description:

To create a web application that sends files from one email to another email using the SMTP protocol, which is handled in a server-based application. The main advantage of the project in this paper is that it provides a safe, reliable, and excellent tool for sharing files in any format. Also, it has infinite scaling capabilities. With a bit of tweak in the code,it can be scaled to handle heavy file loads. The Cloud-based file sharing approach is proposed to provide the following services for external data confidentiality, secure data sharing within the group, protect data from unauthorized access of officials within the group and provide time and number of file access to users.Whenever information sharing among a bunch arise the file owner sends the user uploads the file on the application and then shares it using the send API.This creates a safe medium of sharing of files and user in control of the data in the whole process of sharing the files

2.1 Existing problem

Techniques for automatic recommendation of job offers are specifically designed to address the problem of information overload by giving priority to information delivery for individual users based on their learned preferences [1]. The most common way to process this information nowadays consists of automatically processing the documents involved in the e-recruitment process. For each document, it is possible to extract a vector for each of its fields (which contain textual information) using the bag-of-words model and TF-IDF as weighting function. Then, some kind of methods for set comparison can shed results on the suitability of a given candidate for a specific job offer. In general, most methods try to exploit solutions based on the Vector Space Model (VSM) to measure the similarity ratio between the original job offer and the application received. It is a solution easy to implement, with very low computational costs, and that tradition has achieved very good results in the context of job recommendation. However, new trends bet on the use of machine learning technology in order to overcome the traditional limitations concerning the incapability of going further beyond the syntactical representation of the document.

2.2 References

[1] Palmer, R.: Jobs and Skills Mismatch in the Informal Economy. 978-92-2-131613-8 (2017).

[2] Fernández-Reyes, F.C., Shinde, S.: CV Retrieval System Based on Job Description Matching Using Hybrid Word Embeddings, Computer Speech & Language, vol 56 (2019).

[3] Fabian Abel, Andras A. Benczur, Daniel Kohlsdorf, Martha Larson, Robert Palovics: Proceedings of the 2016 Recommender Systems Challenge, RecSys Challenge 2016, Boston, Massachusetts, USA, September 15, 2016. ACM 2016.

[4] Daniel Bernardes, Mamadou Diaby, Raphael Fournier, Francoise FogelmanSoulie, Emmanuel Viennet: A Social Formalism and Survey for Recommender Systems. SIGKDD Explorations 16(2): 20-37 (2014).

[5] Al-Otaibi S.T., Ykhlef M
A survey of job recommender systems
International Journal of Physical Sciences, 7 (2012), pp. 5127-5142.

[6] Breaugh J.A.
The use of biodata for employee selection: Past research and future directions Human Resource Management Review, 19 (2009), pp. 219-231

[7] Abualigah, Laith, Diabat, Ali, Mirjalili, Seyedali, Abd Elaziz, Mohamed, Gandomi, Amir H. 2021. The arithmetic optimization algorithm, Computer Methods in Applied Mechanics and Engineering, 376, 113609, ISSN 0045-7825.

[8] Batmaz, Z., Yurekli, A., Bilge, A., Kaleli, C. 2018. A review on deep learning for recommender systems: challenges and remedies, Artificial Intelligence Review, Aug 2018.

[9] C. Slamet, R. Andrian, D. S. A. Maylawati, W. Darmalaksana, and M. A. Ramdhani, "Web scraping and Naïve Bayes classification for job search engine," *IOP Conference Series: Materials Science and Engineering*, vol. 288, no. 1, Article ID 012038, 2018.

2.3 Problem Statement Definition

The project is aimed at developing a cloud based application named Skill or Job Recommender In the last years, 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 techniques and strategies used as part of job recommender systems, most of them fail to recommending job vacancies that fit properly to the job seekers profiles.

Thus, the contributions of this work are threefold, we: i) made publicly available a new dataset formed by a set of job seekers profiles and a set of job vacancies collected from different job search engine sites; ii) put forward the proposal of a framework for job recommendation based on professional skills of job seekers; and iii) carried out an evaluation to quantify empirically the recommendation abilities of two state-of-the-art methods, considering different configurations, within the proposed framework. We thus present a general panorama of job recommendation task aiming to facilitate research and real-world application design regarding this important issue.

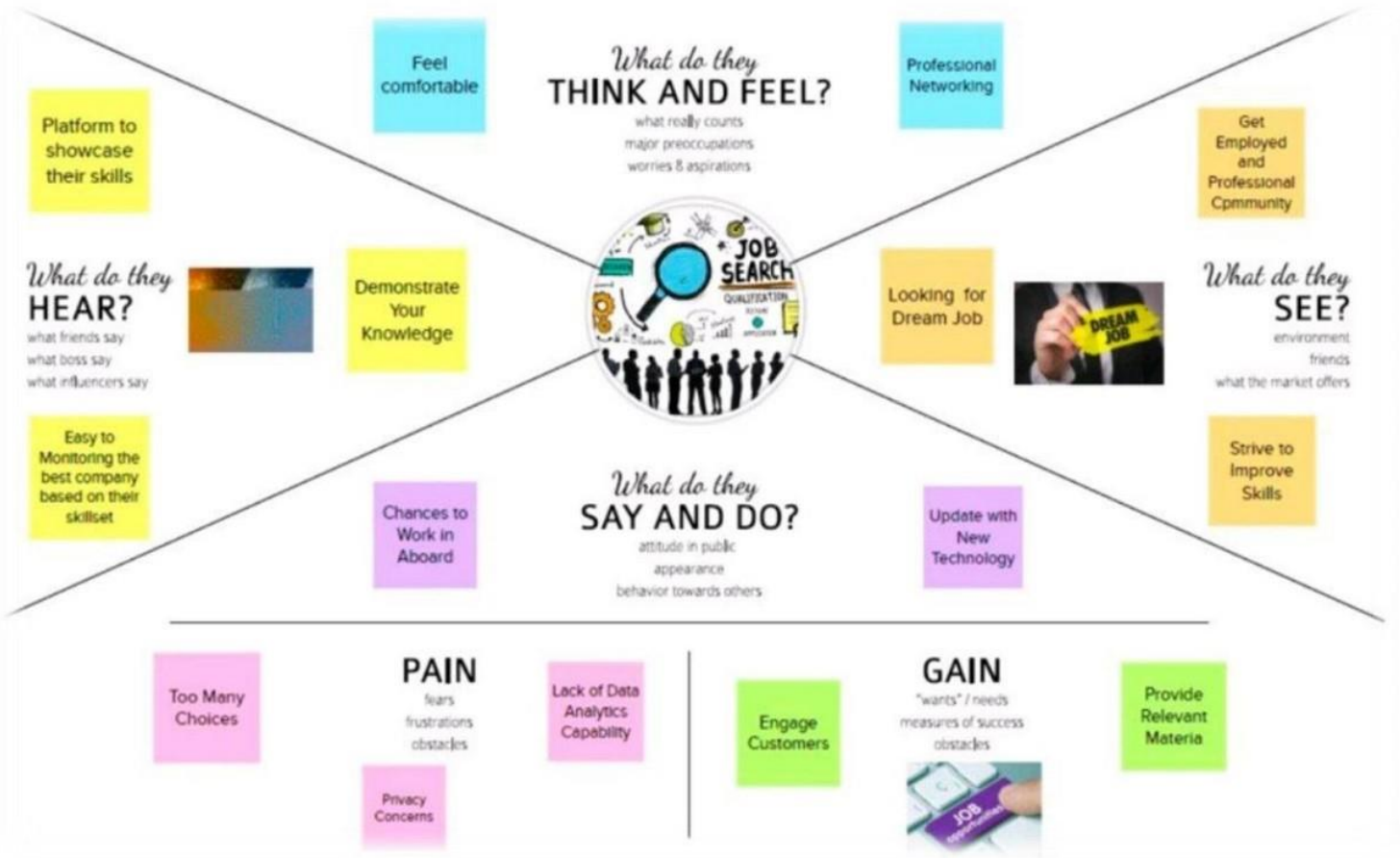
Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	Student	Find job that suits my profile	difficult to find suitable one	There is lots of vacancies.	Confused, because which one I want to choose.

3.IDEATION & PROPOSED SOLUTION

3.1 Empathy Map Canvas

An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers. Much like a user persona, an empathy map can represent a group of users, such as a customer segment. The empathy map was originally created by Dave Gray and has gained much popularity within the agile community. Empathy maps can be used whenever you find a need to immerse yourself in a user's environment. Everyone would add at least one sticky to every section. You might ask questions, such as:

- What would the user be thinking and/or feeling? What are some of their worries and aspirations?
- What would their friends, colleagues, and boss be likely to say while the user is using our product? What would the user hear in these scenarios?
- What would the user see while using our product in their environment?
- What might the user be saying and/or doing while using our product? How would that change in a public or private setting?
- What are some of the user's pain points or fears when using our product?
- What gains might the user experience when using our product?


Feel comfortable
What do they
THINK AND FEEL?
what really counts
major preoccupations
worries & aspirations
Professional Networking
Platform to showcase their skills
Get Employed and Professional Cpmmunity
What do they
HEAR?
what friends say
what boss say
what influencers say
Demonstrate Your Knowledge
JOB SEARCH
Looking for Dream Job
DREAM JOB
What do they
SEE?
environment
friends
what the market offers
Easy to Monitoring the best company based on their skillset
Chances to Work in Aboard
What do they
SAY AND DO?
attitude in public
appearance
behavior towards others
Update with New Technology
Strive to Improve Skills
Too Many Choices
PAIN
fears
frustrations
obstacles
Lack of Data Analytics Capability
Privacy Concerns
Engage Customers
GAIN
"wants" / needs
measures of success
obstacles
Provide Relevant Materia
JOB opportunities

3.2 Ideation and brainstorming

Ideation is often closely related to the practice of brainstorming, a specific technique that is utilized to generate new ideas. A principal difference between ideation and brainstorming is that ideation is commonly more thought of as being an individual pursuit, while brainstorming is almost always a group activity. Brainstorming is usually conducted by getting a group of people together to come up with either general new ideas or ideas for solving a specific problem or dealing with a specific situation.

For example, a major corporation that recently learned it is the object of a major lawsuit may want to gather together top executives for a brainstorming session on how to publicly respond to the lawsuit being filed.

Participants in a brainstorming session are encouraged to freely toss out whatever ideas may occur to them. The thinking is that by generating a large number of ideas, the brainstorming group is likely to come up with a suitable solution for whatever issue they are addressing.

The lines between ideation and brainstorming have become a bit more blurred with the development of several brainstorming software programs, such as Bright idea and Idea wake. These software programs are designed to encourage employees of companies to generate new ideas for improving the companies' operations and, ultimately, bottom-line profitability.

Template

Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

10 minutes to prepare
1 hour to collaborate
2-8 people recommended

Share template feedback

Need some inspiration?

See a finished version of this template to kickstart your work.

Open example →

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

Team gathering
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

Set the goal
Think about the problem you'll be focusing on solving in the brainstorming session.

Learn how to use the facilitation tools
Use the Facilitation Superpowers to run a happy and productive session.

Open article →

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

5 minutes

PROBLEM

The user needs a better/new job to gain a better financial control, justify his skills, move to a relevant domain, learn new skill, challenge himself, career growth, and get a better lifestyle.

Key rules of brainstorming

To run an smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

Sanjay

- obstacle when searching job
- User friendly environment
- Optimized search engine
- Communication

SriNighil

- Responce from company side
- Accurate result
- Discription of the job
- Job for desired skill

Vikram

- Desired salary
- A place for all job
- Time management
- Refferal

pratheesh

- Connections
- Skill based Domain
- Stress management
- Geo expand result

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

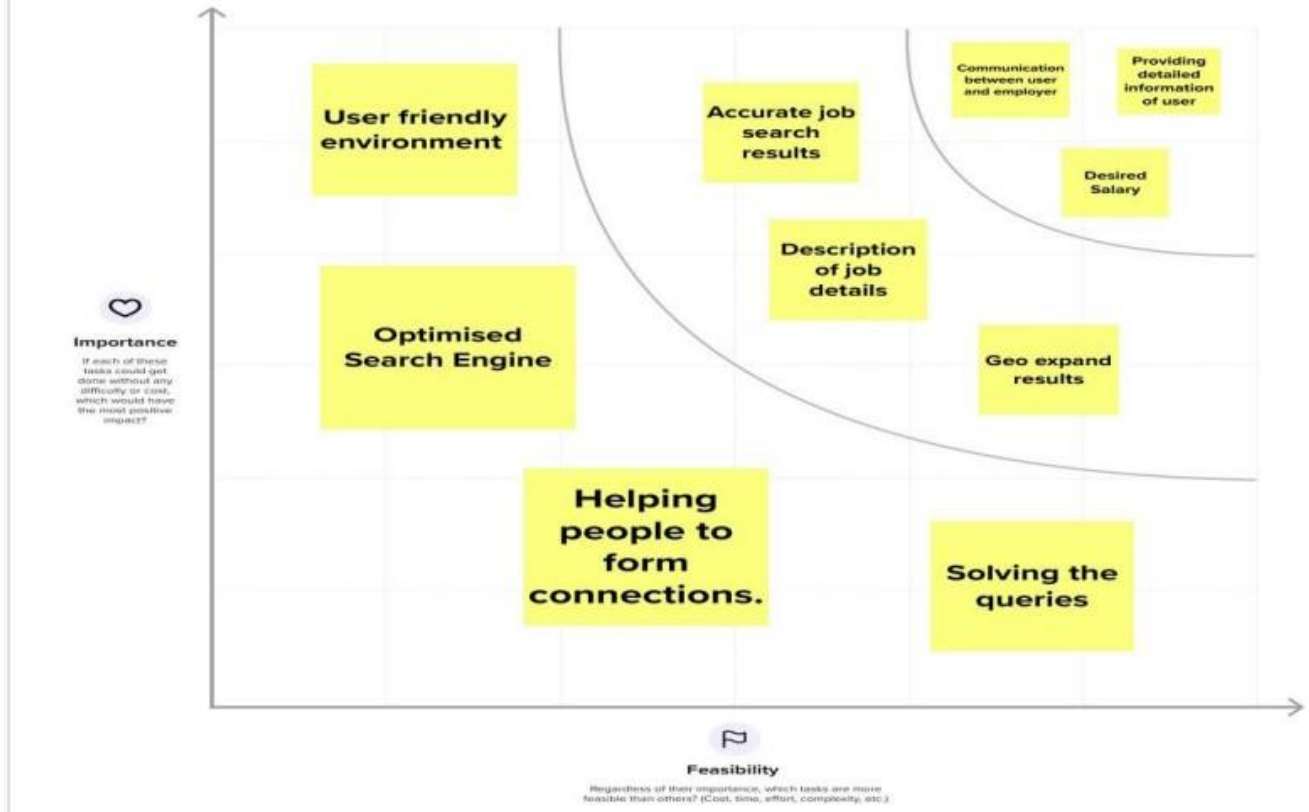
20 minutes

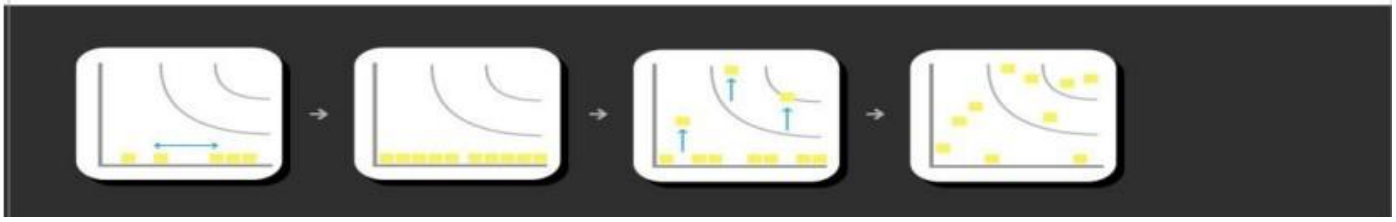
4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⏱ 20 minutes





3.3 proposed solution

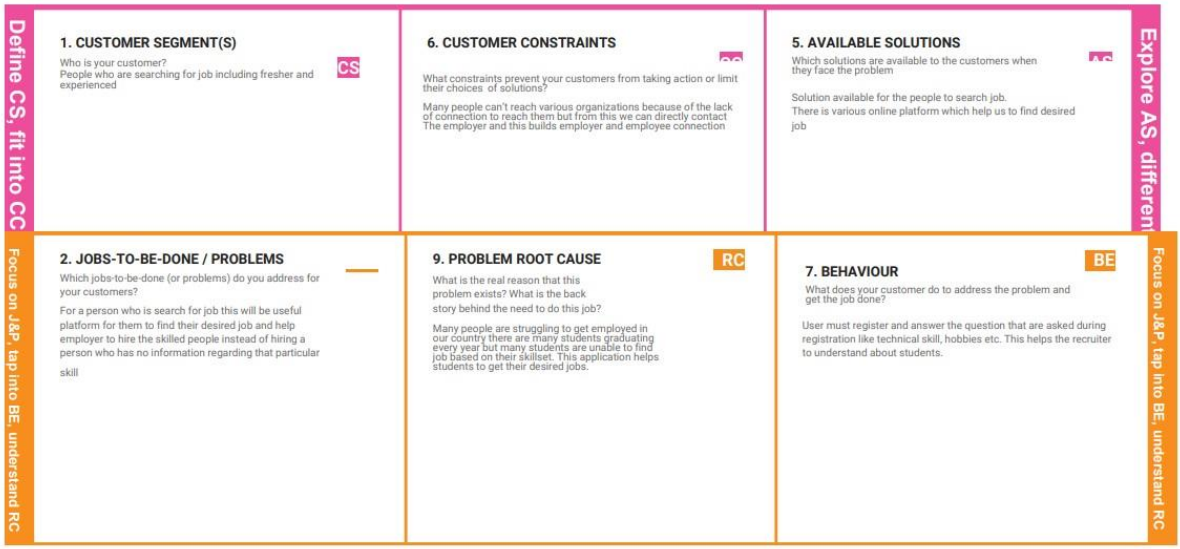
The proposed solution is to improve communication between the project manager and the team, and to give the team more responsibility for their work.

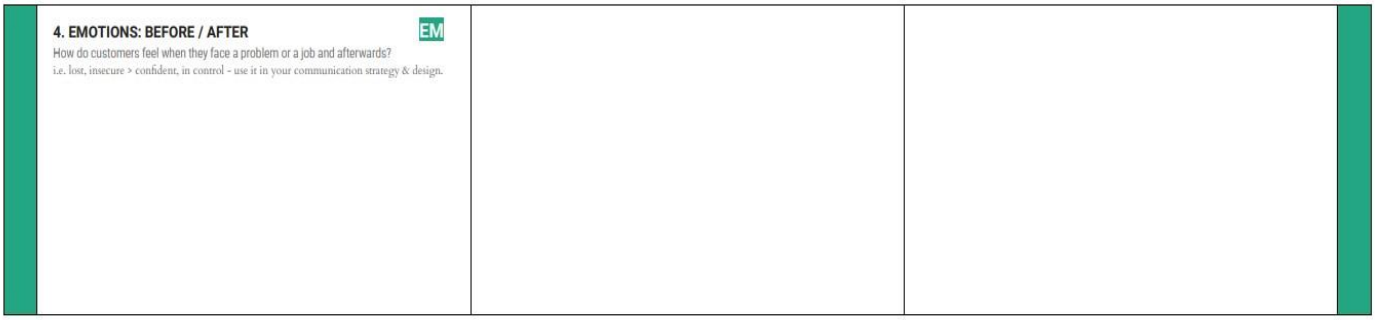
S. No	Parameter	Description
1.	Problem Statement (Problem to be solved)	• Job seekers have to check each every Recruiters website in order to search for any job vacancies. • process to search for which job suits based on their skill set. Recruiters facing difficulties in advertising their job vacancies. • Recruiters also finding it difficult to verify that the person with right skill set have applied for the job
2.	Idea / Solution Description	• By using this web application job seeker directly choose your job related to your skills without help from someone • You can chat with chatbot for get recommendation of list of jobs related to specified skillsets. • Recruiters can post for job opening in our application.
3.	Novelty / Uniqueness	• Chatbot-based interaction, built using IBM • Watson assistant. Search-based recommendation • Send notifications to users regarding job • based courses to enhance their skills.

4.	Social Impact / Customer Satisfaction	The main aim of the project is to build an application that recommend jobs for job seekers. • The user can search using a chatbot and the chatbot recommends the job
5.	Business Model (Revenue Model)	We can generate revenue by offering subscription-based applications to job seekers.
6.	Scalability of the solution	Whatever Skill may be given but skill/job application don't fail to give recommendation

3.4 Problem solution fit

The Problem-Solution Fit simply means that you have found a problem with your customer and that the solution you have realized for it solves the customer's problem. The Problem-Solution Fit is an important step towards the Product-Market Fit, but often an underestimated one.





4. REQUIREMENT ANALYSIS

Requirements analysis, also called requirements engineering, is the process of determining user expectations for a new or modified product. These features, called requirements, must be quantifiable, relevant and detailed. In software engineering, such requirements are often called functional specifications. Requirements analysis is an important aspect of project management.

Requirements analysis involves frequent communication with system users to determine specific feature expectations, resolution of conflict or ambiguity in requirements as demanded by the various users or groups of users, avoidance of feature creep and documentation of all aspects of the project development process from start to finish. Energy should be directed towards ensuring that the final system or product conforms to client needs rather than attempting to mold user expectations to fit the requirements.

Requirements analysis is a team effort that demands a combination of hardware, software and human factors engineering expertise as well as skills in dealing with people.

The purpose of the Requirements Analysis Phase is to transform the needs and high-level requirements specified in earlier phases into unambiguous (measurable and testable), traceable, complete, consistent, and stakeholder-approved requirements.

4.1 Functional Requirement

Functional requirements may involve calculations, technical details, data manipulation and processing, and other specific functionalities that define what a system is supposed to accomplish. Behavioural requirements describe all the cases where the system uses the functional requirements, these are captured in use cases.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIn
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Organization	Detail about organization Detail about job vacancy position
FR-4	Job search	Job searching based on skill
FR-5	Optimization	Optimised result while searching for job

4.2 Non-Functional requirements

In systems engineering and requirements engineering, a non-functional requirement (NFR) is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviours. They are contrasted with functional requirements that define specific behaviour or functions. The plan for implementing functional requirements is detailed in the system design. The plan for implementing non-functional requirements is detailed in the system architecture the system architecture, because they are usually architecturally significant requirements.

FR No.	**Non-Functional Requirement**	**Description**
NFR-1	**Usability**	Job description and vacancy positions are in clear manner this makes effective result while using this platform
NFR-2	**Security**	We work more on user's security while entering their details. We provide security in the form of unique password, OTP and QnA.
NFR-3	**Reliability**	It is reliable because user will post their education qualification, skills and certification.
NFR-4	**Performance**	Performance is effective because our Job search API Produce accurate and effective result for job seekers
NFR-5	**Availability**	This application is available for students who are looking for job..
NFR-6	**Scalability**	This job recommender application provides desired job for skilled students

5. PROJECT DESIGN

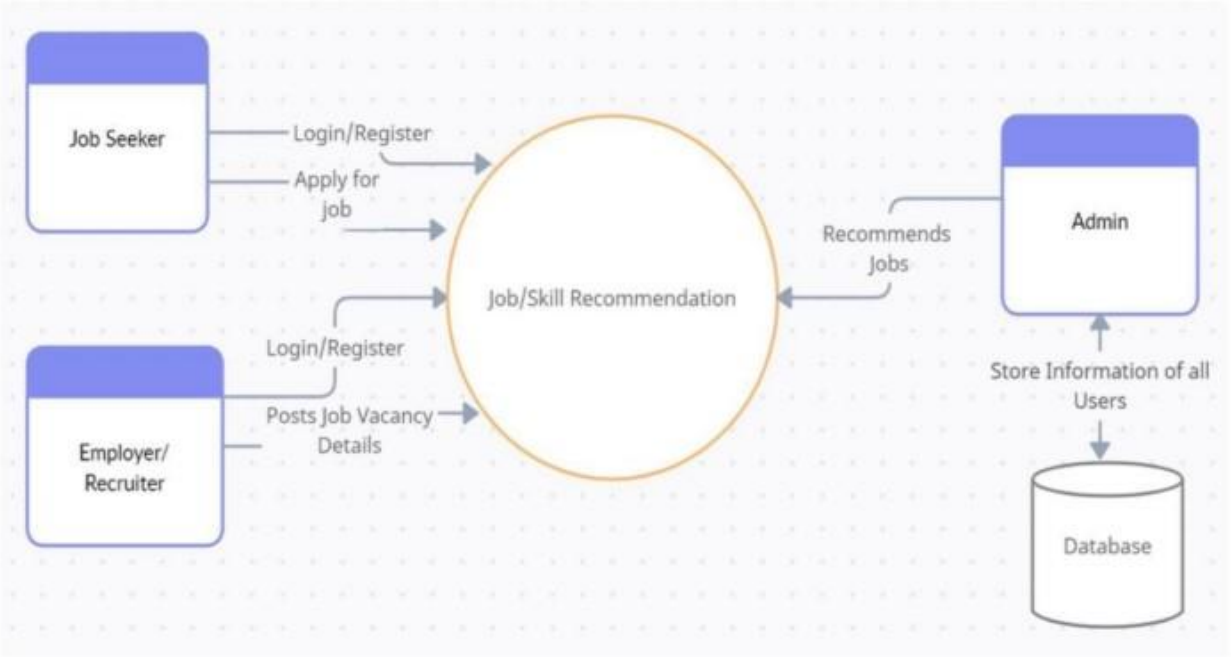
5.1 Data flow diagram

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 can be manual, automated, or a combination of both.

It shows how data enters and leaves the system, what changes the information, and where data is stored.

The objective of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communication tool between a system analyst and any person who plays a part in the order that acts as a starting point for redesigning a system. The DFD is also called as a data flow graph or bubble chart.

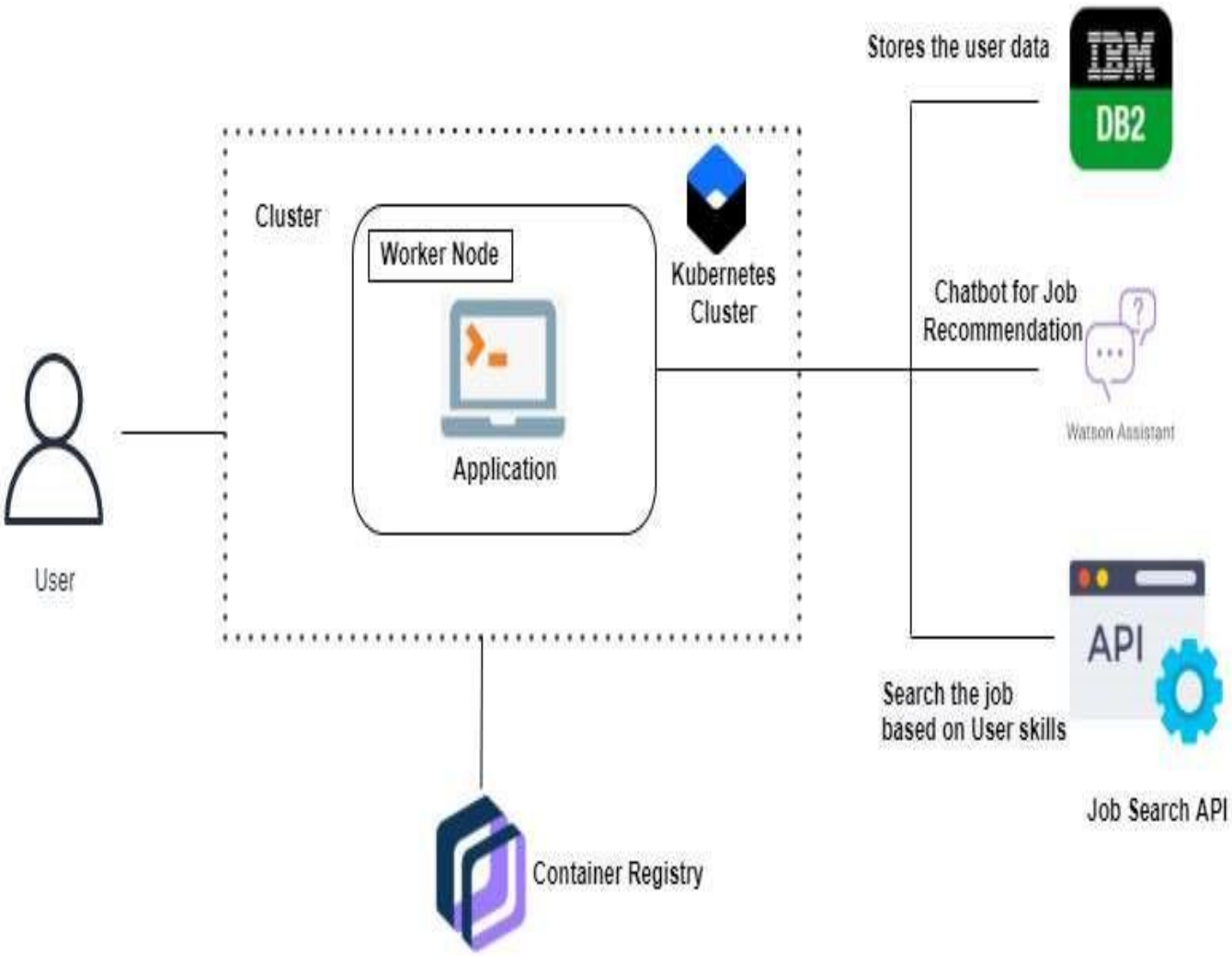
A set of parallel lines shows a place for the collection of data items. A data store indicates that the data is stored which can be used at a later stage or by the other processes in a different order. The data store can have an element or group of elements. The DFD may be used to perform a system or software at any level of abstraction. DFDs may be partitioned into levels that represent increasing information flow and functional detail. Then the system is decomposed and described as a DFD with multiple bubbles. Parts of the system represented by each of these bubbles are then decomposed and documented as more and more detailed DFDs.



DATA FLOW DIAGRAM

5.2 Solution & Technical Architecture

Solution Architects are most similar to project managers, ensuring that all parties, including stakeholders, are on the same page and moving in the right direction at all stages. Technical architects manage all activities leading to the successful implementation of a new application. They propose a combination of building blocks that provides the best possible fix. This process is very detail-oriented and serves as a connecting piece between enterprise architecture and technical architecture. It also requires a breadth of knowledge in the technical and business inner workings of the company.


Stores the user data
IBM
DB2
Cluster
Worker Node
Kubernetes
Cluster
Chatbot for Job
Recommendation
Watson Assistant
Application
User
API
Search the job
based on User skills
Job Search API
Container Registry

5.3 User Stories

A user story is the smallest unit of work in an agile framework. It's an end goal, not a feature, expressed from the software user's perspective.

A user story is an informal, general explanation of a software feature written from the perspective of the end user or customer.

The purpose of a user story is to articulate how a piece of work will deliver a particular value back to the customer. Note that "customers" don't have to be external end users in the traditional sense, they can also be internal customers or colleagues within your organization who depend on your team.

User stories are a few sentences in simple language that outline the desired outcome. They don't go into detail. Requirements are added later, once agreed upon by the team.

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Priority	Story points	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.	High	2	Sanjay S, Srinighil J, Vikram R, Pratheesh VR.

Sprint-1		**USN-2**	**As a user, I will receive a confirmation email once I have registered for the application.**	**High**	**1**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**

Sprint-1		**USN-3**	**As a user, I can register for the application through Facebook.**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-1	**Login**	**USN-4**	**As a user, I can register for the application through Gmail.**	**Low**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-1	**Login**	**USN-5**	**As a user, I can log into the application by entering my email & password.**	**High**	**1**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**

6. PROJECT PLANNING & SCHEDULING

Planning - Planning pertains to the process of creating a plan of which materials and resources will be required to fulfil incoming and forecasted demand. This step is crucial to ensure that you have enough materials and resource capacity available to produce your orders on time. This component pertains to the ‘what’ and ‘how’ of any project: what exactly needs to be achieved and how it will be accomplished.

Scheduling - Scheduling pertains to establishing the timing of the use of specific resources of that organization. In production, scheduling involves developing schedules for workers, equipment, and materials. It reflects on the ‘when’ of a project, by assigning the appropriate resources to get the production plan completed within a period of time. Creating optimized production schedules ensures that your facility is able to reduce costs, increase productivity, and deliver goods to customers on time.

In order to create accurate and realistic production plans that allow manufacturers to react quickly to changes, it is important to have a production plan that is aligned with the resource and material scheduling process. Having any discrepancy or divergence between the planning and scheduling process creates inefficiencies that can be costly for your business. The bigger the divergence, the larger the cost.

6.1 Sprint planning and estimation

Planning:

In Sprint Planning, the team decides what it will build in the upcoming Sprint and how they will build it. The team commits to the Sprint goal after breaking down user stories into tasks and doing task-level estimation. Sprint Planning is done by the

Product Owner, Scrum Master, and the Team. In Scrum, every project is broken into time blocks called sprints, usually 2-4 weeks long. A sprint planning meeting is when the team (including the Scrum Master, Scrum Product Manager, and Scrum Team) meets to determine which backlog items will be handled in the next sprint.

Estimation

In Scrum Projects, Estimation is done by the entire team during Sprint Planning Meeting. The objective of the Estimation would be to consider the User Stories for the Sprint by Priority and by the Ability of the team to deliver during the Time Box of the Sprint.

Product Owner ensures that the prioritized User Stories are clear, can be subjected to estimation, and they are brought to the beginning of the Product Backlog.

As the Scrum Team in total is responsible for the delivery of the product increment, care would be taken to select the User Stories for the Sprint based on the size of the Product Increment and the effort required for the same.

The size of the Product Increment is estimated in terms of User Story Points. Once the size is determined, the effort is estimated by means of the past data, i.e., effort per User Story Point called Productivity.

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Priority	Story Points	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.	High	2	Sanjay S, Srinighil J, Vikram R, Pratheesh VR.

Sprint-1		**USN-2**	**As a user, I will receive a confirmation email once I have registered for the application**	**High**	**1**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-1		**USN-3**	**As a user, I can register for the application through Facebook.**	**Low**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-1		**USN-4**	**As a user, I can register for the application through Gmail**	**Medium**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**

Sprint-1	**Login**	**USN-5**	**As a user, I can log into the application by entering my email & password.**	**High**	**1**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-1	**Dashboard**	**USN-6**	**As a user, I can access the website in a second.**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-1	**Dashboard**	**USN-7**	**As a user, If I Log in correctly, I can view my dashboard and I can navigate to any pages which are already listed there.**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-2	**User Profile**	**USN-8**	**As a user, I can view and update my details.**	**Medium**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-2	**Database**	**USN-9**	**As a user, I can store my details and data in IBM Database**	**Medium**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**

Sprint-2	**Cloud Storage**	**USN-10**	**As a user, I can upload my photo, resume and much more in the website.**	**Medium**	**1**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-2	**Chatbot**	**USN-11**	**As a user, I can ask the Chatbot about the latest job openings, which will help me and show the recent job openings based on my profile.**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**

Sprint-2	**Identity-Aware**	**USN-12**	**As a User, I can access my account by entering the correct login credentials and my user credentials are only displayed to me**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-3	**SendGrid service**	**USN-13**	**As a user, I can get a notification or mail about a job opening with the help of the SendGrid service.**	**Medium**	**1**	**SanjayS, SrinighilJ, VikramR, Pratheesh VR.**
Sprint-3	**Learning Resource**	**USN-14**	**As a user, I can learn the course and I will attain the skills which will be useful for developing my technical skills.**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-3	**Docker**	**USN-15**	**As a user, I can access the website in any device.**	**High**	**2**	**SanjayS, SrinighilJ, VikramR, Pratheesh VR.**
Sprint-3	**Kubernetes**	**USN-16**	**As a user, I can access the website in any device.**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-3	**Deployment in cloud**	**USN-17**	**As a user, I can access the website in any device.**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**

Sprint-3	**Technical support**	**USN-18**	**As a user I can get customer care support**	**Medium**	**1**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-4	**Unit Testing**	**USN-19**	**As a user, I can access the website without any interruptions.**	**High**	**2**	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-4	**Integration Testing**	**USN-20**	**As a user, I can access the website without any interruptions.**	**High**	2	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-4	**System Testing**	**USN-21**	**As a user, I can access the website without any interruptions.**	**High**	2	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**
Sprint-4	**Acceptance Testing**	**USN-22**	**As a user, I can access the website without any interruptions.**	**High**	2	**Sanjay S, Srinighil J, Vikram R, Pratheesh VR.**

PLANNING & ESTIMATION

6.2 Sprint delivery schedule

Since sprints take place over a fixed period of time, it's critical to avoid wasting time during planning and development. And this is precisely where sprint scheduling enters the equation.

In case you're unfamiliar, a sprint schedule is a document that outlines sprint planning from end to end. It's one of the first steps in the agile sprint planning process—and something that requires adequate research, planning, and communication.

Teams often run into trouble when they create more than a few schedules. This can create conflict and derail projects midway through their cycles. To ensure things stay on track, one schedule makes sense.

Sprint	Total Story Points	Duration	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:

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 = sprint duration / velocity

AV = 20 / 6

AV = 3.33 SPRINT

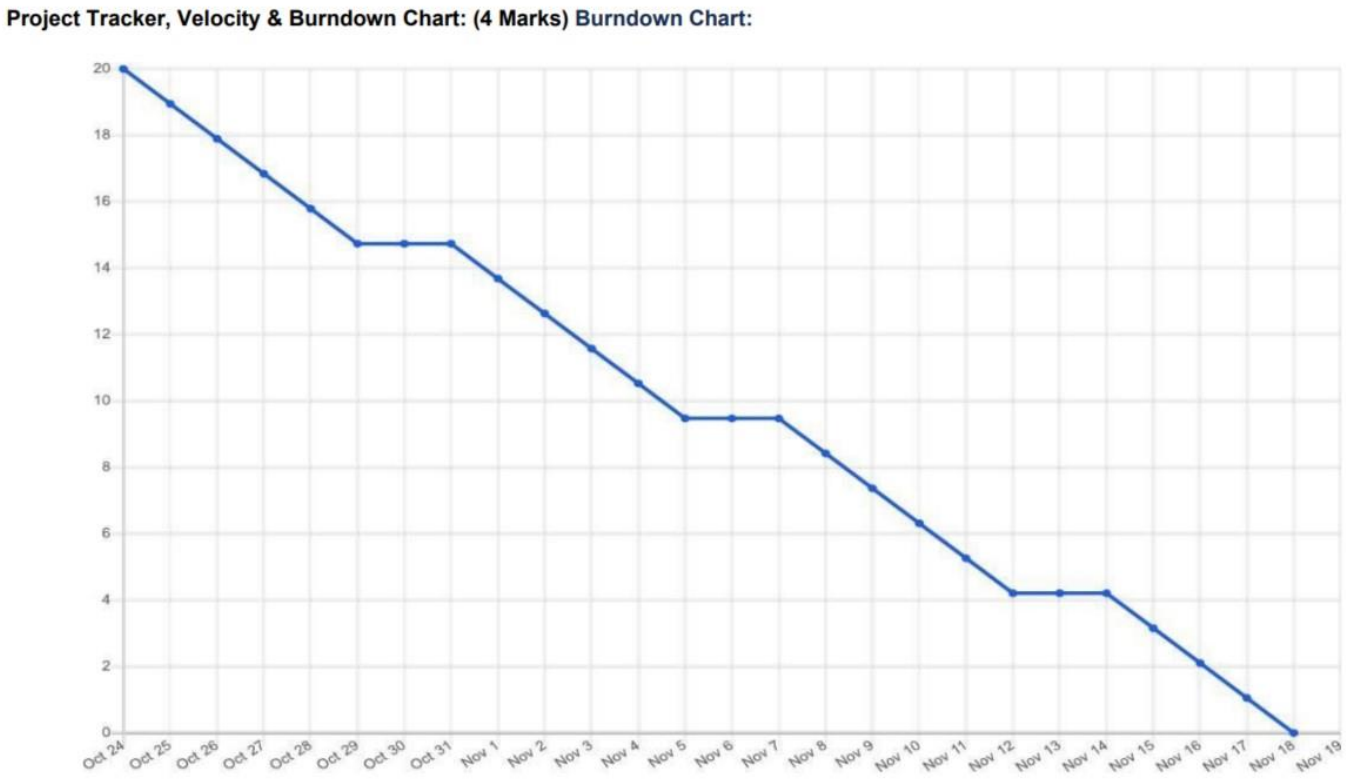
DELIVERY SCHEDULE

6.3 Reports from JIRA

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.

Typically, in a burn down chart, the outstanding work is often on the vertical axis, with time along the horizontal. It is useful for predicting when all of the work will be completed. In the Daily Scrum the Development Team updates the Sprint Burn Down and plots the remaining work of the day.

Burndown Chart (Sprint 4):



7. CODING AND SOLUTIONING

7.1 Feature 1

```
import requests
import json
# mention url
url = "https://www.fast2sms.com/dev/bulkV2"
# create a dictionary
# create a dictionary
headers = {
 'authorization':
'iN19Ocs5q6Qydfha4Y7BGpvTPDrgmCuKXnMUJkej3tw28RlxEocOKswaQIjrGT6tuRCpfi
ZkD1lWNPJU',
 'Content-Type': "application/x-www-form-urlencoded",
 'Cache-Control': "no-cache"
}
my_data = {
    'sender_id': 'FTWSMS'
     'message': 'Argent.....There is a demand for your blood group. We request you to donate
your blood in your nearby BloodBank connect with our Organization.'
    'language': 'english',
    'route': 'p’
    'numbers': '9344610388'
       }
response = requests.request("POST",
       url,
       data = my_data,
       headers = headers)
       #load json data from sourc
returned_msg = json.loads(response.text)

       # print the send message
print(returned_msg['message']
```

Feature 2

```
{% extends 'base.html' %}

{%  block head %}
   <title>SKIll OR Job RECOMMENDER</title>
<link type="image/png" href="static/img/job_logo.png">
   <link rel="stylesheet" href="static/css/bootstrap.min.css">
   <link rel="stylesheet"
   {% endblock %}



   {% block content %}
   <script>
      window.watsonAssistantChatOptions = {          integrationID: "a93c8bfc-
cda0-49cd-a3d0-b68581f7ef06", // The ID of this integration.          region: "eu-
gb", // The region your integration is hosted in.
       serviceInstanceID: "1ab40042-c8f9-455b-b469-fa7435694735", // The ID of
your service instance.          onLoad: function(instance) { instance.render(); }
      };
      setTimeout(function(){
       const t=document.createElement('script');
       t.src="https://web-chat.global.assistant.watson.appdomain.cloud/versions/" +
(window.watsonAssistantChatOptions.clientVersion || 'latest') +
"/WatsonAssistantChatEntry.js";
       document.head.appendChild(t);
      });
    </script>
```

Coding:

App.py

```
from flask import Flask, render_template,url_for,redirect,request,session,flash
import ibm_db
from markupsafe import escape
import requests
import json

url = "https://www.fast2sms.com/dev/bulkV2"

headers = {
 'authorization':
'iN19Ocs5q6Qydfha4Y7BGpvTPDrgmCuKXnMUJkej3tw28RlxEocOKswaQIjrGT6tuRCpfiZkD1lWNPJU',
 'Content-Type': "application/x-www-form-urlencoded",
 'Cache-Control': "no-cache"
}

app = Flask(__name__)
app.secret_key = '32y[wld,fnpsygfwfpwek2;]1[2'
conn = ibm_db.pconnect('DATABASE=bludb;HOSTNAME=0c77d6f2-5da9-48a9-81f8-86b520b87518.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;PORT=31198;SECURITY=SSL;SSLServerCertificate=DigiCertGlobalRootCA.crt;UID=crb08673;PWD=uT97nw08OvG2AFHK',' ',' ')
print(conn)
print("connection successful...")


@app.route('/')
def home():
    message = "TEAM ID : PNT2022TMID29835" +" "+ "BATCH ID : B1-1M3E "
    return render_template('index.html')

@app.route('/login', methods=['GET','POST'])
def login():
    return render_template('login.html')
```

```
@app.route('/register', methods = ['GET','POST'])
def register():
   return render_template('register.html')

@app.route('/studentdashboard', methods = ['GET','POST'])
def studentdashboard():
   return render_template('Stdash.html')

@app.route('/changepass', methods = ['GET','POST'])
def changepass():
   return render_template('changepass.html')



@app.route('/register_student', methods=['GET', 'POST'])
def register_student():
   if request.method == 'POST':
      name = request.form["Nm"]
      email = request.form["email"]
      phonenumber = request.form['PhNo']
      password = request.form['pass']

      sql = "SELECT * FROM student1 WHERE email = ?"
      stmt = ibm_db.prepare(conn, sql)
      ibm_db.bind_param(stmt, 1, email)
      ibm_db.execute(stmt)
      account = ibm_db.fetch_assoc(stmt)

      if account:
         flash("Record Aldready found")
         return  redirect(url_for('register'))

      else:
         insert_sql = "insert into
student1(name,email,phonenumber,password)values(?,?,?,?)"
         prep_stmt = ibm_db.prepare(conn, insert_sql)
         ibm_db.bind_param(prep_stmt, 1, name)
```

```
        ibm_db.bind_param(prep_stmt, 2, email)
        ibm_db.bind_param(prep_stmt, 3, phonenumber)
        ibm_db.bind_param(prep_stmt, 4, password)
        ibm_db.execute(prep_stmt)
        Ph1 = phonenumber
        my_data = {
            'sender_id': 'Skill/Job recommender',
            'message': 'Hii, Your ID successfully created.Explore your skills and Grab
your job.',
            'language': 'english',
            'route': 'p',
            'numbers': {escape(phonenumber)}
            }
        response = requests.request("POST",url,data = my_data,headers = headers)
        returned_msg = json.loads(response.text)
        print(returned_msg['message'])
        return redirect(url_for('login'))

@app.route('/login_student', methods=['GET', 'POST'])
def login_student():
    if request.method == 'POST':
        mail = request.form["em"]
        password = request.form["pass"]
        sql = f"select * from student1 where email='{escape(mail)}' and
password='{escape(password)}'"
        stmt = ibm_db.exec_immediate(conn, sql)
        data = ibm_db.fetch_both(stmt)


        if data:
            session["em"] = escape(mail)
            session["password"] = escape(password)
            return redirect(url_for("studentdashboard"))

        else:
            flash('You have entered worng password or email')
            return redirect(url_for("login"))
```

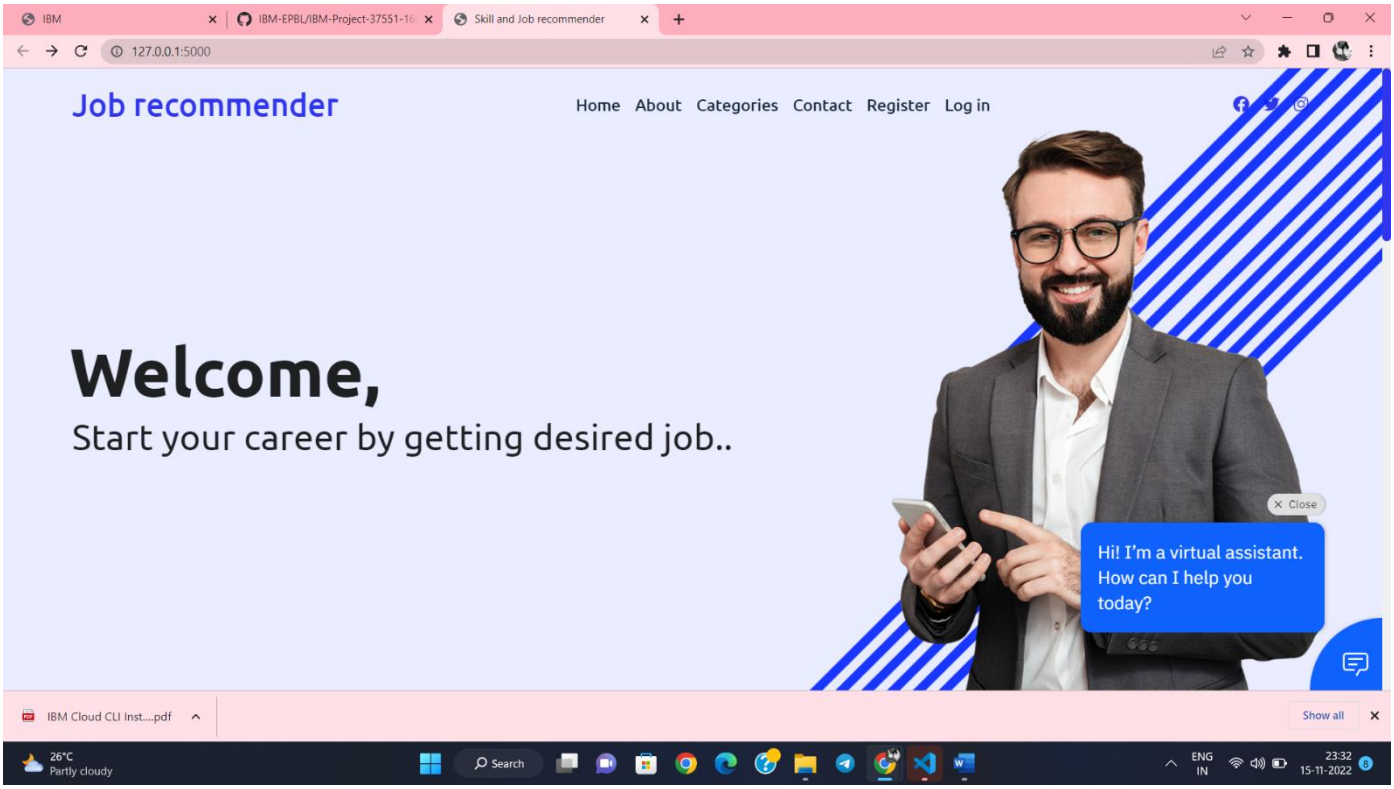
```
@app.route('/forget', methods=['GET', 'POST'])
def forget():
    if request.method == 'POST':
        cm = request.form["Email"]
        cp = request.form["oldpassword"]
        co = request.form["newpass"]
        sql = f"select * from student1 where email='{escape(cm)}' and
password='{escape(cp)}'"
        stmt = ibm_db.exec_immediate(conn, sql)
        data = ibm_db.fetch_both(stmt)

        if data:
            session["Email"] = escape(cm)
            session["oldpassword"] = escape(cp)
            sql = "UPDATE student1   SET password= ? WHERE email = ?"
            stmt = ibm_db.prepare(conn,sql)
            ibm_db.bind_param(stmt,1,co)
            ibm_db.bind_param(stmt,2,cm)
            ibm_db.execute(stmt)
            flash("You Password is changed successfully")
            return redirect(url_for('login'))
        else:
            flash('You old password is wrong')
            return redirect(url_for("changepass"))


if __name__ == "__main__":
    app.run(host='0.0.0.0',port=5000,debug=True)
```

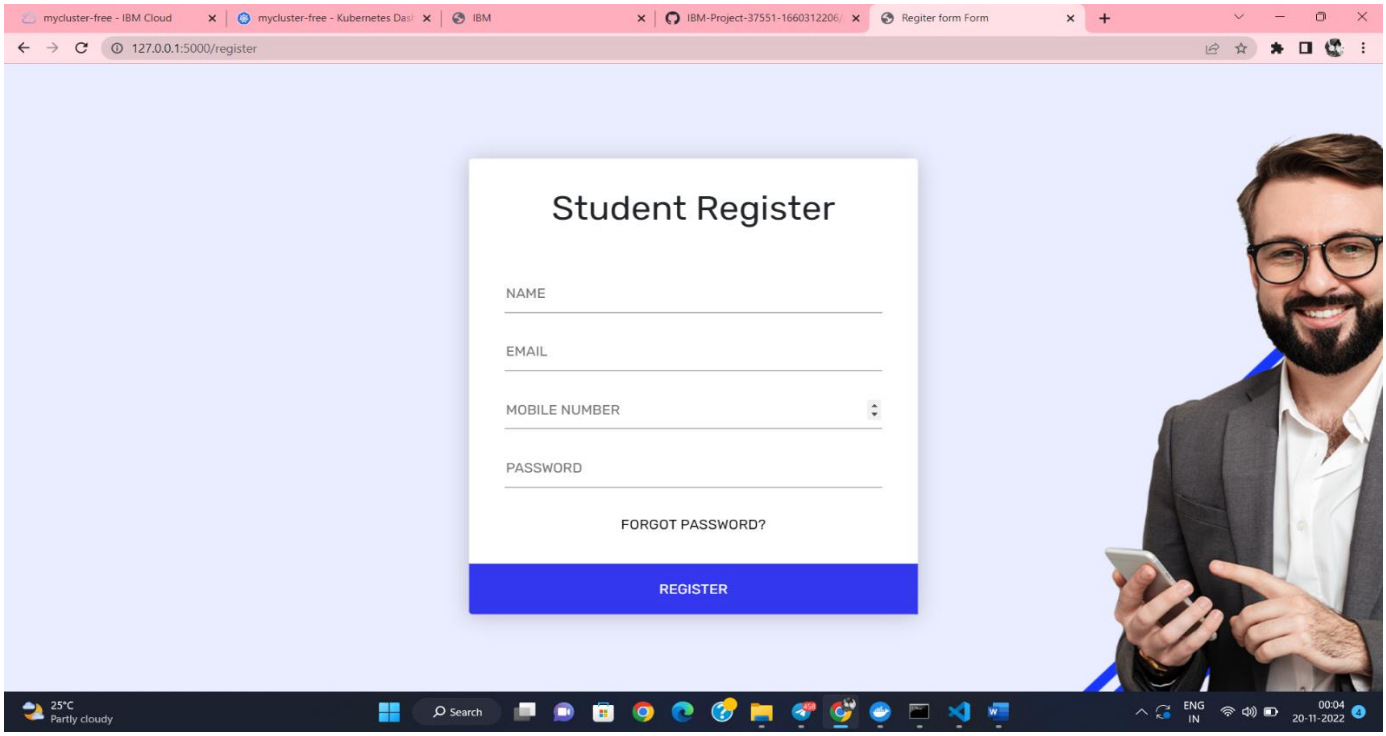
Output:

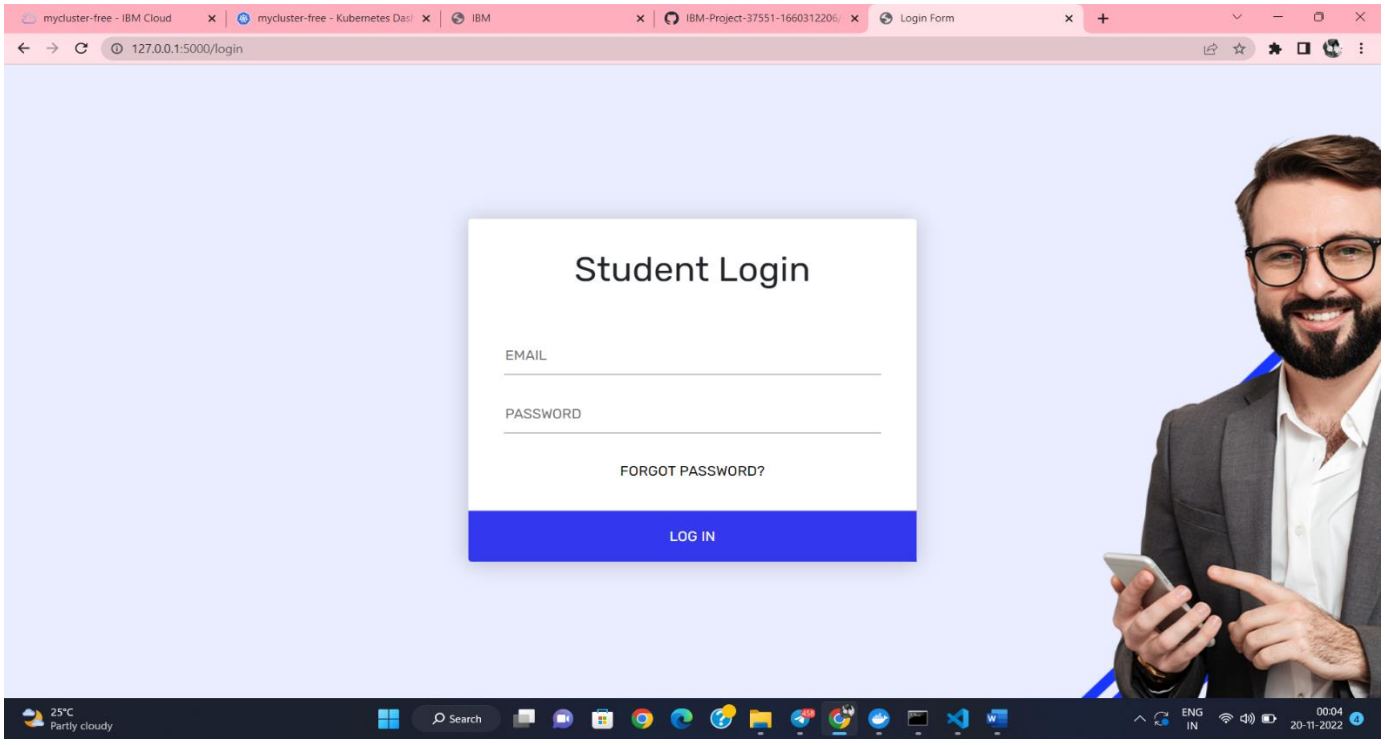
```
<ibm_db.IBM_DBConnection object at 0x00000242FCEC5AB0>
connection successful...
* Serving Flask app 'app'
* Debug mode: on
```

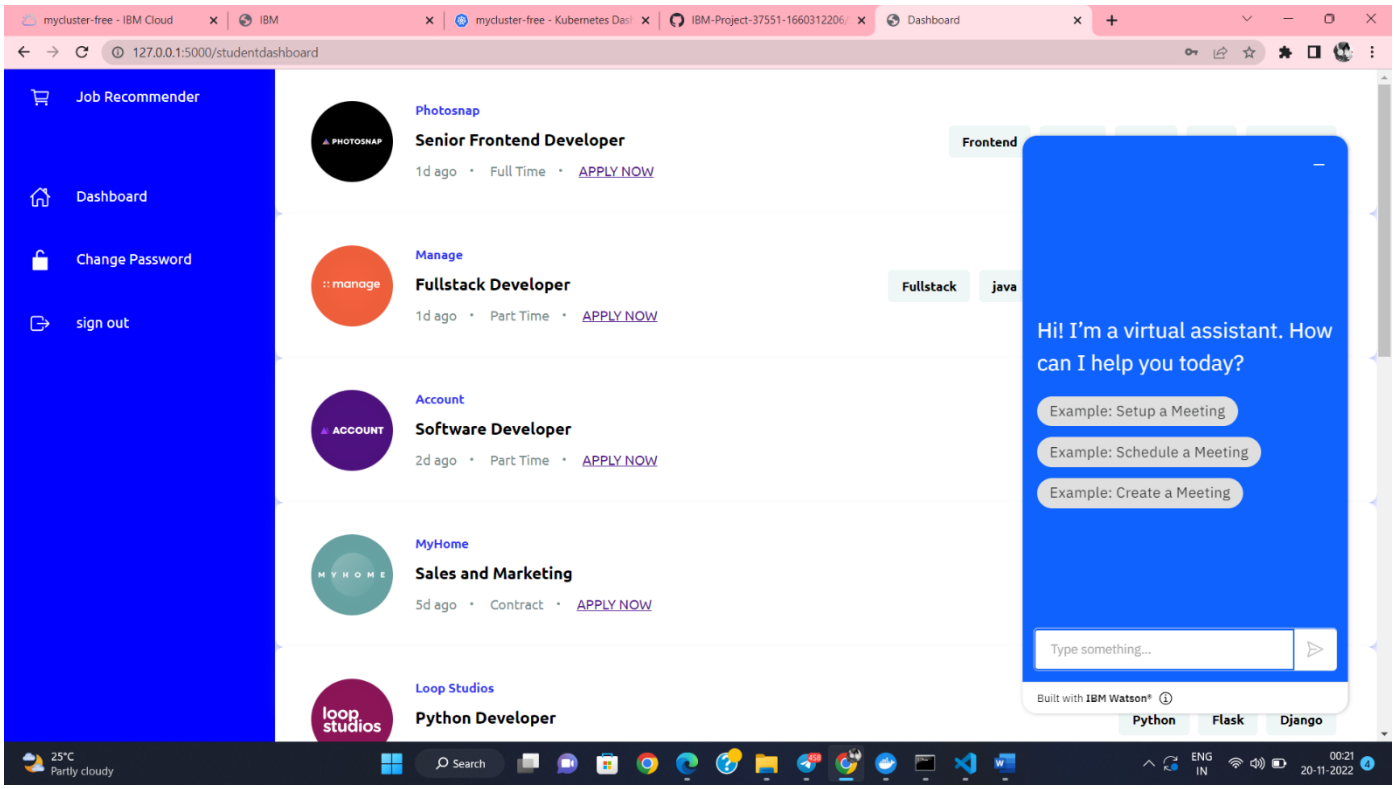
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000/
 * Running on http://192.168.71.106:5000
Press CTRL+C to quit
 * Restarting with stat

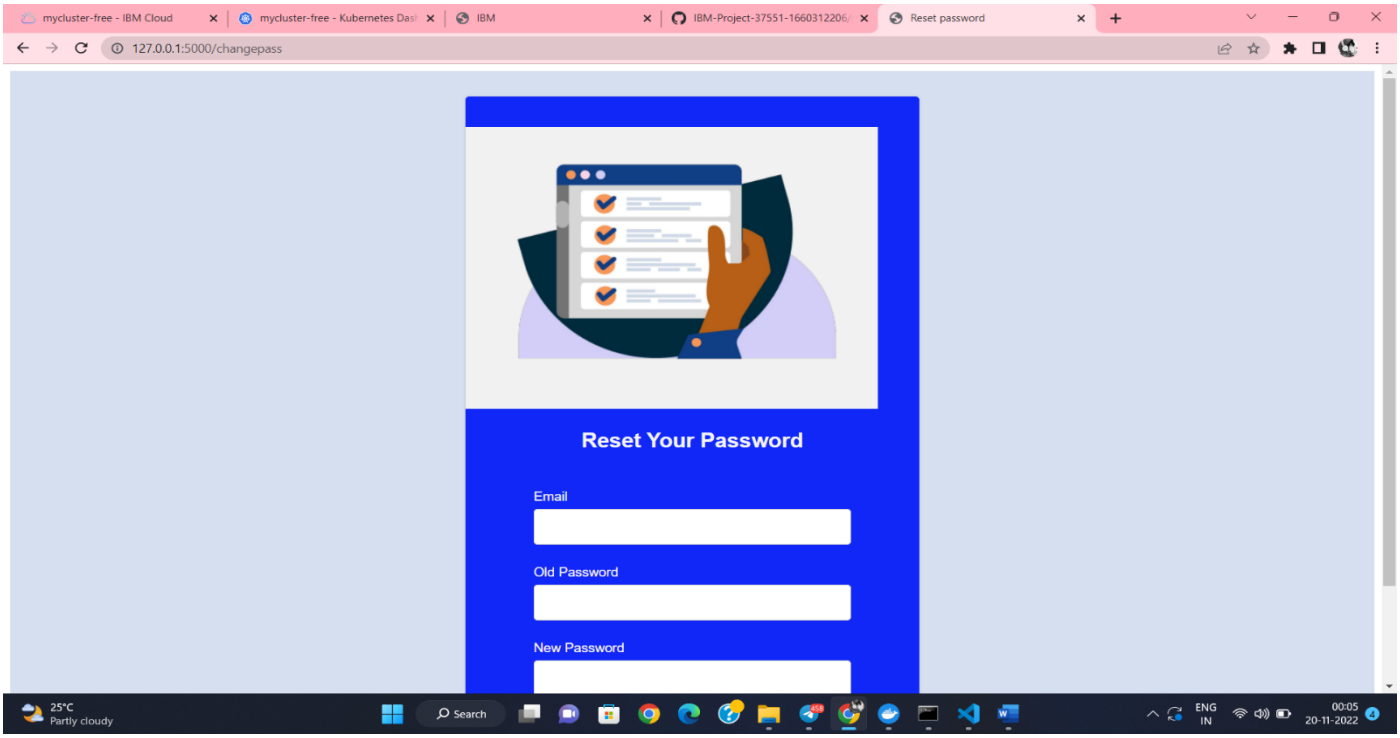
OUTPUT IMAGES:




mycluster-free - IBM Cloud
mycluster-free - Kubernetes Das
IBM
IBM-Project-37551-1660312206
Regiter form Form
127.0.0.1:5000/register
Student Register
NAME
EMAIL
MOBILE NUMBER
PASSWORD
FORGOT PASSWORD?
REGISTER
25°C
Partly cloudy
Search
ENG
IN
00:04
20-11-2022


mycluster-free - IBM Cloud
mycluster-free - Kubernetes Das
IBM
IBM-Project-37551-1660312206
Login Form
127.0.0.1:5000/login
Student Login
EMAIL
PASSWORD
FORGOT PASSWORD?
LOG IN
25°C
Partly cloudy
Search
ENG
IN
00:04
20-11-2022


mycluster-free - IBM Cloud
IBM
mycluster-free - Kubernetes Das
IBM-Project-37551-1660312206/
Dashboard
127.0.0.1:5000/studentdashboard
Job Recommender
Dashboard
Change Password
sign out
Photosnap
Senior Frontend Developer
1d ago • Full Time • APPLY NOW
Frontend
Manage
Fullstack Developer
1d ago • Part Time • APPLY NOW
Fullstack
java
Account
Software Developer
2d ago • Part Time • APPLY NOW
MyHome
Sales and Marketing
5d ago • Contract • APPLY NOW
Loop Studios
Python Developer
Python
Flask
Django
Hi! I'm a virtual assistant. How can I help you today?
Example: Setup a Meeting
Example: Schedule a Meeting
Example: Create a Meeting
Type something...
Built with IBM Watson®
25°C
Partly cloudy
Search
ENG
IN
00:21
20-11-2022


mycluster-free - IBM Cloud
mycluster-free - Kubernetes Das
IBM
IBM-Project-37551-1660312206/
Reset password
127.0.0.1:5000/changepass
Reset Your Password
Email
Old Password
New Password
25°C
Partly cloudy
Search
ENG
IN
00:05
20-11-2022

8. TESTING

Software testing is used to assess the quality of the product. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation.

8.1 Test Cases:

Testcase1: Does the flask application is perfectly created and in works in very good condition?

Testcase2: Does the Send-Grid integration is working correctly?

Testcase3: Does the db2 is perfectly connected to the application? **Testcase4:** Can the chat-bot which is created using Watson assistant is recommending correctly the job for the end users?

Testcase 5: Whether the application is working correctly without any interruptions?

8.2 User Acceptance Testing

User acceptance testing is a type of testing that is used to determine whether or not a software system is suitable for use by end users. It is the process of verifying that a system meets the requirements of the user and that the user is able to use the system for its intended purpose. User acceptance testing (UAT) is a process of verifying that a system meets the needs of the end users and that they are able to use it. This can be done through a variety of methods, such as interviews, surveys, or observation. UAT is important in water quality analysis and prediction because it helps ensure that the system being developed will be useful to those who will be using it. By testing with act users, developers can get feedback on the system and make sure it is meeting the needs of the users.

9. RESULTS

9.1 Performance Metrics

a) Implementation of web application:

To create the web application to interact with the users. The users here is commonly job seeker and job provider. Login, Signup, Job searching have separate pages where we can access into different work functions.

b) SendGrid Integration:

The flask application that we created is to get integrated with sendgrid which provide the e-mail interface for communication purpose.

c) Developing chatbot:

To develop a chat-bot so that, that can be very interactive to the users who are using the application and to recommend the jobs based on the job seekers interests.

d) Deployment of Application:

Finally the developed application is to deployed in the cloud.

1 .Accuracy

The accuracy metric is one of the simplest Classification metrics to implement, and it can be determined as the number of correct predictions to the total number of predictions.

To implement an accuracy metric, we can compare ground truth and predicted value in a loop.

10. ADVANTAGES AND DISADVANTAGES

Advantages:

- The main advantage of our application is that there is a direct one way communication between the job seeker and the job recruiter.
- There is a chat-bot which gives the directions to the users what to do and not to do and also it recommends the jobs based on the job seekers interests.
- The application is an open source one which doesn't asks for the money.

Disadvantage:

- One disadvantage of the application is that it is not a full paced one.
- Another disadvantage of skill / job recommender application is that it is unaware of machine language stack. No AI is implemented here.
- Skill / Job Recommender Application is used in many domains despite of professionals.

11. CONCLUSION

In this work, we have presented our proposal for the automatic recommendation of job offers. Our goal here is being able to build methods being able to deliver appropriate job offers to those job seekers that could be potentially interested on them. To do that, we have based our research efforts on two wellknown classification methods: random forests (RF) and support vector machines (SVM). Our empirical evaluation shows us interesting facts. For example, RF are more likely to be interpreted although they do no present a particularly good performance in relation to SVM. On the other hand, SVM are more accurate, although they work with a model being much harder to interpret by human. What it is clear is, that in both cases, we have shown that these two methods are quite appropriate for accurately working in the context of automatic job recommendation.

There is unemployment only because of lack of skill set in their domain or fear of missing out on a job. When a job seeker is afraid of getting the desired job, he might losses the job which he really deserved for it. The main purpose of the job recommender application is to provide job opportunities for each and every single person. The only thing the job seeker wants to do is just to approach the application and apply for the job. He will be provided with the login credentials with the confirmation email. There he can find numerous job opportunities. He will be guided with the in-built chat bot, which guides the job seekers to apply for the job and recommends the availability of jobs based on their interest. The chat bot is built with IBM Watson Assistant that is very much helpful in collecting the job seeker interests and also guides them to apply for it.

12. FUTURE SCOPE

As future work, we propose to design novel computational methods being able to process the textual description from the job offers. At that point, we were using just the quantitative information that is advertised. However, we think that the way an offer is written can help attracting potential candidates as well, maybe new methods for natural language processing using neural networks could help in this task. We also would like to explore the possibilities to work with expert knowledge via kernel mapping in the case of SVM as we mentioned earlier. Finally, it is also necessary to study how to integrate this technology with existing web information systems so that these two methods can be put into operation by the industry.