

PROJECT REPORT

DATE	13.11.2022
TEAM ID	PNT2022TMID27084
PROJECT NAME	SMART FASHION RECOMMENDER

1.) INTRODUCTION:

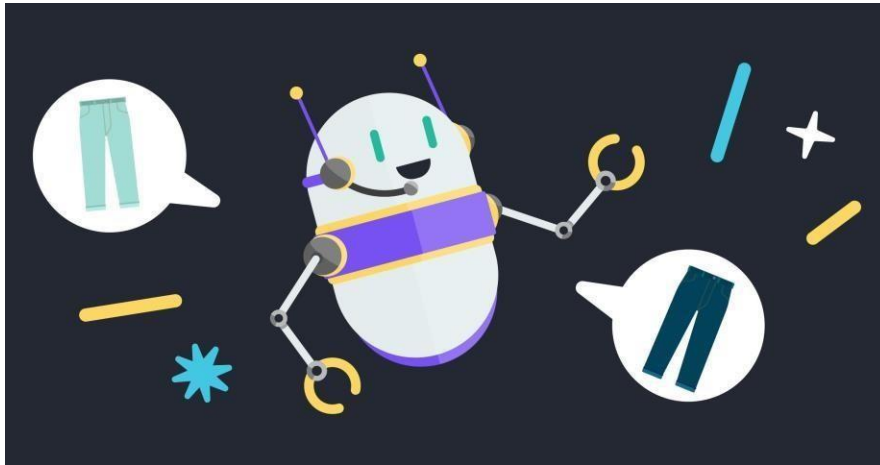
1.1.) PROJECT OVERVIEW :

- ❖ *The Smart fashion recommender chatbot is an intelligent assistant which works accordingly to the user's requirements and queries. It is developed via various applications, using Watson Assistant as the main application.*
- ❖ *The chatbot can be used by any user by entering their login credentials such as their registered email id and password.*
- ❖ *It is developed to come up with a new innovative solution through which you can directly do your online shopping based on your choice without any search. It can be done by using our Smart fashion Recommender chatbot.*
- ❖ *The chatbot can be used by any individual, which also gives them total priority to their interests and gives recommendations based on their clothing selection.*

1.2.PURPOSE:

- ❖ *The main purpose of the chatbot is to be available for the customers at any given time and location, with the user entering their appropriate credentials.*
- ❖ *It serves the purpose of saving time and cost for the users approaching the site.*
- ❖ *It makes a quick and easy procedure for the users to get know of latest fashion products of their interests and choice.*

2.LITERATURE SURVEY



Abstract:

- Fashion recommendation systems have been the subject of extensive research throughout the years. The recommendation systems have adopted a variety of methodologies, including deep learning, machine learning, and image processing.
- Online retailers like Amazon, eBay, and others adapt their fashion suggestion algorithms to meet the needs of their clients on a regular basis. The analysis of consumers' purchasing patterns is suggested using a variety of various methods.
- This article examines a number of deep learning-based fashion recommender system publications from 2016 to 2020. In order to develop the recommendation system, researchers have either employed deep learning models alone or in combination with other machine learning models. In the paper, persuasive deep learning models that are used in recommendation systems are briefly described.

Introduction:

- Chatbots, sometimes referred to as intelligent assistants, are one of the most significant roles that artificial intelligence is now playing in the fashion business.
- Chatbots are actual computer programmes that can manage a conversation by exchanging text or voice messages, emulating intelligent human dialogues.
- Although there are several varieties of chatbots, we may typically classify them as intelligent or task-specific with a restricted set of skills. Task-specific bots are familiar to most people; often, they appear when you choose the chatbot option while contacting a support desk.
- They gradually hone their ideas and talents using a combination of visual AI and machine learning.

Literature survey:

Fast Fashion Retailing and Artificial Intelligence:

- Fast fashion selling is one industry where artificial intelligence (AI) has shown to be effective (Guo et al., 2011; Nayak & Padhye, 2018). With the emergence of COVID-19, AI has drawn attention for its capacity to tame the turbulence of the fast fashion industry and the constantly changing demands of customers.
- Past applications of AI in the fast fashion industry include distribution, fabric inspection, and clothing manufacture (Lee et al., 2012; Nasira & Banumathy, 2014). (Chen et al., 2014). Recently, artificial intelligence (AI), big data analytical tools, and other cutting-edge technologies like the internet of things (IoT) may be used to create digital platforms for rapid fashion selling (Acharya et al., 2018)
- Chatbots powered by AI are being used by fashion firms to assist customers in personalising their experiences. A chatbot is an AI-powered computer that uses a text-based input and output mask to mimic a real human interaction.
- Customers may interact with these conversational bots just like they would with a human front-line worker (Wang & Petrina, 2013). Whatever

their purposes, chatbots employ machine learning to analyse consumer requests and provide the best accurate answers possible (Panesar, 2020). They are typically connected with messaging applications rather than software programmes. Additionally, some chatbots employ the deep learning method, which can handle a lot of unstructured data (Dempt, 2016).

From Mindful Consumption to the Mindful Sustainable Consumption (MSC) Approach:

- This conceptual research demonstrates how four key aspects of mindfulness—mindful attitude and mindful behavior—could encourage improvements in consumer behaviour.
- 1) Non-material values may be improved through mindfulness activities, which increases the significance of non-material actions in consumer decisions (Ericson et al., 2014). By promoting awareness, empathy, compassion, and mental openness, mindfulness is one strategy for stopping unsustainable behaviours.

Maintaining an open mindset to every human experience, favourable or unpleasant, requires self-reflection. In turn, this can lead to the development of pro-social and environmentally conscious behaviours in the individual (Burroughs & Rindfleisch, 2002; Kasser et al., 2014; Richins & Dawson, 1992).

Sustainability Chatbots (SC) in Fast Fashion Retailing:

- Intuitive encounters are created by chatbots using text, online views, graphic pictures, and product shots. They are a valuable tool for quickly communicating the MSC method for the reasons mentioned above.
- By recommending the best options to the customer informally and incorporating multimedia elements that add even more value and enable personalization of the experience, chatbots that have been properly configured for sustainability can increase awareness about the makeup, use, and durability of clothing.
- In order to educate and motivate clients to make thoughtful and sustainable decisions, this article presents the idea of sustainability

chatbots (SC). In order to raise consumer awareness of its products and to improve the customer experience, SC may also provide instructional courses on responsible and attentive consumption.

Conclusion:

- **Even before the COVID-19 crisis, sustainability has been a challenge for the fast fashion sector. Conversely, unconscious fashion purchases, triggered by marketing strategies that do not engage the customer in a conscious and sustainable consumption, but only stimulate demand through the continuous launch of new garment collections, have defined success in terms of the turnover of the industry to the detriment of both the environment and the community.**
- **However, to survive this pandemic and emerge stronger, fast fashion retailers must integrate sustainability into their new growth strategies. In the post-COVID- 19 pandemic world, trends demonstrate that the “new mindful customer” will prioritise trust and purpose and will likely evaluate firms based on how they acted in terms of sustainability practices during and after the crisis. Transparency will be extremely relevant for all interested parties.**
- **An important lesson from the COVID-19 era is that health, safety, and prosperity are inherently collective rather than individual activities and the fast fashion sector is no different. It may not be easy to manage a one-off economic crisis by generating mindful actions in favour of environmental and social concerns. For this reason, the new MSC approach could help marketing managers rebuild a more sustainable fast fashion industry**

What do they THINK AND FEEL?

what really counts
major preoccupations
worries & aspirations

Feel pretty,
feel shine

A style that
defines your
personality

Start falling
in love with
our outfits

What do they HEAR?

what friends say
what boss say
what influencers say

Choices can
be made
instantly with
much ease

Right
combination of
clothing can be
easily choosen

It's trustworthy and
is an easy method
to choose the right
clothing that suits
one's interest

Being the most
prominent choice
for online
wardrobe
shopping

What do they SAY AND DO?

attitude in public
appearance
behavior towards others

Easy access
to anyone
from
anywhere

New
modernized
clothing

Share your
trendy
moments

Cool and
trendy
costumes

Live cloth
matching

What do they SEE?

environment
friends
what the market offers

PAIN

fears
frustrations

Delay in
Delivery

You cant
touch the
product

You cannot
bargain

Lack of
Interaction

GAIN

"wants" / needs
measures of success

Trails from
home

Ease cloth
selection

Convenience

No Crowd

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

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

- A Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.
 - B Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.
 - C Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.
- [Open article](#)

Define your problem statement

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 A
Smart Recommendation in Fashion

Key rules of brainstorming
To run a smooth and productive session

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

Brainstorm

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

10 minutes

TIP
You can select a sticky note and hit the pencil (switch to sketch) icon to start drawing!

Nithish J

Bit paper Recommendation
Catalogues/ Pamphlets
Festival season offer

Showcased during a Festival season
Material Cloths
Foreign Returned Products

Sai Sarath B

Traditional Cloths Recommendation
Mobile Fashion Recommendation
Youthful Designs are Designed by Famous Tailor

Homemade Cloths are Directly Sold by Weavers
Street Seller
Collections are Sold in a BigMall

Nisanth C

Low cost with combo offers
Designer tailor
Multiuse dresses

Recommendation offering with home gadgets
Recycled cloths
Traditional cloths into modern cloths

Pavithran S V

Theatre Recommendation
Slade recommendation
Radio announcement

Bus & Railway station advertisement
Bags and slogan advertisement
Attractive advertisement

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. In the last 10 minutes, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

Collections

Available in all Sizes
Different Shades
Inspired from Various Culture

For all Different age groups
Number of choices are available
New varieties

Offers

Seasonal Offers
All Type of ranges were Available
Depends upon their frequent range purchasing

Festival offers
Offers are vary for various designs and collections
Discount offers

Designs

Revolution in Fashion
Traditional cloths
Authentic Wears also Available

Western fusion
Clothes from all types of Fabrics
Modern and trend Collections

Recommendations

Display the offers through the Notifications
We Notify the time limit of the Offers
Also Recommended the suitable Collections for you

Providing Suitable Accessory in the Menu
Through public Advertisement
Multipurpose Thing are Recommended with some gifts

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

Importance
If each of these tasks could get done without any difficulty or cost, which would have the most positive impact?

By scanning a person and suitable cloths can be selected

Festival Discount offers

Scrolling products in Offline mode

Various cultural Collections

Discount offers Validity

Handmade and khathicraft materials are available

Customize own dress

Perfect Size,perfect colour, perfect Finishing.

Easily Accessible through Voice search and Image

Low cost with quality Items

Returned products and Exchanging products are less

Short Time Delivery

After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons

- A Share the mural**
Share a view link to the mural with stakeholders to keep them in the loop about the outcomes of the session.
- B Export the mural**
Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

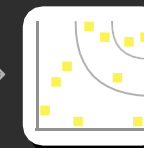
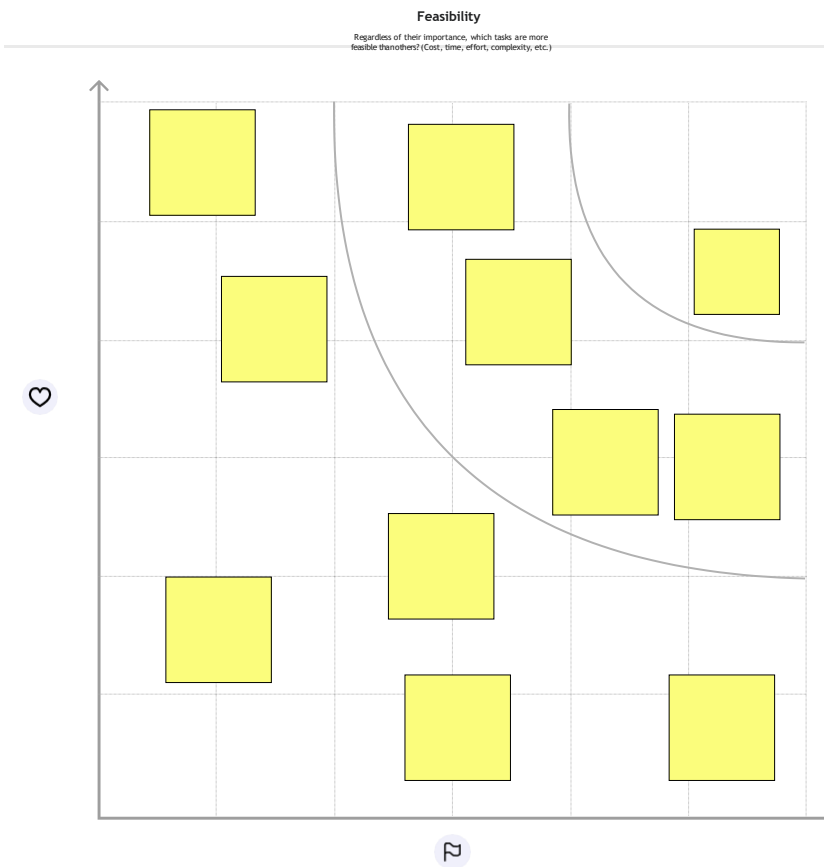
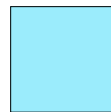
Keep moving forward

Strategy blueprint
Define the components of a new idea or strategy.
[Open the template](#)

Customer experience journey map
Understand customer needs, motivations, and obstacles for an experience.
[Open the template](#)

Strengths, weaknesses, opportunities & threats
Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.
[Open the template](#)

[Share template feedback](#)



3.IDEATION AND PROPOSED SOLUTION

Proposed Solution

3.3.Proposed Solution :

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	<ul style="list-style-type: none"> • Lack of interaction between application and user • User need to navigate across multiple pages to choose right product • Confusion in choosing product • Lack of sales • Complex User Interface. • Lack of proper guidance.
2.	Idea / Solution description	By using Smart fashion recommender application: <ul style="list-style-type: none"> • Improve customer relationship, interactivity and services. • Effective recommendation of products. • Recommendation within a single page via chat-bot • Collect feedback instantly. • Reduce human error • Proper guidance in accessing application.
3.	Novelty / Uniqueness	<ul style="list-style-type: none"> • Chat-bot asks and learns from user preference which recommends appropriate products to the user without making them to search through various filters. Reduces time in choosing right product thus increases sales.
4.	Social Impact / Customer Satisfaction	<ul style="list-style-type: none"> • Feedback from the user at the end of session or after placing order is one of the most important factor in deriving customer satisfaction and providing better services.
5.	Business Model (Revenue Model)	<ul style="list-style-type: none"> • The application can be developed at minimum cost with high performance and interactive user interface.
6.	Scalability of the Solution	<ul style="list-style-type: none"> • The solution can be made scalable by using micro service architecture provided that each server responsible for certain functionality of the application. Storing user preferences along with product in browser cookie will enable to provide response instantly and allows for fetching related products.

Define CS, fit into CC	<div><div>1. CUSTOMER SEGMENT(S)<div>Who is your customer? i.e. working parents of 0-5 y.o. kids</div><div>The Customers are Adults and children</div></div><div>CS</div></div>	<div><div>6. CUSTOMER CONSTRAINTS<div>What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.</div><div>Money and Network Connection</div></div><div>CC</div></div>	<div><div>5. AVAILABLE SOLUTIONS<div>Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking</div><div>Online shopping gives New Collections Pros: Easy to use Cons: customer confused when have lost of collections</div></div><div>AS</div></div>	Explore AS, differentiate	
	<div><div>2. JOBS-TO-BE-DONE / PROBLEMS<div>Which jobs-to-be-done (or problems) do you address for your customers? There could be more than one; explore different sides.</div><div>Users hard to find Trending Fashion Clothes.</div></div><div>J&P</div></div>	<div><div>9. PROBLEM ROOT CAUSE<div>What is the real reason that this problem exists? What is the back story behind the need to do this job? i.e. customers have to do it because of the change in regulations.</div><div>Customers need to be with new fashions for current trends</div></div><div>RC</div></div>	<div><div>7. BEHAVIOUR<div>What does your customer do to address the problem and get the job done? i.e. directly related: find the right solar panel installer, calculate usage and benefits; indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace)</div><div>Customers spend the time to find the new fashion clothes</div></div><div>BE</div></div>		Focus on J&P, tap into BE, understand RC
	<div><div>3. TRIGGERS<div>What triggers customers to act? i.e. seeingtheirneighbour installing solar panels, readingabout amore efficient solution in thenews.</div><div>Seeing neighbor Dressing Styles</div></div><div>TR</div></div>	<div><div>10. YOUR SOLUTION<div>If you are workingon an existingbusiness, write down your current solution first, fill in the canvas, and checkhow much it fits reality. If you are working on a new business proposition, then keep it blank until you fill in the canvas and comeup with a solution that fits within customer limitations, solves a problem and matches customer behavior.</div><div>Make a ChatBot Assistant for shopping with customers and send notifications when new collections arrived</div></div><div>SL</div></div>	<div><div>8. CHANNELS of BEHAVIOUR<div>ONLINE What kind ofactions do customers takeonline? Extract online channels from #7 OFFLINE What kind ofactions do customers takeoffline? Extract offline channels from #7and use them for customer development.</div><div>ONLINE: Customers buy the new clothes OFFLINE: Customers will use the clothes</div></div><div>CH</div></div>		
<div><div>4. EMOTIONS: BEFORE / AFTER<div>Howdo customers feelwhen they face a i.e. lost,insecure >confident, in control-use it in yourcommunication strategy &design. problem or a job and afterwards?</div><div>Felling Sad and Frustration > Self-confident</div></div><div>EM</div></div>					

4.REQUIREMENT ANALYSIS:

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 Form Registration through Gmail
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP

Non-functional Requirements:

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

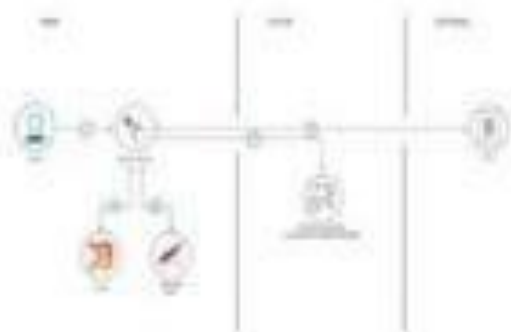
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	It acts as an strong source and an easier way for customers to purchase clothings in online .
NFR-2	Security	It is an secured way for online purchasing as every individual has their own login secured credentials.
NFR-3	Reliability	Chatbots are highly relied upon and it is said that online purchasing has increased by 60% by them.
NFR-4	Performance	Chatbots brings innovation in online purchasing and is effective most of the time.
NFR-5	Availability	By entering the correct credentials and login details , the chatbot can be availed by any user with all functional requirements.
NFR-6	Scalability	Online fashion recommender chatbots increase the scale of online shopping by thier easier and effective ways of procedure.

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.

Example: [Simplified](#)

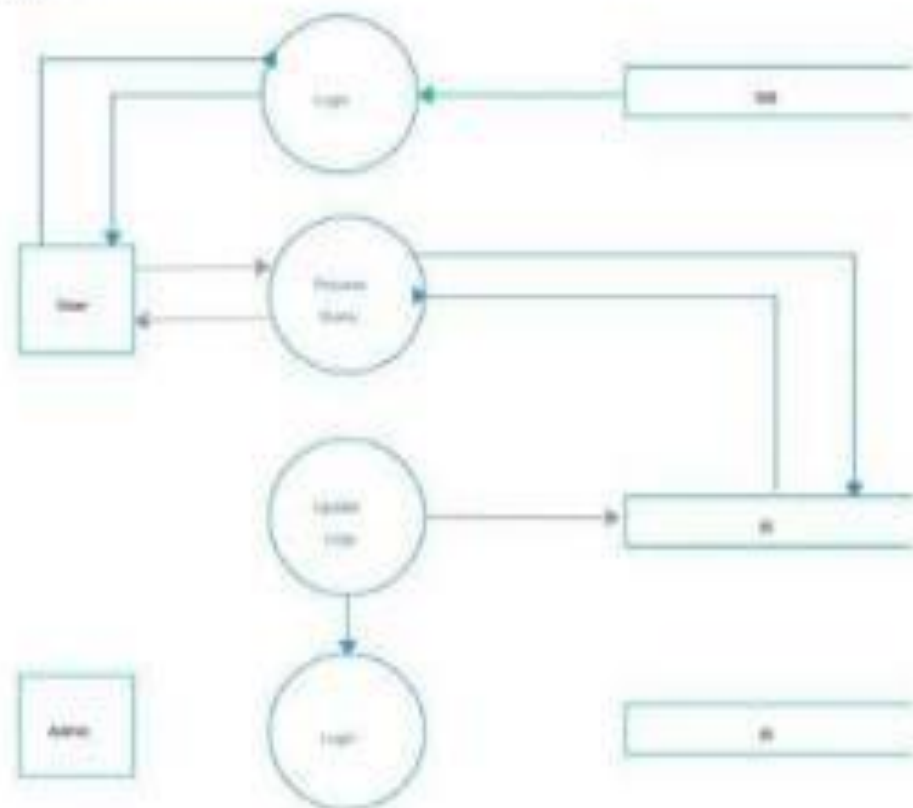
Flow



1. User configures credentials for the Watson Natural Language Understanding service and starts the app.
2. User selects data file to process and load.
3. Apache Tika extracts text from the data file.
4. Extracted text is passed to Watson NLU for enrichment.
5. Enriched data is visualized in the UI using the D3.js library.

Example: DFD Level 1 (Industry Standard)

LEVEL 1



USER STORIES

User Stories

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

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Customer (Mobile user)	Registration	USN-1	As a user, I can register for the application by entering my email or through google account	I can access to the chatbot	High	Sprint-1
		USN-2	As a user, I will receive confirmation email once I have registered for the chatbot application	I can receive confirmation email & click confirm to access the chatbot	High	Sprint-1
		USN-3	As a user, I can register for the application through gmail	I can access the dashboard by gmail login.	Medium	Sprint-1
	Login	USN-4	As a user, I can log into the application by entering email & password	I can login into the application by gmail login.	High	Sprint-1
	Dashboard	USN-5	As a user I can access into the dashboard by login into the application	I can access the dashboard by login into the application	High	Sprint-1
Customer (Web user)	Registration	USN-1	As a user , I can register for the website by entering my email, password and confirming it .	I can access my account	High	Sprint-1
		USN-2	As a user , after applying for the website i will recieve a confirmation mail .	I can recieve confirmation email and click confirm	High	Sprint -1
		USN-3	As a user , I can register for the website through email	I can access dashboard through email	Low	Sprint -2
	Login	USN-4	As a user , i can enter the website by entering my username and password	I can get into the application through gmail login	High	Sprint -1
	Dashboard	USN -5	As a user I can get into dashboard by login into webpage	I can access dashboard through webpage	High	Sprint -1

5.PROJECT DESIGN

5.2.Solution Architecture

Solution Architecture:

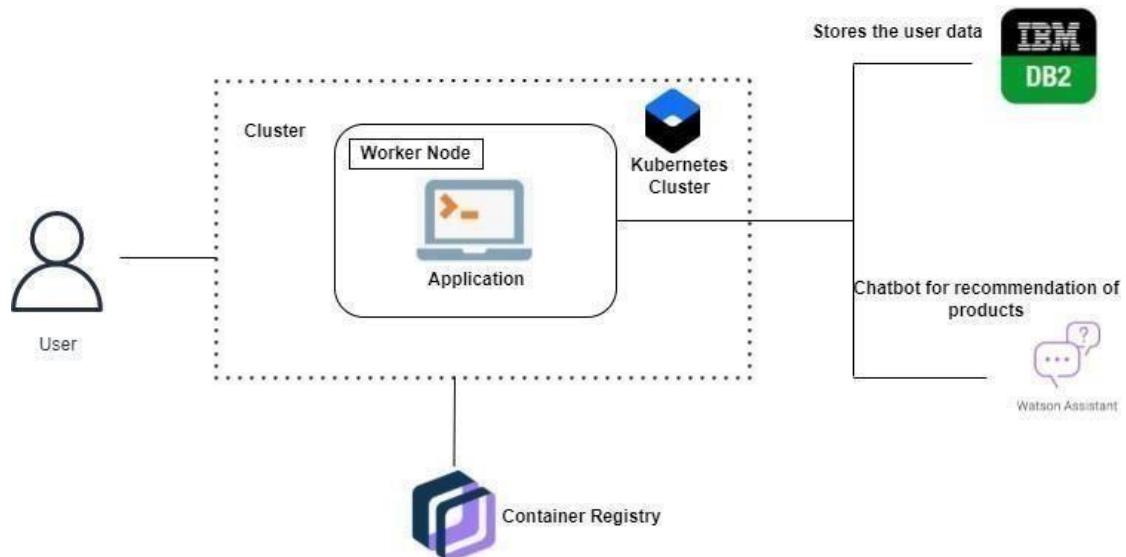
Solution architecture is a complex process – with many sub-processes – that bridges

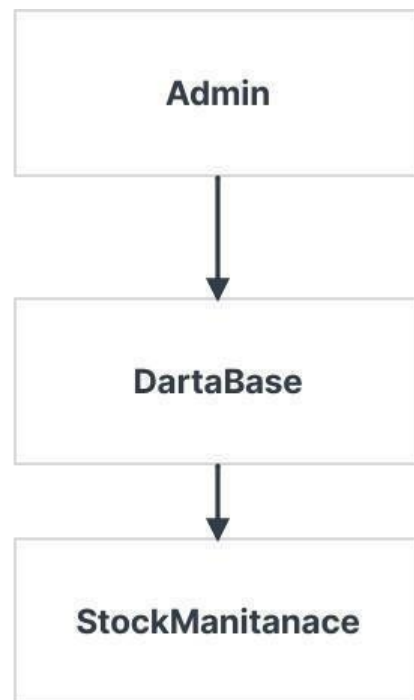
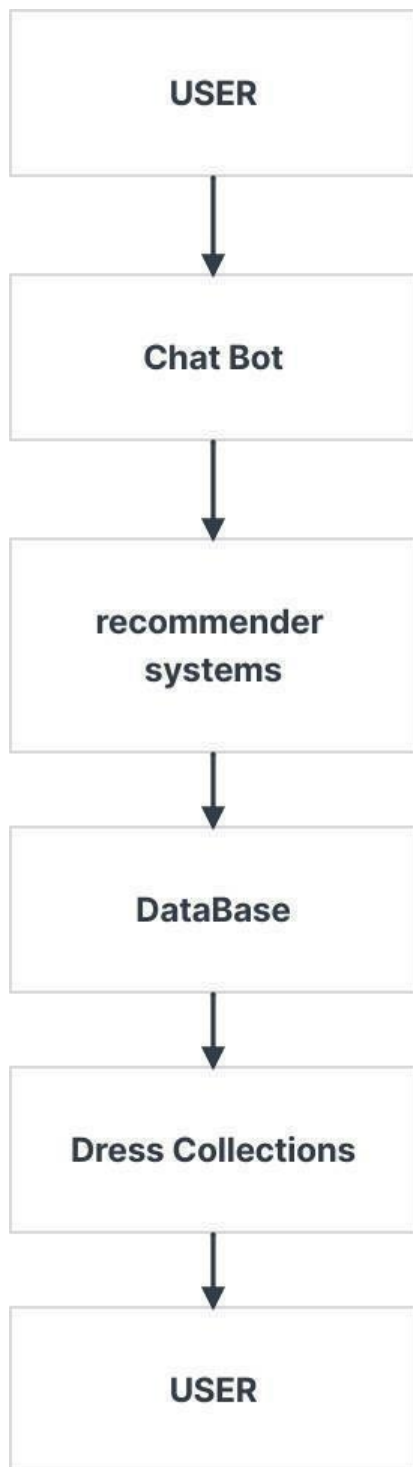
the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.
- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
- Define features, development phases, and solution requirements.
- Provide specifications according to which the solution is defined, managed, and delivered.

Example - Solution Architecture Diagram:

Solution Architecture:





6.PROJECT PLANNING AND SCHEDULING

Project Planning (Milestones & Activity List)

Remaining tasks (Milestones & Activities) to be completed

Milestones	Activities	Description
Project Development Phase	Delivery of Sprint – 1,2,3,4	To develop the code and submit the developed code by testing it
Setting up App environment	Create IBM Cloud account	Signup for an IBM Cloud account
	Create flask project	Getting started with Flask to create project
	Install IBM Cloud CLI	Install IBM Command Line Interface
	Docker CLI Installation	Installing Docker CLI on laptop
	Create an account in sendgrid	Create an account in sendgrid. Use the service as email integration to our application for sending emails
Implementing web Application	Create UI to interact with Application	Create UI <ul style="list-style-type: none"> • Registration page • Login page • View products page • Add products page
	Create IBM DB2 & connect with python	Create IBM DB2 service in IBM Cloud and connect with python code with DB
Integrating sendgrid service	Sendgrid integration with python	To send emails form the application we need to integrate the Sendgrid service
Developing a chatbot	Building a chatbot and Integrate to application	Build the chatbot and Integrate it to the flask application
Deployment of App in IBM Cloud	Containerize the App	Create a docker image of your application and push it to the IBM container registry
	Upload image to IBM container registry	Upload the image to IBM container registry
	Deploy in kubernetes cluster	Once the image is uploaded to IBM Container registry deploy the image to IBM Kebernetes cluster

Finished tasks (Milestones & Activities)

Milestones	Activities	Description
Ideation Phase	Literature Survey	Literature survey on the selected project & information gathering
	Empathy Map	Prepare Empathy map to capture the user Panis & Gains, prepare list of problem statement
	Ideation	Organizing the brainstorming session and prioritise the top 3 ideas based on feasibility & Importance
Project Design Phase I	Proposed Solution	Prepare proposed solution document which includes novelty, feasibility of ideas, business model, social impact, Scalability of solution
	Problem Solution Fit	Prepare problem solution fit document
	Solution Architecture	Prepare solution architecture document
Project Design Phase II	Customer Journey	Prepare customer journey map to understand the user interactions & experience with the application
	Functional requirement	Prepare functional & non functional requirement document
	Data Flow Diagram	Prepare Data Flow Diagram and user stories
	Technology architecture	Draw the technology architecture diagram
Project Planning Phase	Milestones & Activity list	Prepare milestones and activity list of the project
	Sprint Delivery Plan	Prepare sprint delivery plan

Project Planning Phase

Project Planning (Product Backlog, Sprint Planning, Stories, Story points)

Product Backlog, Sprint Schedule, Estimation

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story points	Priority	Team Members
Sprint-1	Setting up App environment	USN-1	As a user, I can register in ICTA Academy and create IBM cloud account.	2	High	Nithish J Nisanth C
Sprint-1		USN-2	As a user, I will create a flask project	1	Low	Sai Sarath B Pavithran
Sprint-1		USN-3	As a user, I will install IBM Cloud CLI	2	Medium	Nithish J Sai Sarath B
Sprint-2	Setting up App environment	USN-4	As a user, I can install Docker CLI	1	Low	Nisanth C Pavithran
Sprint-2		USN-5	As a user, I will Create an account in sendgrid	2	Medium	Nithish J Pavithran

Sprint-3	Implementing web application	USN-6	As a user, I Create UI to interact with the application	1	High	Nithish J Pavithran
Sprint-3		USN-7	As a user, I Create IBM DB2 and connect with Python	3	High	Nisanth C
Sprint-3	Integrating sendgrid service	USN-8	As a user, I will integrating sendgrid with python code	2	High	Sai Sarath B
Sprint-3	Developing a chatbot	USN-9	As a user, I have to build a chatbot and Integrate to application	1	Medium	Pavithran
Sprint-4	Development of App in IBM Cloud	USN-10	As a user, I will Containerize the App	1	Low	Nithish J
Sprint-4		USN-11	As a user, I will upload image to IBM Container registry	2	Medium	Sai Sarath B
Sprint-4		USN-12	As a user, I will deploy App in Kebernetes cluster	3	High	Nithish J
Sprint-4	User panel		As a user <ul style="list-style-type: none"> ● Register, Login, Email, Verification ● Manual Search ● Order placement, Order Details 	3	High	Nithish J Nisanth C Sai Sarath B Pavithran

Project Tracker, Velocity & Burndown Chart

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	18	6 Days	24 Oct 2022	29 Oct 2022	24	29 Oct 2022
Sprint-2	18	6 Days	31 Oct 2022	05 Nov 2022	24	05 Nov 2022
Sprint-3	18	6 Days	07 Nov 2022	12 Nov 2022	24	12 Nov 2022
Sprint-4	18	6 Days	14 Nov 2022	19 Nov 2022	24	19 Nov 2022

Velocity

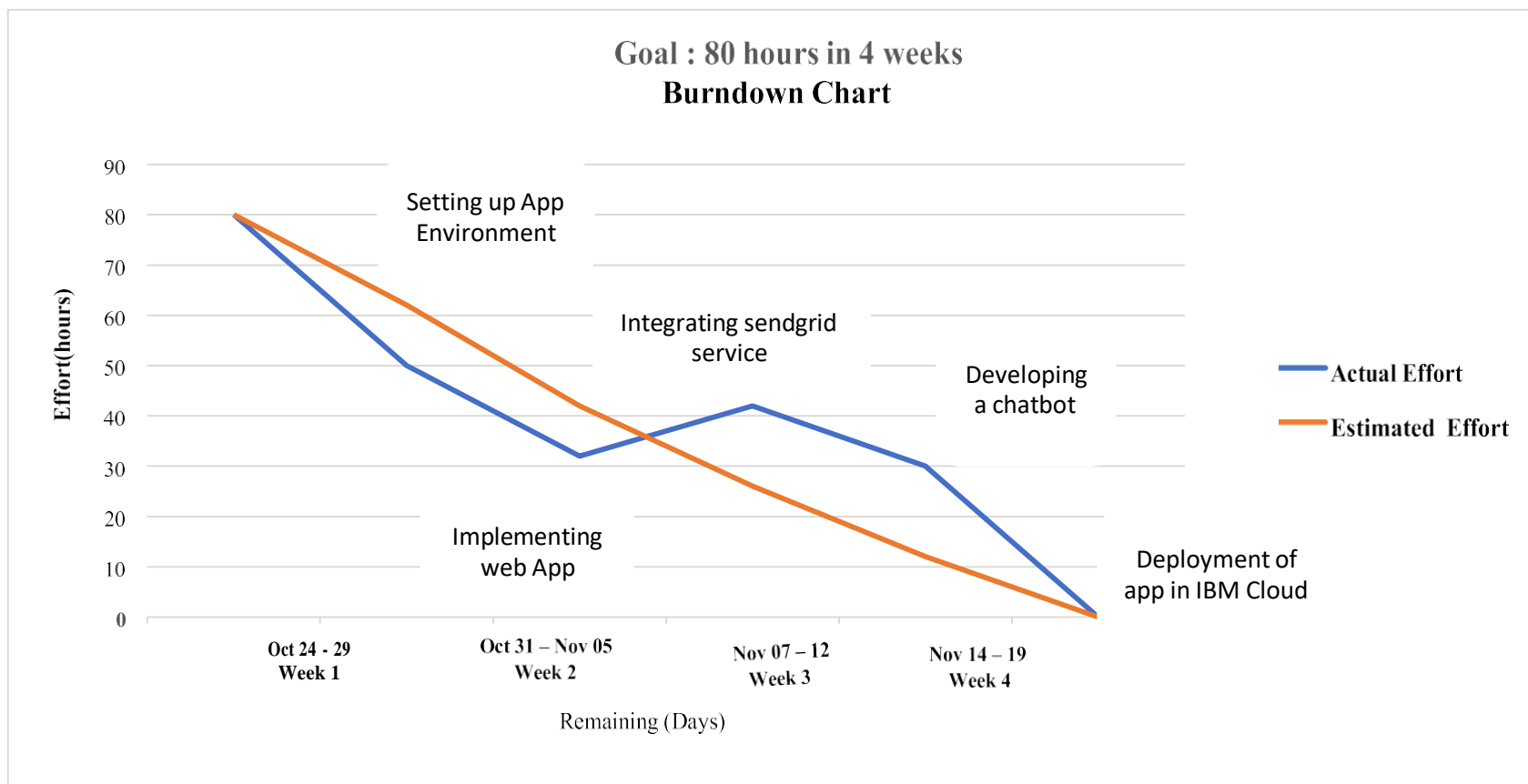
Imagine we have a 6-day sprint duration, and the velocity of the team is 18(points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \text{Sprint Duration} / \text{Velocity}$$

$$24/6 = 4$$

Burndown Chart

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.



7.) CODING AND SOLUTIONING:

7.1) HTML HOME page code:

```
<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <meta http-equiv="X-UA-Compatible" content="ie=edge">

    <link rel="stylesheet" href="{{ url_for('static', filename='css/main.css') }}">

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/meyer-
reset/2.0/reset.min.css">

    <title>Login - Register Form | Flask</title>

    <!-- Latest compiled and minified CSS -->

    <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.c
ss" integrity="sha384-
BVYiISiFeK1dGmJRAkycuHAHRg32OmUcww7on3RYdg4Va+PmSTsz/K68vbdEjh4
u" crossorigin="anonymous">

    <!-- Optional theme -->

    <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap-
theme.min.css" integrity="sha384-
rHyoN1iRsVXV4nD0JutlNGaslCJuC7uwjduW9SVrLvRYooPp2bWYgmgJQIXwl/Sp"
crossorigin="anonymous">

</head>

<body background= "{{url_for('static', filename='bg.png')}}" >
```

```

<div class="container">

    <div class="row" style="margin-top: 40px">
        <div class="col-sm-6">
            <ul>
                <li class="col-sm-6"><a href="/list" class="btn form-control btn-success">Login</a></li>
                <li class="col-sm-6"><a href="/addstudent" class="btn form-control btn-primary">Register</a></li>
            </ul>
        </div>
    </div>

</div>

```

```

<!-- Latest compiled and minified JavaScript -->

<script
src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js"
integrity="sha384-
Tc5IQib027qvyjSMfHjOMaLkfuWVxZxUPnCJA7I2mCWNlpG9mGCD8wGNlCPD7
Txa" crossorigin="anonymous"></script>

</body>

</html>

```

HTML Register Page code:

```

<!DOCTYPE html>

<html lang="en">

```

```

<head>

  <meta charset="UTF-8">

  <meta name="viewport" content="width=device-width, initial-scale=1.0">

  <meta http-equiv="X-UA-Compatible" content="ie=edge">

  <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/meyer-
reset/2.0/reset.min.css">

  <title>Register | Flask</title>

  <!-- Latest compiled and minified CSS -->

  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.c
ss" integrity="sha384-
BVYiISiFeK1dGmJRAkycuHAHRg32OmUcww7on3RYdg4Va+PmSTsz/K68vbdEjh4
u" crossorigin="anonymous">


  <!-- Optional theme -->

  <link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap-
theme.min.css" integrity="sha384-
rHyoN1iRsVXV4nD0JutlnGaslCJuC7uwjduW9SVrLvRYooPp2bWYgmgJQIXwl/Sp"
crossorigin="anonymous">

</head>

<body background= "{{url_for('static', filename='bg.png')}}" >

  <div class="container">

    <div class="row" style="margin-top: 40px">

      <div class="col-sm-6">

        <form action = "{{ url_for('addrec') }}" method = "POST">


          <div class="form-group">

            <label for="email">Username : </label>

```



```

        <input type = "text" name="name" />
    </div>
    <div class="form-group">
        <label for="email">Email Address: </label>
        <input type = "text" name="email" />
    </div>
    <div class="form-group">
        <label for="email">Password : </label>
        <input type = "text" name="password" />
    </div>
    <button type="submit" class="btn form-control btn-
default">Register</button>
</form>
</div>
</div>
</div>

```

CSS CODE:

```

@import url("https://fonts.googleapis.com/css?family=Raleway:400,700");
*, *:before, *:after {
    box-sizing: border-box;
}

body {
    min-height: 100vh;
    font-family: "Raleway", sans-serif;
}

```

```
.container {  
  position: absolute;  
  width: 100%;  
  height: 100%;  
  overflow: hidden;  
}  
  
.container:hover .top:before, .container:hover .top:after, .container:hover  
.bottom:before, .container:hover .bottom:after, .container:active .top:before,  
.container:active .top:after, .container:active .bottom:before, .container:active  
.bottom:after {  
  margin-left: 200px;  
  transform-origin: -200px 50%;  
  transition-delay: 0s;  
}  
  
.container:hover .center, .container:active .center {  
  opacity: 1;  
  transition-delay: 0.2s;  
}  
  
.top:before, .top:after, .bottom:before, .bottom:after {  
  content: "";  
  display: block;  
  position: absolute;  
  width: 200vmax;  
  height: 200vmax;  
  top: 50%;  
  left: 50%;
```

```
margin-top: -100vmax;
transform-origin: 0 50%;
transition: all 0.5s cubic-bezier(0.445, 0.05, 0, 1);
z-index: 10;
opacity: 0.65;
transition-delay: 0.2s;
}
```

```
.top:before {
  transform: rotate(45deg);
  background: #e46569;
}
```

```
.top:after {
  transform: rotate(135deg);
  background: #ecaf81;
}
```

```
.bottom:before {
  transform: rotate(-45deg);
  background: #60b8d4;
}
```

```
.bottom:after {
  transform: rotate(-135deg);
  background: #3745b5;
}
```

```
.center {
```

```
position: absolute;
width: 400px;
height: 400px;
top: 50%;
left: 50%;
margin-left: -200px;
margin-top: -200px;
display: flex;
flex-direction: column;
justify-content: center;
align-items: center;
padding: 30px;
opacity: 0;
transition: all 0.5s cubic-bezier(0.445, 0.05, 0, 1);
transition-delay: 0s;
color: #333;
}

.center input {
width: 100%;
padding: 15px;
margin: 5px;
border-radius: 1px;
border: 1px solid #ccc;
font-family: inherit;
}
```

8.TESTING

8.1.Test Cases

Test case ID	Feature Type	Component	Test Scenario	Pre-Requisite	Steps To Execute	Test Data	Expected Result	Actual Result	Status	Comments	TC for Automation(Y/N)	BUG ID	Executed By
LoginPage_TC_001	Functional	Home Page	Verify user is able to see the Login/Signup	HTML	1.Enter URL and click go 3.Signup/Login that displayed.	http://159.122.179.156:30428/	Login/Signup popup should display	Working as expected	Pass	Executed Successfully	Y	Nil	Good on you
LoginPage_TC_002	UI	Login Page	Verify the UI elements in Login/Signup popup	IBM database	1.Verify login/Signup popup with below UI elements: a.email text box b.password text box c.Login button	http://159.122.179.156:30428/	Application should show below UI elements: a.email text box b.password text box c.Login button	Working as expected	Pass	Executed Successfully	Y	Nil	Good on you
LoginPage_TC_003	Functional	Login Page	Verify user is able to log into application with Valid credentials	IBM database	1.Click on Login 2.Enter Valid email in Email text box 3.Enter valid password in password text box 4.Click on login button	http://159.122.179.156:30428/	User should navigate to user account homepage	Working as expected	Pass	Executed Successfully	Y	Nil	Good on you
LoginPage_TC_004	Functional	Login page	Verify user is able to log into application with Invalid credentials	IBM database	1.Enter Invalid username/email in Email text box 2.Enter valid password in password text box 3.Click on login button	Username: mah@gmail password: mah123	Application should show 'incorrect email or password' validation message.	Working as expected	Pass	Executed Successfully	Y	Nil	Good on you
LoginPage_TC_004	Functional	Home page	Verify user is able to use the chatbot efficiently	IBM Watson	1.Click on the chatbot. 2.Use the chatbot with every questions the user wants to ask.	Need help in Fashion Recommendation	Asked user by using category and made him select the Dress he want to select.	Working as expected	Pass	Executed Successfully	Y	Nil	Good on you
LoginPage_TC_005	Functional	Home page	Verify user is able to use the chatbot efficiently	IBM Watson	1.Click on the chatbot. 2.Use the chatbot with every questions the user wants to ask.	Show all the products and combination.	I'm sorry I cant understand.	Not Working as expected	Fail	AI should be trained or connected to a private source	N	BUG-1234	Good on you

8.2 USER ACCEPTANCE TESTING.

1. Purpose of Document

The purpose of this document is to briefly explain the test coverage and open issues of the [Smart fashion recommender] project at the time of the release to User Acceptance Testing (UAT).

2. Defect Analysis

This report shows the number of resolved or closed bugs at each severity level, and how they were resolved

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
Discovering Trends	10	4	6	3	23
Easy accessibility	4	7	3	0	14
Personalised access	6	3	0	1	10
Quick customer service/response	9	2	4	5	20
Data security	3	0	2	0	5
Cost/Time saving	10	5	4	3	22
Totals	42	21	19	12	94

3. Test Case Analysis

This report shows the number of test cases that have passed, failed, and untested

Section	Total Cases	Not Tested	Fail	Pass
Discovering Trends	20	0	0	20
Easy accessibility	17	0	0	17
Personalised access	24	0	0	24
Quick customer service/response	11	0	0	11
Data security	9	0	0	9
Cost/Time saving	56	0	0	56
Totals	137	0	0	137

10. Advantages and Disadvantages of chatbots

Advantages of using Chatbots:

24*7 Availability:

In the present era organizations are working 24*7 to help their clients and explore new areas. The company has hired a large number of employees to answer client messages and phone calls so that no customer will go unnoticed. Despite this, customers often have to wait for responses, which can lead to dissatisfaction. When employees are trying to answer clients' questions 24x7, it can be difficult. A chatbot is an automated program, designed to answer customer questions. Therefore, In order to avoid fatigue and be more responsive.

Reduce Errors:

Chatbots help to minimize errors, unfortunately, customer support representatives can do make mistakes (human error) in providing appropriate information to the customers. But the chatbot flow contains pre-written information, intelligent algorithms, and programming, which ensures proper data output.

Reduces Operational Costs:

By replacing a human with a chatbot, you can minimize your operational cost. It is difficult for a corporation to hire employees for each role A single operator can only handle one or two customers at a time, but a chatbot can handle several interactions at once, which is much more when compared with your service or sales team. can handle. Chatbots help businesses to save a lot of money, while also being easily adaptable to satisfy a variety of needs, depending on the application.

Increases Sales and Engagement:

It's critical to keep your customers engaged with your website if you want to grow your business. Using a chatbot for branding purposes can enhance consumer engagement and keep them interested, resulting in more conversions and sales. Because of their adaptability, chatbots are easy to integrate with a variety of platforms, resulting in increased customer interaction.

Lead Generation:

Chatbot is the best lead generation tool because it can suggest everything which is there in your basket helping to capture a super targeted lead. Chatbots are capable of asking relevant questions, persuading customers, and generating qualified leads. It ensures that conversation flow is in the right direction to get high converting leads.

Disadvantage of using Chatbots:

Needs Analyzing:

To ensure that the chatbot provides the correct information to the customer. It's natural for users' and businesses' goals to vary as a result of their engagements. Therefore, the chatbot must be updated with the correct information to meet client demands.

Less Understanding of Natural Language:

People in today's world use shortcut keys to speed up responses and increase efficiency. As a result, chatbots are unable to adapt their language to that of humans. So slang, misspellings, and sarcasm are frequently misunderstood by bots. It means that a chatbot is unacceptable for a friendly discussion.

Higher Misunderstanding :

A computer program that is set up to answer questions from a database. When a user asks a question that isn't in the chatbot's database. The chatbot is unable to respond. These queries are likely to confuse chatbots, which will send them in loops.. By trying to understand the question, the bot will avoid leaving you without an answer.

Not Satisfied Angry Customer:

Sometimes customers cannot find the information they need or are unable to communicate with support executive connect. Because they did not enter the correct command. Because a chatbot is a programmed software with a specified response, if a consumer does not provide the correct command, they will not give the correct response, which makes them upset or frustrated with the company's services. However, there is a major risk of losing clients.

11.Conclusion:

Advantages and Disadvantages of Chatbots are important for developing chatbots for any business. Chatbots are more effective than people in reaching out to a big audience via messaging apps. They have the potential to become a useful information gathering tool in the near future. Chatbots are artificial intelligence that can provide highly tailored communication. To the user while minimizing the workload of healthcare provider teams. Consumers of today are always on the lookout for the best and most personalized customer experiences. It can seem an impossible task to fulfill the onslaught of ever-evolving demands

12.Future Scope

Can you find an industry where AI isn't present? Chances are, you wouldn't be able to. AI is one of the most popular technologies on the planet, thanks to its versatility and advanced solutions. It has been growing at a fast pace, but what is the future scope of AI? We'll find answers to this question in this article by taking a look at various sectors that are using (or are planning to use) this technology.

Scope of Artificial Intelligence

1. AI in Science and Research

AI is making lots of progress in the scientific sector. Artificial Intelligence can handle large quantities of data and processes it quicker than human minds. This makes it perfect for research where the sources contain high data volumes.

AI is already making breakthroughs in this field. A great example is 'Eve,' which is an AI-based robot. It discovered an ingredient of toothpaste that can cure a dangerous disease like Malaria. Imagine a common substance present in an everyday item that is capable of treating Malaria; it's a significant breakthrough, no doubt.

Drug discovery is a fast-growing sector, and AI is aiding the researchers considerably in this regard. Biotechnology is another field where researchers are using AI to design microorganisms for industrial applications. Science is witnessing significant changes thanks to AI and ML.

2. AI in Cyber Security

Cybersecurity is another field that's benefitting from AI. As organizations are transferring their data to IT networks and cloud, the threat of hackers is becoming more significant.

One triumphant attack can wreak havoc on an organization. To keep their data and resources secure, organizations are making massive investments in cybersecurity. The future scope of AI in cybersecurity is bright.

Cognitive AI is an excellent example of this field. It detects and analyses threats, while also providing insights to the analysts for making better-informed decisions. By using [Machine Learning algorithms](#) and Deep.

Learning networks, the AI gets better and more durable over time. This makes it capable of fighting more advanced threats that might develop with them.

Many institutions are using AI-based solutions to automate the repetitive processes present in cybersecurity. For example, IBM has [IBM Resilient](#), which is an agnostic and open platform that gives infrastructure and hub for managing security responses.

Another field is fraud detection. AI can help in detecting frauds and help organizations and people in avoiding scams. For example, [Recurrent Neural Networks](#) are capable of detecting fraud in their early stages. They can scan extensive quantities of transactions quickly and classify them according to their trustworthiness. By identifying fraudulent transactions and tendencies, organizations can save a lot of time and resources. It surely lessens the risk of losing money.

3. AI in Data Analysis

Data analysis can benefit largely from AI and ML. [AI algorithms](#) are capable of improving with iterations, and this way, their accuracy, and precision increase accordingly. AI can help data analysts with handling and processing large datasets.

AI can identify patterns and insights that human eyes can't notice without putting in a lot of effort. Moreover, it is faster and more scalable at doing so. For example, Google Analytics has [Analytics Intelligence](#), which uses machine learning to help webmasters get insights on their websites faster. You can ask Analytics Intelligence a question in simple English, and it would give you a prompt reply. It also provides webmasters with SmartLists, Smart Goals, Conversion Probability, and other features that help the webmaster in improving the results of their site.

The scope of AI in data analytics is rising rapidly. Another example of AI applications in this sector is predicting outcomes from data. Such systems use the analytics data to predict results and the appropriate course of action to achieve those results.

As mentioned earlier, AI systems can handle tons of data and process it much faster than humans. So, they can take customer data and make more accurate predictions of customer behavior, preferences, and other required factors. [Helixa.ai](#) is a great example of such an AI application. They use AI to provide insights into customer (or audience) behavior for higher accuracy and better results. Agencies and marketers can use their services to build precise buyer personas and create better-targeted ad campaigns.

4. AI in Transport

The transport sector has been using AI for decades. Although the presence and scope of artificial intelligence have been theoretically existent for sometime now, only a few people are aware that we use it on a regular basis. The scope of AI is quite advanced because it can learn automated manual tasks just like humans. Since automation is becoming more prevalent, time-consuming tasks are being taken over by AI. Any system that has AI shows the same amount of potential that human intelligence shows. These AI-powered machines can carry out jobs that require critical thinking and decision-making processes all by themselves. Several businesses in the transportation sector have been taken over by AI so that they can stay ahead in the market.

Autopilot helps the human operator and assists them in heading in the right direction. A pilot of a modern aircraft usually works for 7 minutes; the autopilot handles most of the steering of the plane. This allows the pilots to focus on other more important areas of the flight, such as the weather and the trajectory of the plane.

Another area where the future scope of AI is quite broad is driverless cars. Many companies are developing autonomous vehicles, which will rely heavily on AI and ML to operate optimally. Experts believe [self-driving cars](#) will bring many long-term and short-term benefits, including lower emissions and enhanced road safety. For example, self-driving cars will be free from human errors, which account for 90% of traffic accidents. Many companies, including Tesla and Uber, are developing these vehicles.

The scope of artificial intelligence has expanded and helped in the evolution and innovation of the sector of transportation. AI comes with several benefits like an increase in safety of the passengers, fewer accidents, lesser traffic congestion, lesser carbon emissions, and reduced financial expenses.

5. AI in Home

AI has found a special place in people's homes in the form of Smart Home Assistants. Amazon Echo and Google Home are popular smart home devices that let you perform various tasks with just voice commands.

You can order groceries, play music, or even switch on/off the lights in your living room with just a few voice commands. Both of them rely on [Voice Recognition technologies](#), which are a result of Artificial Intelligence and Machine Learning. They constantly learn from the commands of their users to understand them better and become more efficient.

Smart assistants are also present in mobile phones. Apple's Siri and Google Assistant are great examples of this sort. They also learn to recognize their users' voices to interpret them better all the time. And they can perform a plethora of tasks. Microsoft also has a smart assistant, which is called Cortana.

You can use these smart assistants for various tasks such as:

- Playing a song
- Asking a question
- Buying something online
- Opening an app

There's a lot of room left for improvement, but surely, the scope of AI in the smart home sector is booming.

online business appears to be an easy task, but that is far from the truth. Many businesses have gone online to satisfy their customers' needs and deliver a unique and comfortable experience.

For businesses to make better and more informed decisions, they have to manage massive amounts of data generated each second. Artificial intelligence has played a huge role in this procedure. The scope of AI is prominent in all aspects of business, like sales, marketing, customer support, and the HR department.

For example, a company like Amazon uses AI to provide the most accurate services to its customers. They give personalized recommendations of the products they think the customers will use based on their web behaviour. This AI algorithm is responsible for almost 40% of the entire business of a company like Amazon.

6. AI in Education

The importance of education in this world has been prevalent, but it continues to grow even today. With a large part of the country's population being the youth, it is important that they receive a good quality education. Along with that, it is also necessary that they understand AI and its benefits. Just like all the other sectors, it is critical for the education sector to keep up with AI as well as the artificial intelligence scope keeps increasing to fuel the education sector.

Artificial intelligence plays a huge role in every aspect of education. Here are some of the leading roles of AI.

- Artificial intelligence can make sure that every educational software is customized according to the student's needs and capabilities.
- Education will now be available to everybody sitting across the globe without any language barriers.

- While there are several concerns that once AI becomes more prevalent, the people doing manual labour will lose their jobs. While AI has the ability to do several menial tasks, they are meant to complement these workers and not replace them. AI is just a machine, and it will require human assistance.

There is a connection between education and AI in 3 different areas; learning about AI, learning with AI and preparing for AI. [UNESCO](#) has appointed an international Advisory Board to create a framework for students in which they learn all about how to use AI and how it can affect the human race. This workshop is not only targeted at students but at teachers as well.

13.APPENDIX

SOURCE CODE:

```
from turtle import st
from flask import Flask, render_template, request, redirect, url_for, session
from markupsafe import escape
import os
from sendgrid import SendGridAPIClient
from sendgrid.helpers.mail import Mail
import ibm_db
conn = ibm_db.connect("DATABASE=bludb;HOSTNAME=824dfd4d-99de-440d-9991-629c01b3832d.bs2io90l08kqb1od8lcg.databases.appdomain.cloud;PORT=30119;SECURITY=SSL;SSLServerCertificate=DigiCertGlobalRootCA.crt;UID=xhx40038;PWD=BDz5ow7439yj5PEd",",")
print ("Database connection established", conn)

app = Flask(__name__)

@app.route('/')
def home():
    return render_template('home.html')

@app.route('/addstudent')
def new_student():

    message =
    Mail(from_email="nithishjaganathanpersonal@gmail.com",to_emails="nithishjaganathan@gmail.com",subject="Account Registered Successfully",html_content="<p>Your account has been created using you provided email address.</p>")

    try:
        sg =
        SendGridAPIClient("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")
```

```

    response = sg.send(message)

    except Exception as e:
        print(e)
        return render_template('add_student.html')
@app.route('/list')
def list():
    return render_template('list.html')

@app.route('/addrec',methods = ['POST', 'GET'])
def addrec():
    if request.method == 'POST':

        name = request.form['name']
        email = request.form['email']
        password = request.form['password']

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

        if account:
            return render_template('list.html', msg="You are already a user, please login using
your details")
        else:
            insert_sql = "INSERT INTO userdata VALUES (?,?)"
            prep_stmt = ibm_db.prepare(conn, insert_sql)
            ibm_db.bind_param(prepare_stmt, 1, name)
            ibm_db.bind_param(prepare_stmt, 2, email)
            ibm_db.bind_param(prepare_stmt, 3, password)

            ibm_db.execute(prepare_stmt)

        return render_template('home.html', msg="Registered successfully")

@app.route('/check',methods = ['POST', 'GET'])
def check():

    if request.method == 'POST':

        email = request.form['email']
        password = request.form['password']

        sql = "SELECT * FROM userdata WHERE email=? and password= ?"
        stmt = ibm_db.prepare(conn, sql)
        ibm_db.bind_param(stmt,1,email)
        ibm_db.bind_param(stmt,2,password)

```

```
ibm_db.execute(stmt)
account = ibm_db.fetch_assoc(stmt)
if account:
    return render_template('result.html', msg='')
else:
    return render_template('list.html', msg="Please check your credentials!")
```

```
## while student != False:
##     print ("The Name is : ", student)
```

```
# print(student)
```

```
# @app.route('/posts/edit/<int:id>', methods=['GET', 'POST'])
# def edit(id):
```

```
#     post = BlogPost.query.get_or_404(id)
```

```
#     if request.method == 'POST':
#         post.title = request.form['title']
#         post.author = request.form['author']
#         post.content = request.form['content']
#         db.session.commit()
#         return redirect('/posts')
#     else:
#         return render_template('edit.html', post=post)
```

GIITHUB AND PROJECT DEMO LINK:

GITHUB LINK:

<https://github.com/IBM-EPBL/IBM-Project-1783-1658413125>

PROJECT DEMO LINK:

https://drive.google.com/file/d/1542X9zLitcIHheHGc4sLuPD_I6n2a1QS/view?usp=drivesdk