SMART FASHION RECOMMENDER APPLICATION

A PROJECT REPORT

Submitted by

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ABSTRACT

In recent years, the huge amount of information and users of the internet service, it is hard to know quickly and accurately what the user wants. This phenomenon leads to an extremely low utilization of information, also known as the information overload problem. Traditionally, keywords are used to retrieve images, but such methods require a lot of annotations on the image data, which will lead to serious problems such as inconsistent, inaccurate, and incomplete descriptions, and a huge amount of work. Recommendation systems are the techniques that are used to predict the rating one individual will give to an item or social entity. The items can include books, movies, restaurants and things on which individuals have different preferences. These preferences are being predicted using two approaches first content-based approach which involves characteristics of an item and second collaborative filtering approaches which considers user's past behaviour to evaluate its choices. This thesis proposes a fashion recommendation system which will recommend clothing images supported the style sort of the provided clothing images. In this work, we focus on the images of upper body as well as the lower body clothing and with human model in the images.

INTRODUCTION

Humans are inevitably drawn towards something that is visually more attractive. This tendency of humans has led to development of fashion industry over the course of time. With introduction of recommender systems in multiple domains, retail industries are coming forward with investments in latest technology to improve their business. Fashion has been in existence since centuries and will be prevalent in the coming days as well. Women are more correlated with fashion and style, and they have a larger product base to deal with making it difficult to take decisions. It has become an important aspect of life for modern families since a person is more often than not judged based on his attire. Moreover, apparel providers need their customers to explore their entire product line so they can choose what they like the most which is not possible by simply going into a cloth store. In 2013, the total turnover for ecommerce in Europe expanded with 17% in contrast to the 12 months before and huge organizations can have hundreds and hundreds of products or even more from which we can select on websites. Both the customer and the business enterprise desire the client to easily discover applicable products or items both throughout search and when they are searching, and this is where recommender systems come into the picture. From all the clients looking for items on the web, 63% of them buy garments (Burke, 2002), these being, quite possibly, the most purchased items. The information uncover that women are more likely to buy on-line, with 71% of ladies doing this, contrasted with 52% of men. Studies on clothing are in a growing development in general as a result of the tremendous market related to dress. In China, the serviceable market crushed 20 billion US dollars in 2016. Picture recovery can be depicted as the errand of looking out for pics in a picture data set.

PROJECT OVERVIEW

In recent years, with the huge amount of information and users of the internet service, it is hard to know quickly and accurately what the user wants. This phenomenon leads to extremely low utilization of information, also known as the information overload problem. Smart Fashion Recommender is an e-commerce website project that We developed .The backend was written by Flask (Python) and the frontend used Bootstrap. In addition to an easy-to-use and robust web interface, We also integrated some AI technologies to make the project unique. For example, there is a recommendation system to provide useful feedback on what a user might potentially want to buy, based on their previous choices. A chatbot is also available to provide a sense of personalized shopping and seamless service. We plan to implement even more interesting features as future work. Scalable and adaptive, this website can be used by a wide range of e-commerce businesses.

Features of ChatBot*:*

- Using chatbot we can manage user's choices and orders.
- The chatbot can give recommendations to the users based on their interests.
- It can promote the best deals and offers on that day.
- It will store the customer's details and orders in the database.
- The chatbot will send a notification to customers if the order is confirmed.
- Chatbots can also help in collecting customer feedback.

PURPOSE

This purpose of using smart fashion recommender system to select the most relevant garment design scheme for a specific consumer in order to deliver new personalized products. This system integrates emotional fashion themes and human perception on personalized body shapes and professional designer’s knowledge. The corresponding perceptual data are systematically collected from professional using sensory evaluation techniques. A recommender system aims to estimate the utility of a set of objects belonging to a given domain, starting from the information

available about users and objects. Product recommendation engines are an excellent way to deliver customers with an improved user experience. Leveraging advanced algorithms such as machine learning and AI, a recommendation system can help bring customers the relevant products they want or need. Product recommendations are part of an e-Commerce personalization strategy wherein products are dynamically populated to a user on a webpage, app, or 8 email based on data such as customer attributes, browsing behavior, or situational context—providing a personalized shopping experience.

2. LITERATURE SURVEY

Smart fashion: A review of AI applications in virtual try-on and fashion synthesis.

Authors: Seyed omid Mohammadi, ahmad kalhor

Year: 2021

virtual try-on is a highly active field, primarly, due to its potential application inthe online fashion retail industry and also offline intelligent software packagesused in clothing stores. The main problem is the definition of a well structured and uniform objectivemetric to assess the results.

Outfit Recommender system

Author : Nikita Ramesh

Year :2018

As research in this field continuous, more and more interestingmethods have come to light. Work once started using text based methods, turned to visual methods with image processing and use of CNN and now transfer learning with deepneural network. This paper could be to use the nearest neighbour approach on an online store database instead of the current clothing database to suggest clothes.A user could then directly buy the recommended clothes if he/she wants to.

Clothing fashion style recommendation system

Author : Wei dai

Year : may 2015

It increase user interaction with the services they provide. To demonstrate this clothing recommendation system we also develop two user interfaces, including a

Web Application and an iOS App. Lastly, we discuss theapproaches to secure the system and user privacy. We set up a Demo of this clothing recommendation system running on iPhone, which can achieve promising results within 5 seconds. Fashion item representation, fashion item compactability,personalization and interpretable and explanation.

2.1 Existing problem:

It is a process of collecting and interpreting facts, identifying the problems, and decomposition of a system into its components. It is a problem-solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

2.2 Reference:

1.Seyed omid Mohammadi, Ahmad kalhor. (2021) . Smart fashion: A review of AI applications in virtual try-on and fashion synthesis.

2.Mohammad Khalid, Maokeming, Tariq Hussain. (2021). Design and implementing of clothing fashion style recommendation system using Deep learning.

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6.Kang, W.-C.; Fang, C.; Wang, Z.; McAuley, J. Visually-aware fashion recommendation and design with generative image models. In Proceedings of the 2017 IEEE International Conference on Data Mining (ICDM), New Orleans, LA, USA, 18–21 November 2017.

7. Guan, C.; Qin, S.; Ling, W.; Ding, G. Apparel recommendation system evolution: An empirical review. Int. J. Cloth. Sci. Technol. 2016, 28, 854–879.

8. Liu, Y.; Gao, Y.; Feng, S.; Li, Z. Weather-to-garment: Weather-oriented clothing recommendation. In Proceedings of the 2017 IEEE International Conference on Multimedia and Expo. (ICME), Hong Kong, China, 31 August 2017; pp. 181– 186.

9. Yamaguchi, K.; Kiapour, M.H.; Ortiz, L.E.; Berg, T.L. Parsing clothing in fashion photographs. In Proceedings of the 2012 IEEE Conference on Computer Vision and Pattern Recognition, Providence, RI, USA, 16–21 June 2012.

10.Polania, L.F.; Gupte, S. Learning Fashion Compatibility Across Apparel Categories for Outfit Recommendation. In Proceedings of the 2019 IEEE International Conference on Image Processing (ICIP), Taipei, Taiwan, 22–25 September 2019.

2.3 Problem Statement Definition:

A problem statement is a concise description of the problem or issues a project seeks to address. The problem statement identifies the current state, the desired future state and any gaps between the two. A problem statement is an important communication tool that can help ensure everyone working on a project knows what the problem they need to address is and why the project is important.

A problem statement is important to a process improvement project because it helps clearly identify the goals of the project and outline the scope of a project. It also helps guide the activities and decisions of the people who are working on the project. The problem statement can help a business or organization gain support and buy-in for a process improvement project.

How to write problem statement?

A good problem statement can be created by identifying and answering several questions related to the problem,

✓ Identify the Problem

✓ Begin were statement with were ideal situation

✓ Describe current gaps

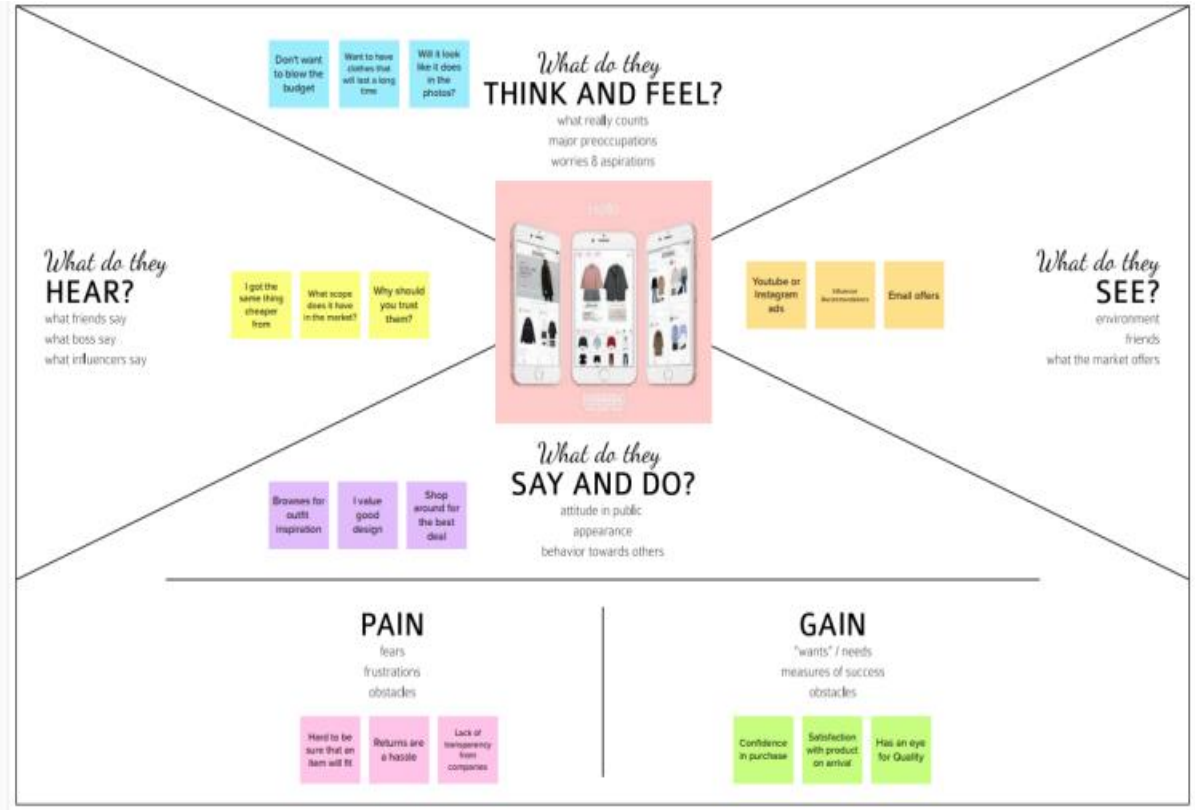
✓ State the consequence of the problem

✓ Propose addressing the problem

3. IDEATION AND PROPOSED SOLUTION

3.1 Empathy map canvas

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviour and attitudes. An empathy map canvas is a more in-depth version of the original empathy map, which helps identify and describe the user's needs and pain points. And this is valuable information for improving the user experience. Teams rely on user insights to map out what is important to their target audience, what influences them, and how they present themselves. This information is then used to create personas that help teams visualize users and empathize with them as individuals, rather than just as a vague marketing demographic or account number.



Uses of empathy map canvas:

An empathy map canvas helps brands provide a better experience for users by helping teams understand the perspectives and mindsets of their customers. Using a template to 15 create an empathy map canvas reduces the preparation time and standardizes the process so we create empathy map canvases of similar quality.

How to create an empathy map canvas?

Empathy maps are divided into segments, which are typically defined by questions that teams work to answer one by one to complete the map. Using MURAL's template allows we to add color-coded sticky notes to help categorize answers visually.

How to use the empathy map canvas template?

The empathy map canvas template provides an easy way for teams to visualize and better understand their target users. MURAL's customizable template provides features that allow us to maximize the map's effectiveness by tailoring it to were user base.

3.2 Ideation and Brainstorming

Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem-solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich number of creative solutions. Use this template in were brainstorming sessions so were team can unleash their imagination and start shaping concepts even if we're not sitting in the same room.

Template

SMART FASHION RECOMMENDATION

Fashion applications have seen tremendous growth and are now one of the most used programs in the e-commerce field. The needs of people are **continuously evolving,** creating room for innovation **among the** applications. Having an AI program that understands the algorithm of a specific application can be of great aid. We are implementing such a chat bot, which is fed with the knowledge of the application's algorithm and helps the user completely from finding their needs to **processing the payment and** initiating delivery.

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

Unavailability of chatbots that are interactive enough to navigate the user to do whatever they want.The amount of toil a user has to go through to look for a product they desire for. Need for a more User-friendly interface.
The main aim of the project is to develop a smart chat-bot that is able to understand the needs of the user and recommend products of desire.

PROBLEM
How might we [your problem statement]?

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.

Brainstorm

Write down any ideas that come to mind that address your proble

10 minutes

VISHNU PRIYA A

SANGEETHA S

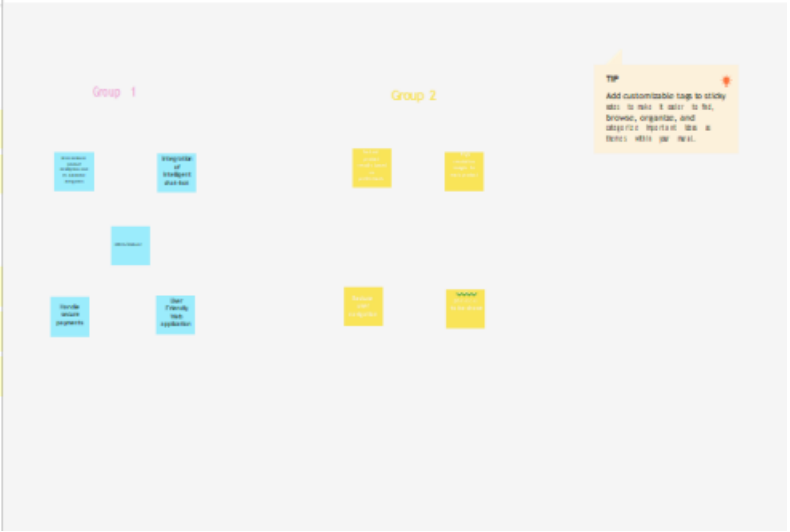
SHALINI K

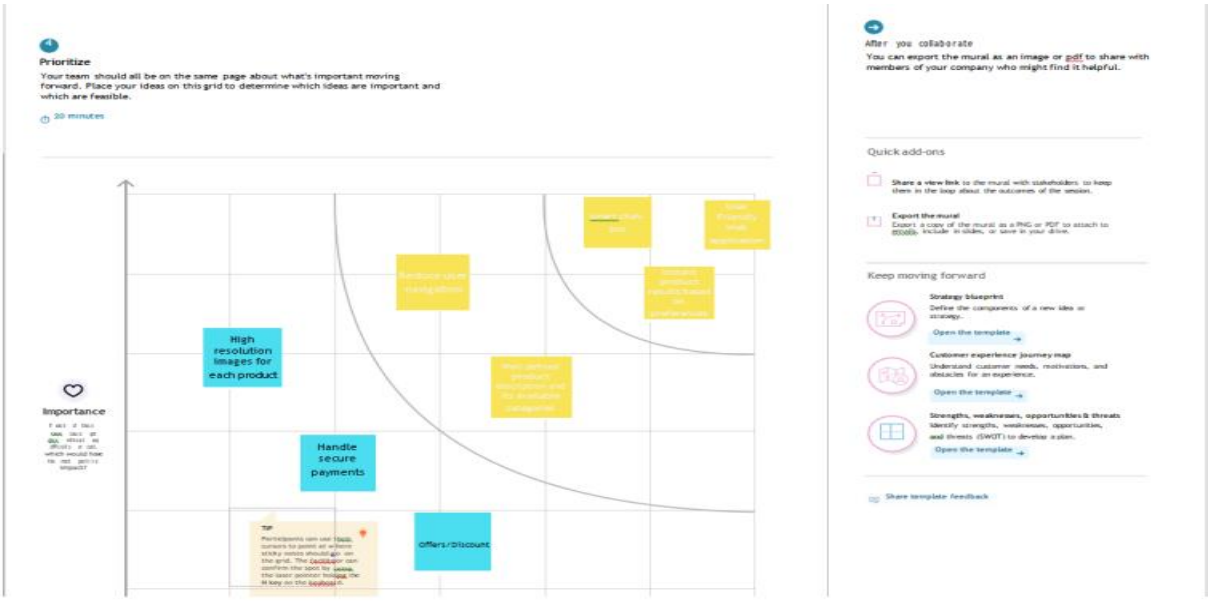
SUDARESHWARI S

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 and break it up into smaller sub-groups.

20 minutes





Benefits of Brainstorming :

Outside Input: Brainstorms allow others to freely propose ideas. It can be extremely difficult to come up with new ideas being the person closest to the issue. Inviting others into the conversation to figure out new ways of doing things allows people less familiar with the issue to speak openly about Idea.

Idea Building: The concept of idea building is sharing ideas, which triggers new ideas, and creates a chain of new thoughts. The only way idea building can thrive in a brainstorming session is if no ideas are immediately shut down. This will discourage people from sharing and in turn, will limit the success of the session.

Breaks Routine: Another benefit of having a brainstorming session is getting out of a normal routine. Maybe there are no apparent issues to be solved with how things are operating. A brainstorming session over a project can still be beneficial because it can reveal improvements we didn't even know we needed.

List Generation: Each session should have at least one person writing ideas down so no idea are lost. One of the best parts of leaving a brainstorming session is the list of ideas we can take with we and build off in the future. Not everything may be applied immediately, but a list of ideas can help we think creatively for months after the actual session took place.

Teamwork: Last but not least, brainstorming sessions create a team atmosphere. Brainstorms don't happen without people. Inviting co-workers into a brainstorming session helps solidify that we are on the same team and opens the option to ask for help from others.

Concept of ideation: Ideation is the process where we generate ideas and solutions through sessions such as Sketching, Prototyping, Brainstorming, Brainwriting, Worst Possible Idea, and a wealth of other ideation techniques. Ideation is also the third stage in the Design Thinking process.

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Ideation Process:

Ideation is the creative process of generating, developing, and communicating ideas. It's important to note that these ideas don't have to be completely new. Specific problems, investigate new ways of implementing a solution, or even collect feedback and evaluate ideas.

As we can see, ideation is not just a one-time idea generation or a brainstorming session. We can divide ideation into these three stages: generation, selection, and development. Even though they might have similarities, idea management is not the same as ideation. Ideation is more focused and linked to a specific problem or opportunity, while idea management is done at the level of the organization.

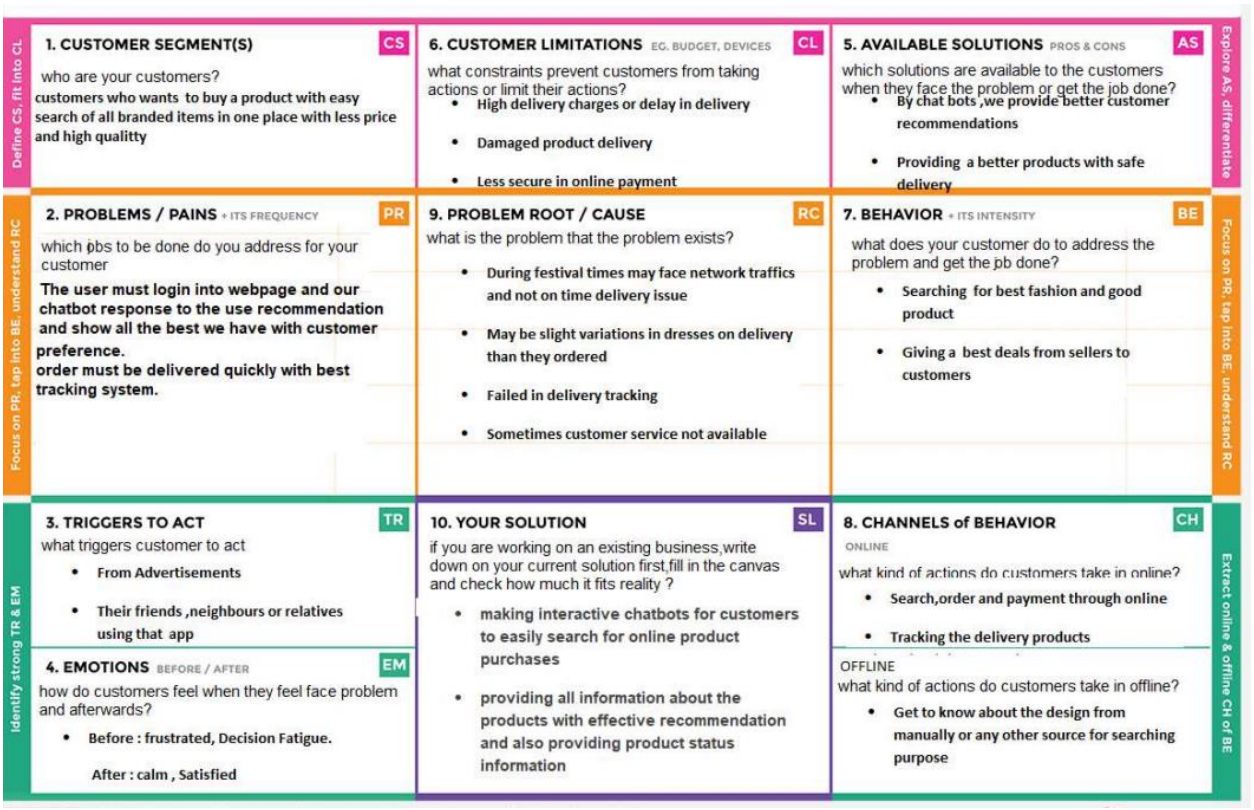
3.3 Proposed Solution

The proposed Solution means the data de-duplication system submitted by a Vendor as described in its Response, consisting of the Products and Services. The main goal of presenting a business proposal is to provide a solution to a problem faced by a potential buyer. This section should be as comprehensive as possible, and able to address all the needs that we have pointed out in the first section.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	User need to navigate across multiple pages to choose right product. Customer feels difficult to find Fashion clothes and accessories.
2.	Idea / Solution description	Improve customer relationship and services. Recommendation within a single page via chat-bot. Effective recommendation of products.
3.	Novelty / Uniqueness	The user give preference to the Chat Bot which helps to find their required products. Get the recommendations based on information provided by the user.
4.	Social Impact / Customer Satisfaction	The user -friendly interface make the user to find their products quickly which saves time and makes customer satisfaction.
5.	Business Model (Revenue Model)	Customer buy our products and generate revenue. The application can be developed at minimum cost with high performance and interactive user interface.
6.	Scalability of the Solution	We can easily scalable our application by increasing the number of products and also accuracy of the product suggestions.

3.4 Problem solution fit

- The Problem-Solution Fit canvas is based on the principles of Lean Startup, LUM (Lazy User Model) and User Experience design. It helps entrepreneurs, marketers and corporate innovators identify behavioral patterns.
- It is a template to help identify solutions with higher chances of solution adoption, reduce time spent on testing and get a better overview of the current situation.
- My goal was to create a tool that translates a problem into a solution, taking into account customer behavior and the context around it .
- With this template we will be able to take important information into consideration at an earlier stage and look at problem solving in depth.
- It increases were chances of finding problem-solution and product-market fit.



1.Customer State fit: To make sure we understand were target group, their limitations and their currently available solutions, against which we are going to compete.

2. Problem-Behavior fit: to help we filter out the noise and identify the most urgent and frequent problems, understand the real reasons behind them and see which behavior supports it. Is this behavior weak or infrequent — is it a problem worth solving?

3. Communication-Channel fit: to help we sharpen were communication with strong triggers, emotional messaging and reaching customers via the right channels.

4. Solution guess: translate all the validated data we have gathered into a solution that fits the customer state and his/her limitations, solves a real problem and taps into the common behavior of were target group.

•Problem-Solution canvas is a tool for entrepreneurs, marketers and corporate innovators, which helps them identify solutions with higher chances for solution

adoption, reduce time spent on solution testing and get a better overview of current situation.

• Such data is typically discovered "on the go", after rounds of iterations and customer interviews, but it's crucial for were success.

• This canvas is based on principles of Lean Startup, LUM and User Experience design, it combines everything we need to identify patterns and recognize what would work and why.

• Simply be where were customers are and solve a real problem, it's either the same done differently or something new, presented in a familiar way.”

4. Requirement Analysis

4.1 Functional Requirements

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	The user has his/her own ID to get registered through email and the portal.
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	Dashboard	The collected data are found in visualized format and prior data are analyzed.
FR-4	Dataset	The purchase record are collected and consolidated as dataset.
FR-5	Report Generator	The periodic reports of customer and the user are reported.
FR-6	Exploration	The data exploration on available dataset.

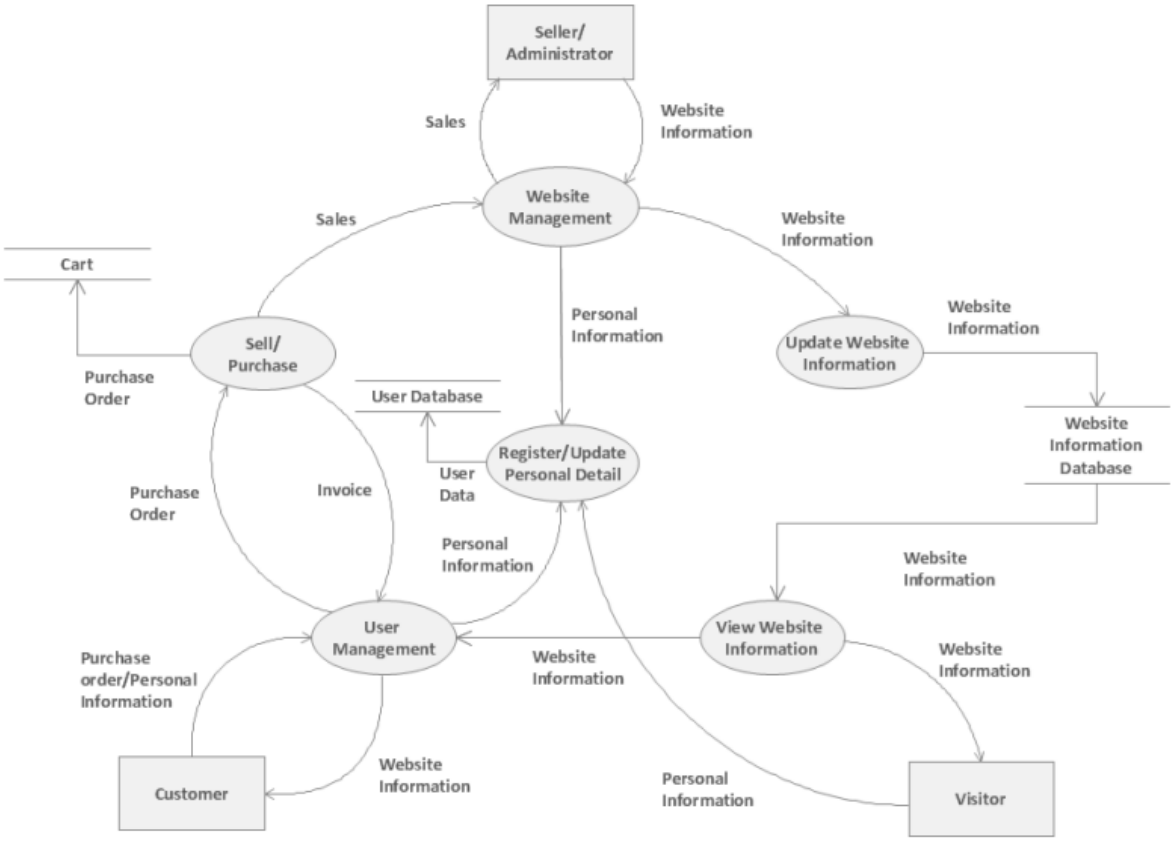
4.2 Non-functional Requirements

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

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	People with basic understanding can use the system. No prior experience is required .
NFR-2	**Security**	Only registered user can use this application.
NFR-3	**Reliability**	The fashion recommender system ensures the reliability.
NFR-4	**Performance**	The performance of this algorithm is evaluated by using some metrics that indicate the accuracy of the system.
NFR-5	**Availability**	The availability of dataset must be constrained for accurate data.
NFR-6	**Scalability**	The scalability can be increased by increasing the items and products.

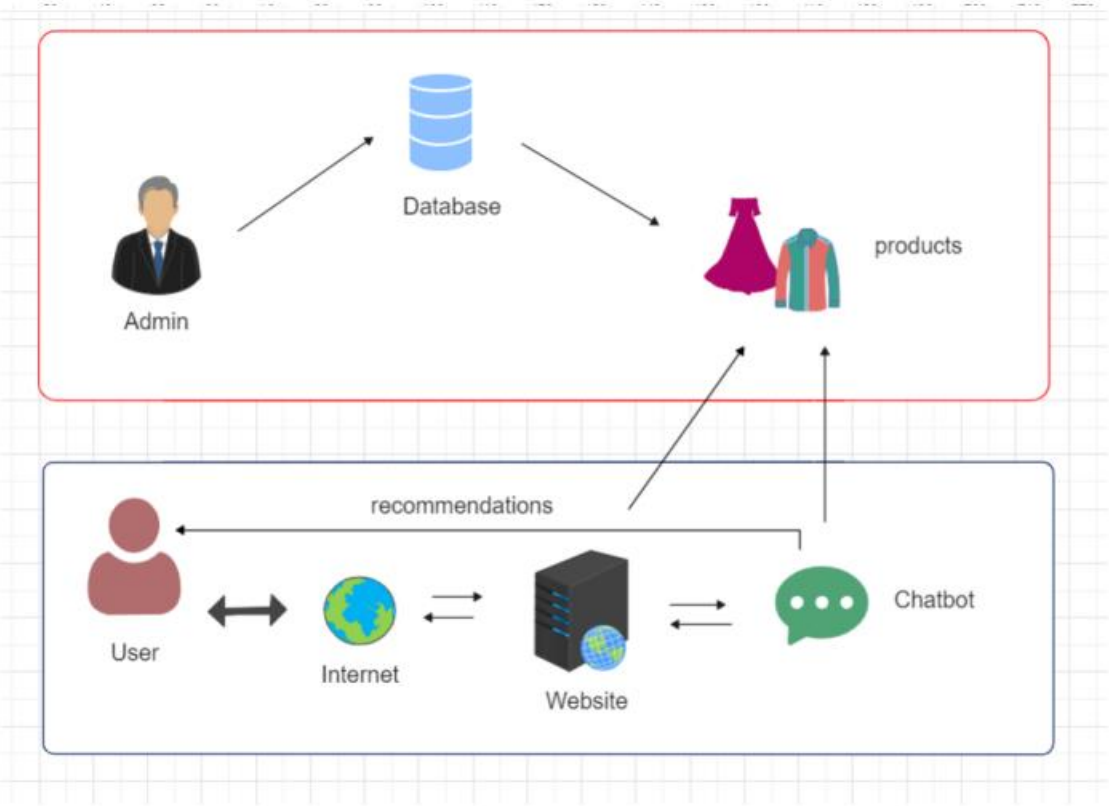
5.PROJECT DESIGN

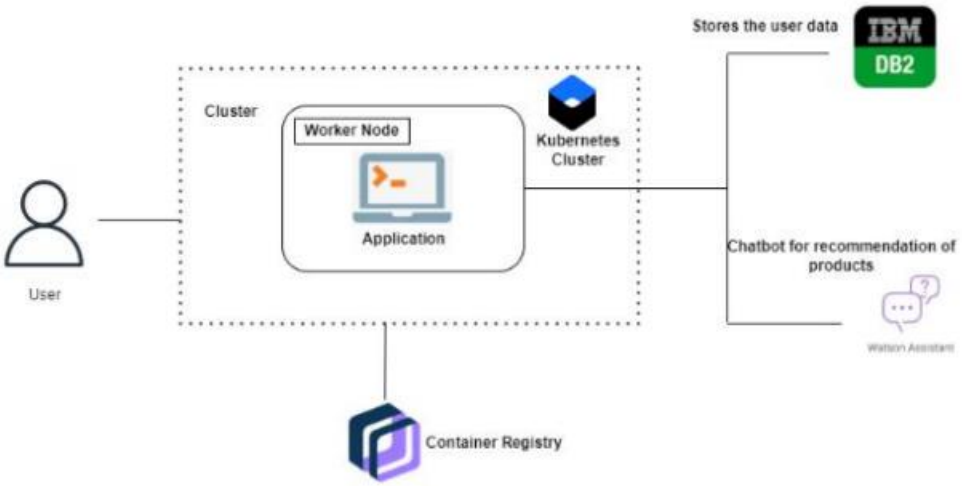
5.1 Data Flow Diagram

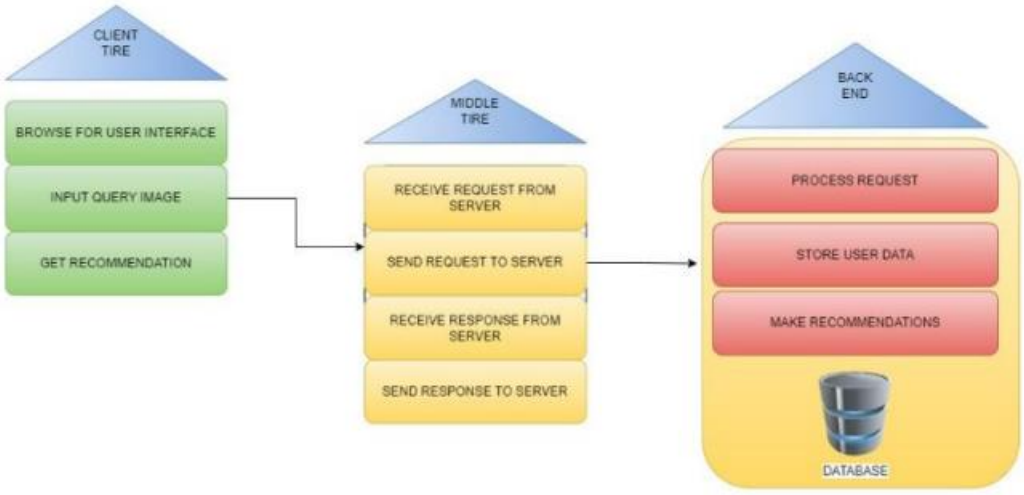


5.2 Solution and Technical Architecture

The system architecture defines the hardware, software and network environment of the structure. The system will be web-based meaning that the users need to run the URL in order to run the system. The system will run both horizontally and vertically.







5.3 User stories

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, password, and confirming my password.	I can access my account / dashboard	High	Phase-2
		USN-2	As a user, I will receive confirmation email once I have registered for the application	I can receive confirmation email & click confirm	High	Phase -2
		USN-3	As a user, I can register for the application through Facebook	I can register & access the dashboard with Facebook Login	Low	Phase -2
		USN-4	As a user, I can register for the application through Gmail	I can register my application through Gmail	Medium	Phase-2
	Login	USN-5	As a user, I can log into the application by entering email & password	I can log into the application by entering email & password	High	Phase-2
	Dashboard	USN-6	As a user, I can receive any update of about my purchasing products through my application dashboard	I can receive any update of about my purchasing products through my application dashboard	Medium	Phase-2
Customer (Web user)	Web page	USN-7	As a user, I can purchase any product through my application	I can receive product which is perfectly delivered	High	Phase-2
Customer Care Executive	Help line	USN-8	As a User, Sometimes if the any issues in my ordering product that time I will use the customer care help line method	I solve my issues of my ordering product	Medium	Phase-2
Administrator	Data Base	USN-9	As the Admin, I can check out the database about the stock and have a track of all the things that the users are purchasing.	I can check out the database about the stock and have a track of all the things that the users are purchasing.	High	Phase-2

6. PROJECT PLANNING & SCHEDULING

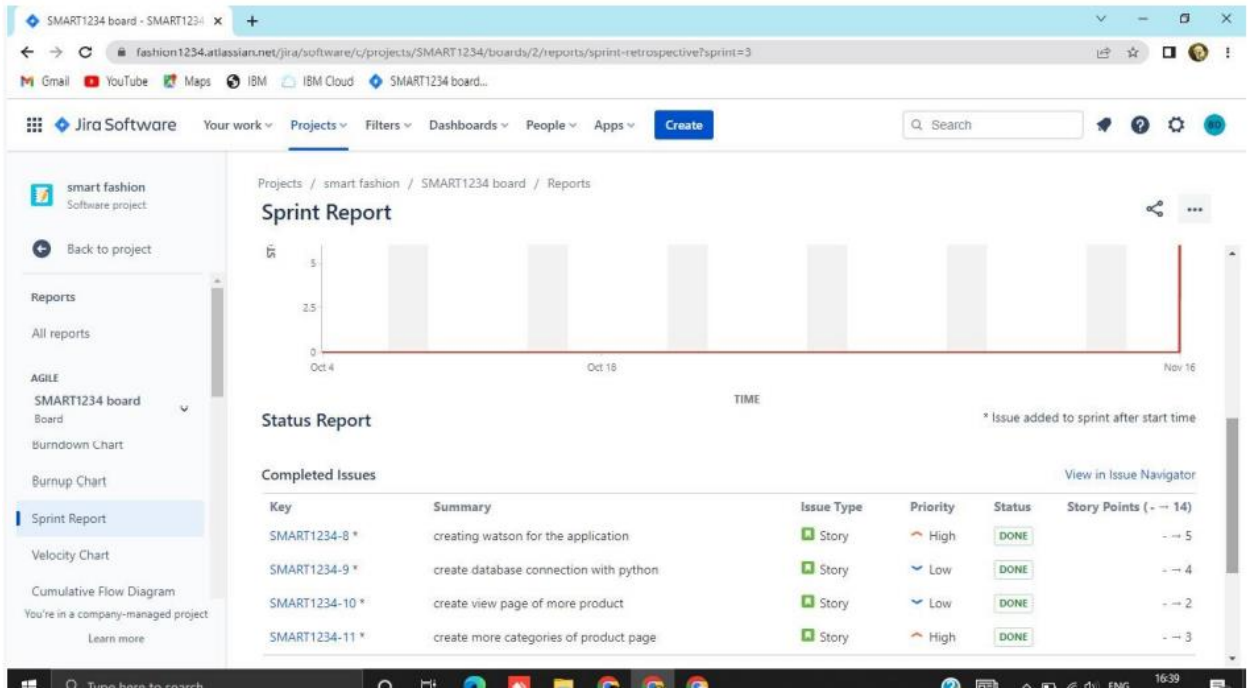
6.1 Sprint Planning & Estimation

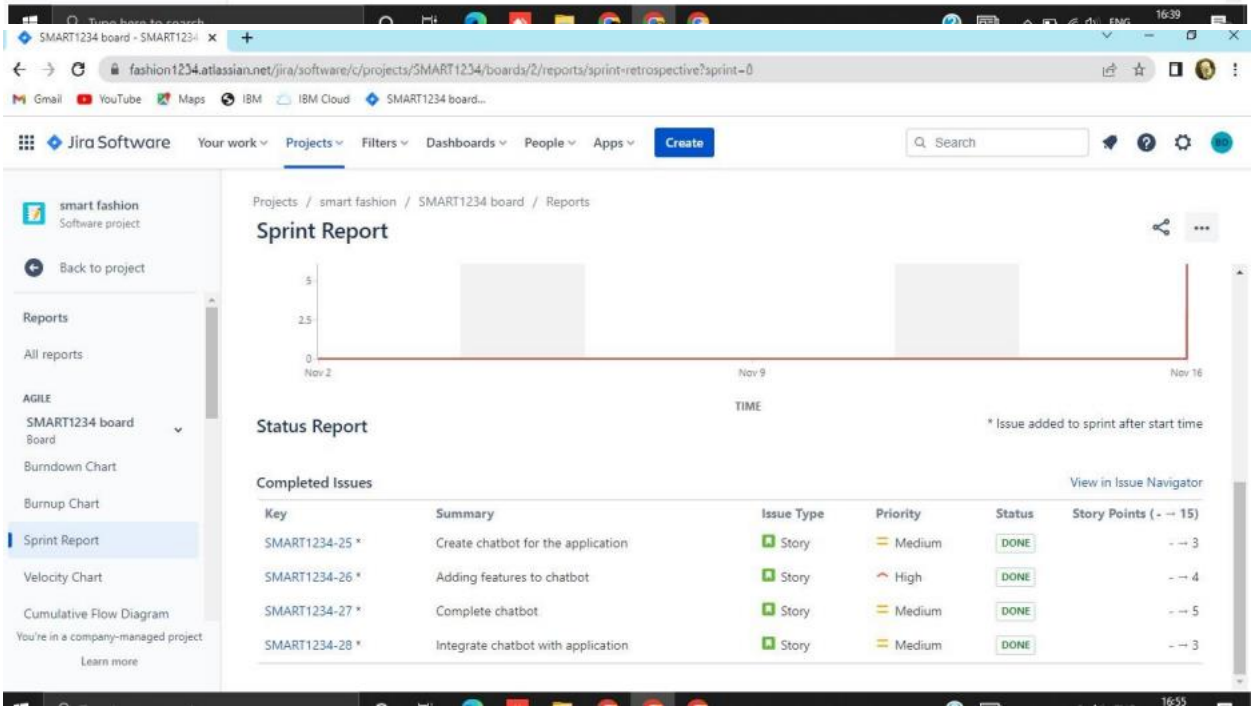
Sprint planning is an event in scrum that kicks off the sprint. The purpose of sprint planning is to define what can be delivered in the sprint and how that work will be achieved. Sprint planning is done in collaboration with the whole scrum team. A sprint is a time-boxed interval that defines the time allocated to complete a task.

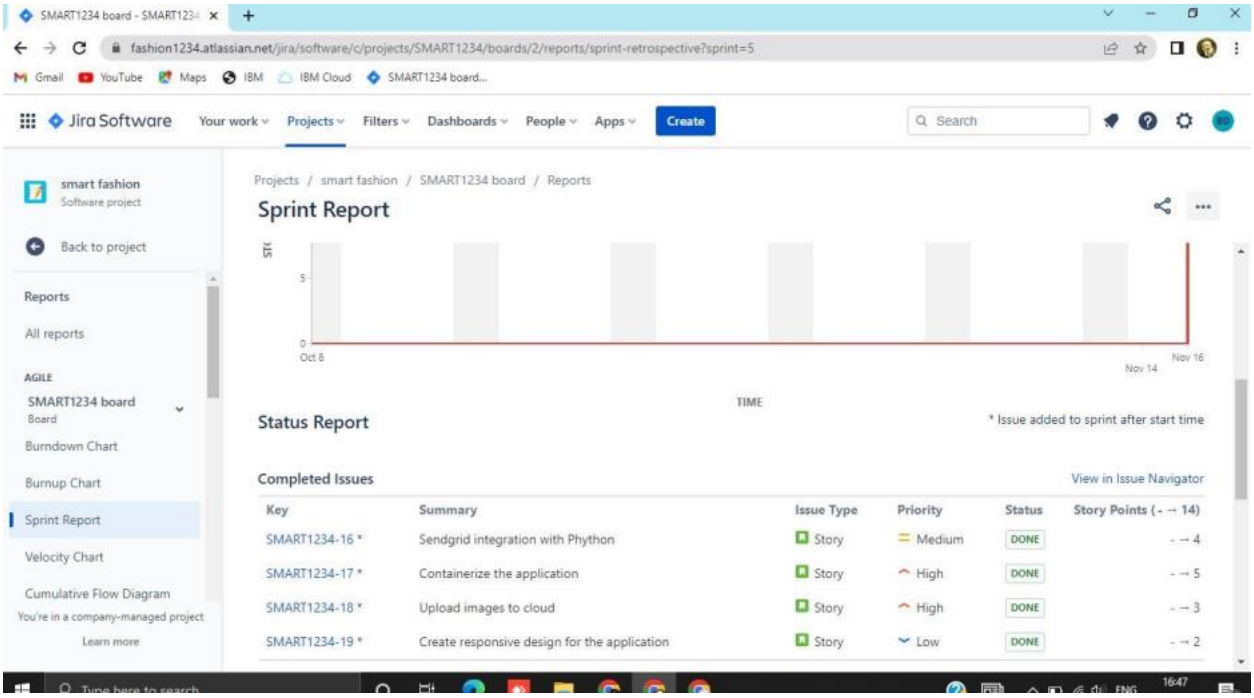
6.2 Sprint Delivery Schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	User Panel	USN-1	The user login into the website and go through the availability of products on it.	20	High	Shalini .K Sangeetha .S Sundareswari .S Vishnu Priya .A
Sprint-2	Admin Panel	USN-2	The role of the admin is to check out the database of the product stock and track all the things that the customers are purchasing.	20	High	Shalini .K Sangeetha .S Sundareswari .S Vishnu Priya .A
Sprint-3	Chat Bot	USN-3	The user can directly talk to Chatbot about the products. Get the recommendations based on the information provided by the users.	20	High	Shalini .K Sangeetha .S Sundareswari .S Vishnu Priya .A
Sprint-4	Final delivery	USN-4	Container of applications using kubernetes and deployment of the application. Create the documentaion and final submit the application.	20	High	Shalini .K Sangeetha .S Sundareswari .S Vishnu Priya .A

6.3 Reports from JIRA







7. CODING & SOLUTIONING

#Register.html

```
<html>

<head>

<script type="text/javascript" src="formtest.js"> </script>

</head>

<body style="background:linear-gradient(rgba(205, 228, 243, 0.856),#f1eeefec);">

<form  method="POST" onsubmit="return validate()">

<br>

<center><h3 style="color:rgb(146, 69, 248);font-family: 'Times New Roman', Times, serif;" >Create  Account.. </h3></center>
```

```
</br>

<center>

<input type="text" id="first" placeholder="First Name" size="22%" style="height:5%;" required> 

<input type="text" id="last" placeholder="Last Name" size="22%" style="height:5%;" required></br></br>

<input type="date" id="birth" style="width:70%;"  required></br></br>

<input type="radio" id="gender" > <label>Male</label>    

<input type="radio" id="gender" > <label>Female</label></br></br>

<input type="number" id="contact" placeholder="Phone no" style="height:5%; width:70%;" required ></br></br>

<select id="state" style="width:70%;height:5%;" >

<option selected disabled hidden> -Choose State-</option>

<option>Tamilnadu</option>

<option>Bangalore</option>

<option>Delhi</option>

<option>Kerela</option>

<option>Nagpur</option>

<option>Andhra Pradesh</option>

</select></br></br>

<textarea id="home" placeholder="Your Address" rows="5" cols="52" required></textarea></br></br>

<input type="email" id="mail" placeholder="Email" size="50%" style="height:5%;" required></br></br>
```

<input type="password" id="pwd" placeholder="Password" size="50%" style="height:5%;" required></br></br></br>

<input type="checkbox" id="tick" > <label>I accept the Terms of use & privacy policies </label></br></br>

</br>

<input type="submit" value="Register" style="width:30%; height:5%;background-color: rgb(33, 161, 33);color: rgb(237, 236, 243);">

</form>

</body>

</html>

#login.html

```
<html>
    <head>
        <style>

            ::placeholder
            {
                color:rgba(252, 247, 247, 0.664);
                font-size: small;
            }
        </style>
        <script type="text/javascript" src="logintest.js"></script>
    </head>
```

<body background="citybg.jpg" style="background-size:cover;">

<form method="POST" onsubmit="return validate()" action="fash.html">

<h3 style="text-align: center;font-size:xx-large;font-style: italic;color:rgb(149, 247, 149);">Login here..</h3>

</br>

    <img src="user.png">

 <input type="text" required id="uname" placeholder="UserName" size="26%" style="border:none;outline: none;background: none;border-bottom:1px solid green;padding-bottom:8px;color:white;" ></br>

</br>

</br>

    <img src="secured-lock.png">

 <input type="password" id="passwd" required placeholder="Password" size="26%" style="border: none;outline: none;background: none;border-bottom:1px solid green;padding-bottom:8px;color:white;">

</br>

</br>

</br>

</br>

     <input type="submit" name="login" value="Sign in" style="background:none;width:62%;height:8%;color:rgb(233, 231, 240);border-color: green;font-size:medium;">

</br>

</br>

Don't have an account ? <a href="form.html" style="color: lightsalmon;">Register</a>

</form>

</body>

</html>

#main.html

<html>

<head> <title>Fashion smart</title>

<link rel="stylesheet" href="fash.css">

<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOmLASjC" crossorigin="anonymous">

<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsP1UyJoMp4YLEuNSfAP+JcXn/tWtIaxVXM" crossorigin="anonymous"></script>

<script>

window.watsonAssistantChatOptions = {

```
        integrationID: "0f776b87-48a3-4e22-94a3-4f4ae2826506", // The ID of this integration.

        region: "au-syd", // The region your integration is hosted in.

        serviceInstanceID: "5e86a50a-4ed5-4fce-b2c1-47eeddbf7f6e", // 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>

    </head>

    <body>

        <nav class="navbar navbar-expand-lg navbar-dark bg-gradient-info">

            <div class="container-fluid">

              <a class="navbar-brand px-3 bg-danger" href="#">Giftskill</a>

              <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

                <span class="navbar-toggler-icon"></span>

              </button>
```

```
        <div class="collapse navbar-collapse" id="navbarSupportedContent">
          <ul class="navbar-nav me-auto mb-2 mb-lg-0">
            <li class="nav-item">
              <a class="nav-link active px-4" aria-current="page" href="#">Home</a>
            </li>
            <li class="nav-item">
              <a class="nav-link px-4" href="#">Products</a>
            </li>
            <li class="nav-item">
              <a class="nav-link px-4" href="#">About</a>
            </li>
          </ul>
          <form class="d-flex">
            <input class="form-control me-3 mt-2 px-4" type="search" placeholder="Search" aria-label="Search">
            <button class="btn btn-outline-dark mt-2 " type="submit">Search</button>
          </form>
        </div>
      </div>
    </nav>
  </body>
```

8. TESTING

8.1 Test Cases

A test case is a set of actions performed on a system to determine if it satisfies software requirements and functions correctly. The purpose of a test case is to determine if different features within a system are performing as expected and to confirm that the system satisfies all related standards, guidelines and customer requirements. The process of writing a test case can also help reveal errors or defects within the system.

Test cases are typically written by members of the quality assurance (QA) team or the testing team and can be used as step-by-step instructions for each system test. Testing begins once the development team has finished a system feature or set of features. A sequence or collection of test cases is called a test suite. A test case document includes test steps, test data, preconditions and the post conditions that verify requirements.

The benefits of an effective test case include:

• Guaranteed good test coverage.

• Reduced maintenance and software support costs.

• Reusable test cases.

• Confirmation that the software satisfies end-user requirements.

More satisfied customers will increase company profits. Overall, writing and using test cases will lead to business optimization. Clients are more satisfied, customer retention increases, the costs of customer service and fixing products decreases, and more reliable products are produced, which improves the company's reputation and brand image.

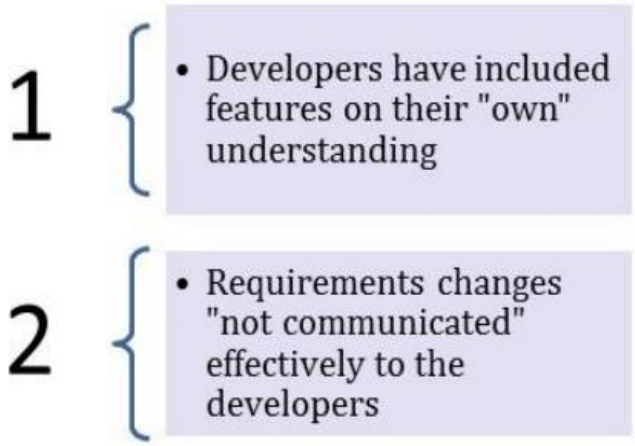
8.2 User Acceptance Testing

User acceptance testing (UAT), also called application testing or end-user testing, is a phase of software development in which the software is tested in the real world by its intended audience. User Acceptance Testing (UAT) is a type of testing

performed by the end user or the client to verify/accept the software system before moving the software application to the production environment. UAT is done in the final phase of testing after functional, integration and system testing is done.

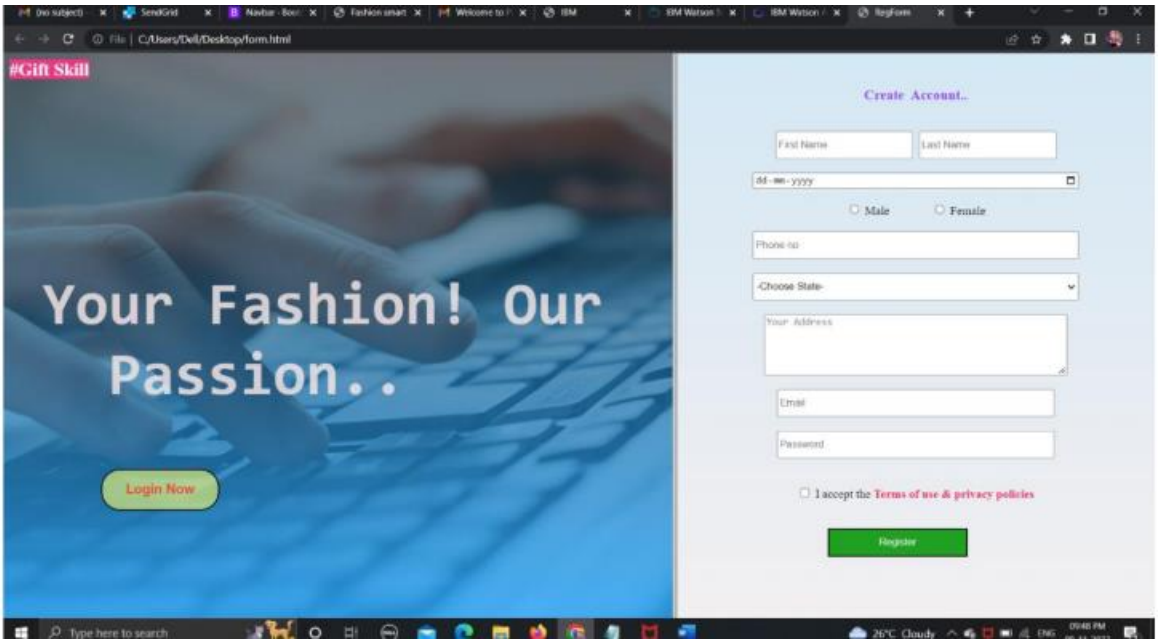
Need of User Acceptance Testing:

Need of User Acceptance Testing arises once software has undergone Unit, Integration and System testing because developers might have built software based on requirements document by their own understanding and further required changes during development may not be effectively communicated to them, so for testing whether the final product is accepted by client/end-user, user acceptance testing is needed.

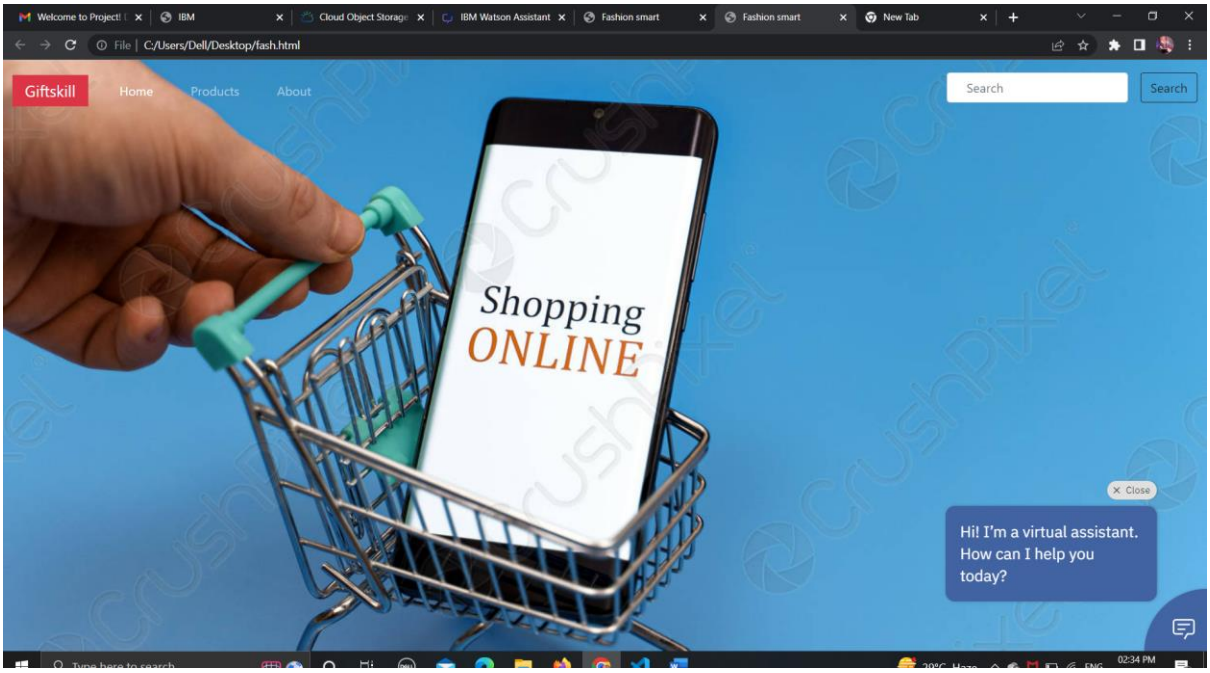


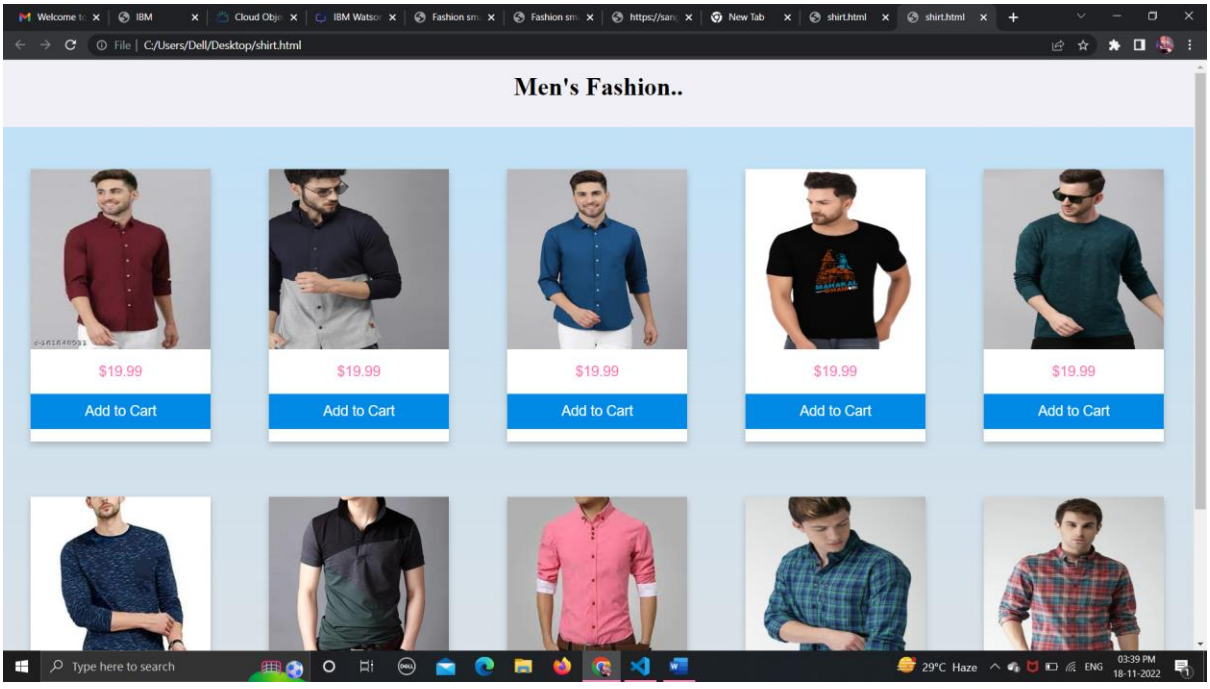
Developers code software based on requirements document which is their “own” understanding of the requirements and may not actually be what the client needs from the software. Requirements changes during the course of the project may not be communicated effectively to the developers.

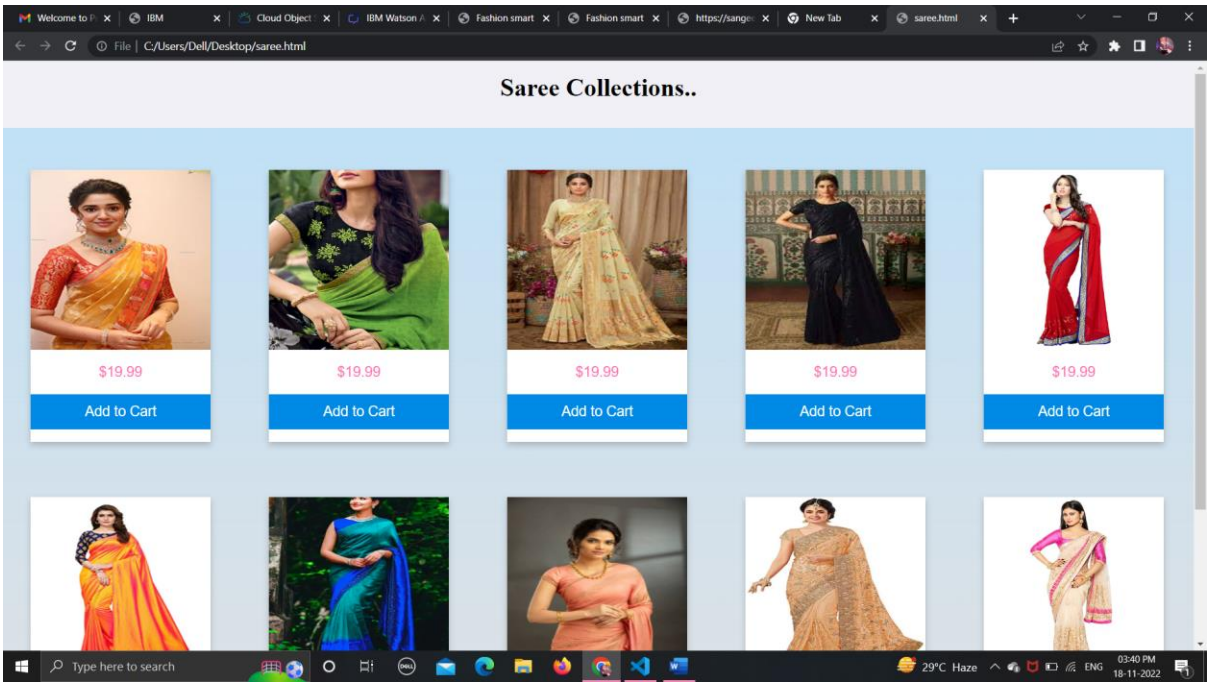
9. Results

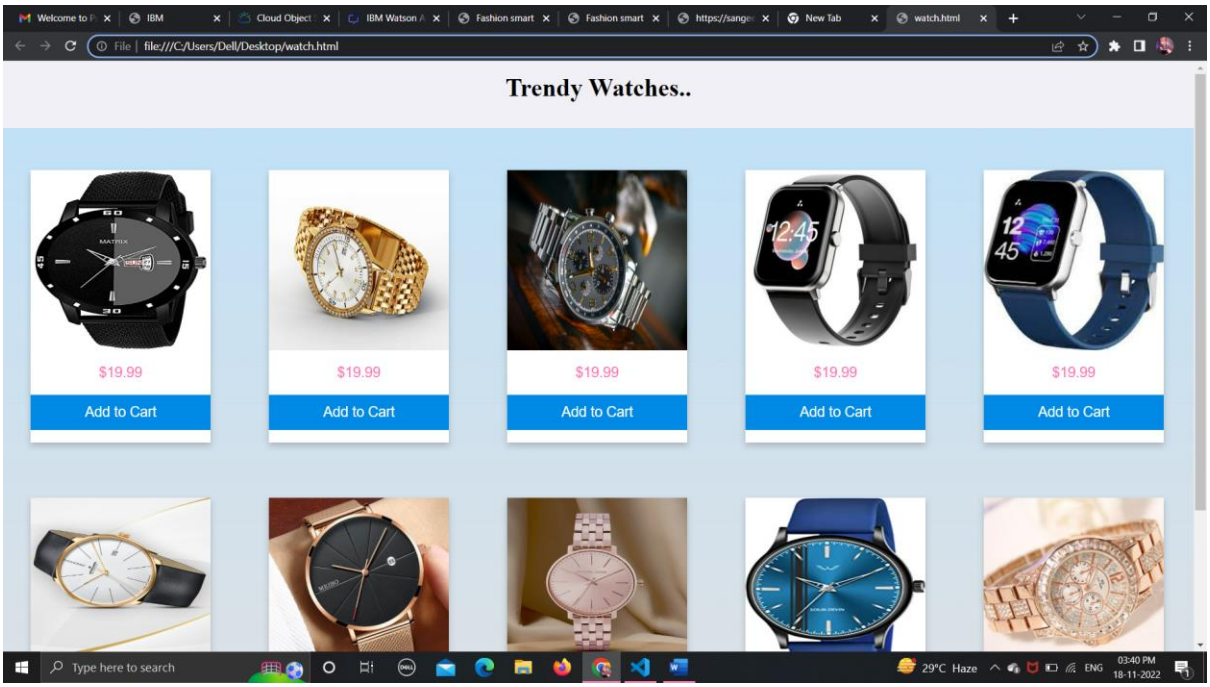

#Gift Skill
Your Fashion! Our Passion..
Login Now
Create Account..
First Name
Last Name
dd-mm-yyyy
Male
Female
Phone no
-Choose State-
Your Address
Email
Password
I accept the Terms of use & privacy policies
Register

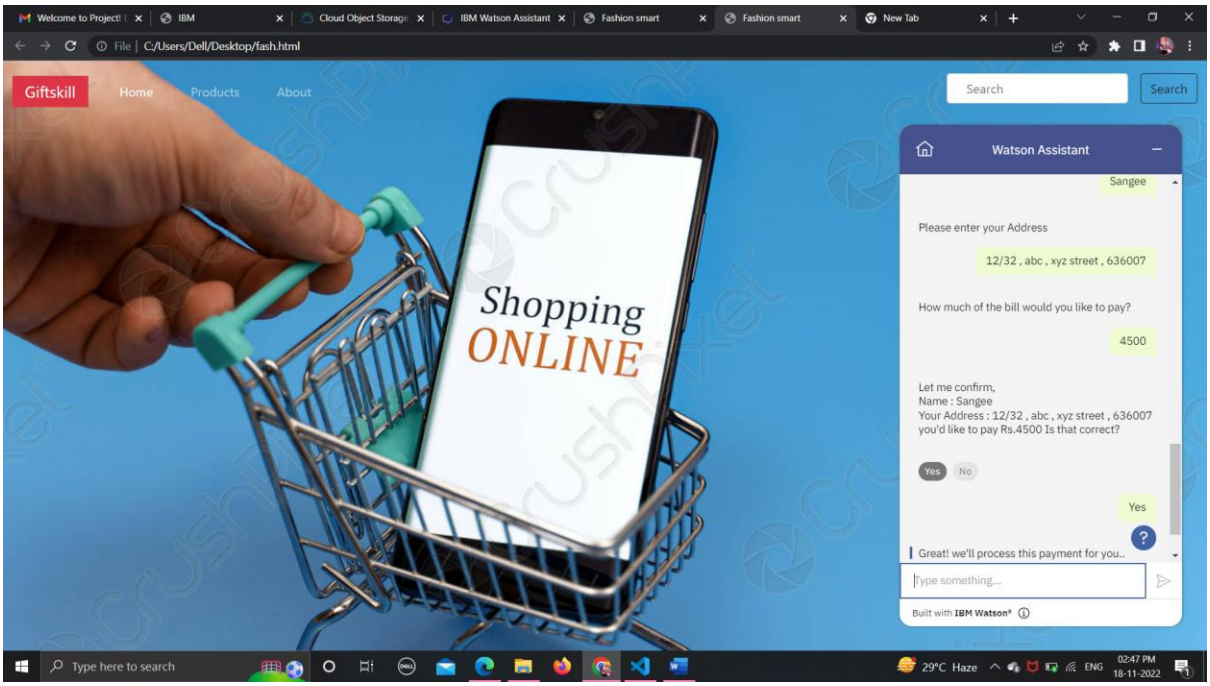
Login here..
Sign in
Don't have an account ? Register

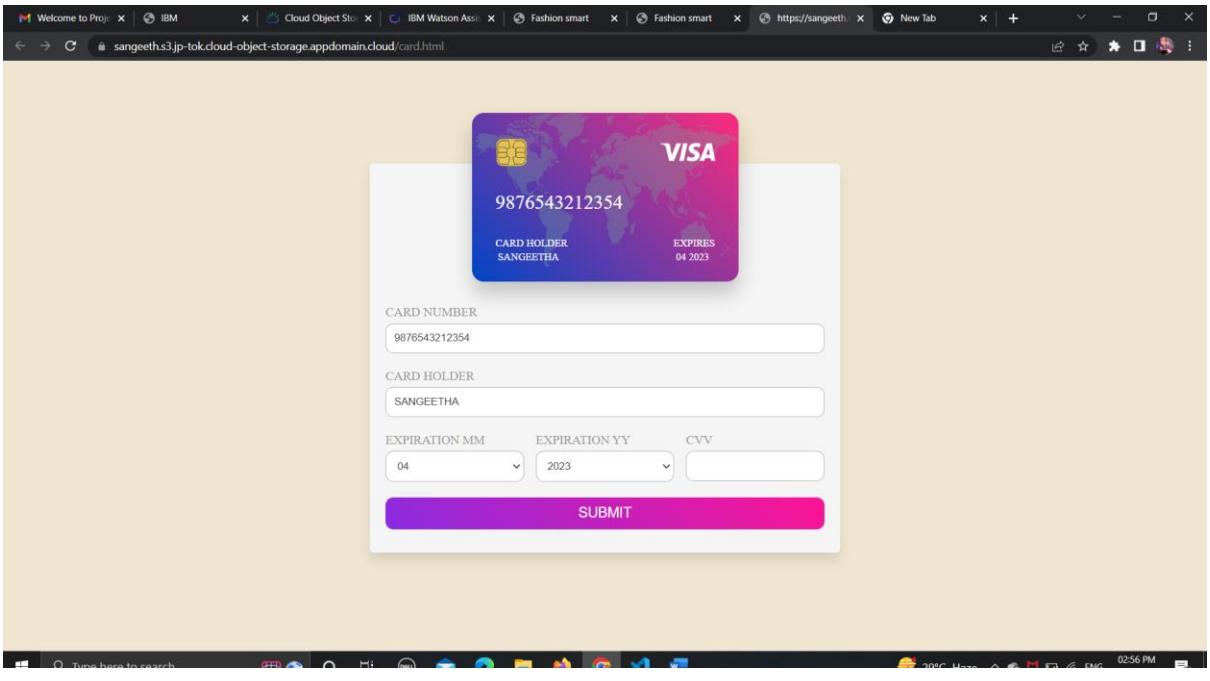

Welcome to Project!
IBM
Cloud Object Storage
IBM Watson Assistant
Fashion smart
Fashion smart
New Tab
File | C:/Users/Dell/Desktop/fash.html
Giftskill
Home
Products
About
Search
Search
Shopping
ONLINE
Close
Hi! I'm a virtual assistant. How can I help you today?
Type here to search
02:34 PM


IBM
shirt.html
shirt.html
File | C:/Users/Dell/Desktop/shirt.html
Men's Fashion..
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart
Type here to search
29°C Haze
ENG
03:39 PM
18-11-2022


Saree Collections..
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart


Trendy Watches..
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart
$19.99
Add to Cart


Welcome to Project!
IBM
Cloud Object Storage
IBM Watson Assistant
Fashion smart
Fashion smart
New Tab
File | C:/Users/Dell/Desktop/fash.html
Giftskill
Home
Products
About
Search
Search
Shopping
ONLINE
Watson Assistant
Sangee
Please enter your Address
12/32 , abc , xyz street , 636007
How much of the bill would you like to pay?
4500
Let me confirm,
Name : Sangee
Your Address : 12/32 , abc , xyz street , 636007
you'd like to pay Rs.4500 Is that correct?
Yes
No
Yes
Great! we'll process this payment for you..
Type something...
Built with IBM Watson®
Type here to search
29°C Haze
ENG
02:47 PM
18-11-2022


sangeeth.s3.jp-tok.cloud-object-storage.appdomain.cloud/card.html
VISA
9876543212354
CARD HOLDER
SANGEETHA
EXPIRES
04 2023
CARD NUMBER
9876543212354
CARD HOLDER
SANGEETHA
EXPIRATION MM
04
EXPIRATION YY
2023
CVV
SUBMIT
02:56 PM

9.1. Performance metrics:

The performance of a recommendation algorithm is evaluated by using some specific metrics that indicate the accuracy of the system. The type of metric used depends on the type of filtering technique. Root Mean Square Error (RMSE), Receiver Operating Characteristics (ROC), Area Under Cover (AUC), Precision, Recall, and F1 score is generally used to evaluate the performance or accuracy of the recommendation algorithms. Root-mean-square error (RMSE). RMSE is widely used in evaluating and comparing the performance of a recommendation system model compared to other models. A lower RMSE value indicates higher performance by the recommendation model. RMSE, as mentioned can be as represented as follows:

$$RMSE = \sqrt{\frac{1}{N_p} \sum_{u,i} (p_{ui} - r_{ui})^2}$$

Where Np is the total number of predictions, pui is the predicted rating that a user u will select item i, and rui is the real rating.

Precision: Precision can be defined as the fraction of correct recommendations or predictions (known as True Positive) to the total number of recommendations provided, which can be as represented as follows:

Precision=True Positive (TP)/True Positive(TP)+False Positive (FP)

It is also defined as the ratio of the number of relevant recommended items to the number of recommended items expressed as percentages.

Recall: Recall can be defined as the fraction of correct recommendations or predictions (known as True Positive) to the total number of correct relevant recommendations provided, which can be as represented as follows:

Recall=True Positive (TP) / True Positive(TP)+False Negative (FN)

It is also defined as the ratio of the number of relevant recommended items to the total number of relevant items expressed as percentages.

F1 Score: The F1 score is an indicator of the accuracy of the model and ranges from 0 to 1, where a value close to 1 represents a higher recommendation or prediction accuracy. It represents precision and recall as a single metric and can be as represented as follows:

F1 score=2×Precision Recall / Precision + Recalls

Coverage: Coverage is used to measure the percentage of items that are recommended by the algorithm among all of the items.

Accuracy: Accuracy can be defined as the ratio of the number of total correct recommendations to the total recommendations provided, which can be as represented as follows:

Accuracy=TP+FN / TP+FN+TN+FP

Intersection over union (IoU): It represents the accuracy of an object detector used on a specific dataset

IoU=TP / TP+FN+FP 70

ROC: The ROC curve is used to conduct a comprehensive assessment of the algorithm's performance.

AUC: AUC measures the performance of the recommendation and its baselines as well as the quality of the ranking based on pairwise comparisons. Rank aware top-N metrics. The rank-aware top-N recommendation metric finds some of the interesting and unknown items that are presumed to be most attractive to a user. Mean reciprocal rank (MRR), mean average precision (MAP), and normalized discounted cumulative gain (NDCG) are the three most popular rank-aware metrics.

10. ADVANTAGES AND DISADVANTAGES:

Advantages:

1)Easy recommendations make fewer searches and sometimes end up in good deals

2) User reviews will give accurate information, this is also an advantage if we purchase online as we can see other reviews too, most of the time honest.10

3) Speed up the process of decision and purchase based on the previous statistics.

4) A recommendation engine can bring traffic to were sites. It accomplishes this with customized email messages and target blasts.

DISADVANTAGES:

1) If the system recommends products with bias, then the customer will be landing on the wrong deals.

2) Chances are that some websites may suggest products wrongly based on analysis of little information gathered.

3) Since the feature representations of the items are hand-engineered to some extent, this technique requires a lot of domain knowledge. Therefore, the model can only be as good as the hand-engineered features.

4) The model can only make recommendations based on the existing interests of the user. In other words, the model has limited ability to expand on the users' existing interests.

11. Conclusion:

Recent advancements in cloud computing helping ease the fashion industry' s transition from customer stores into modern online shops equipped with high-tech features such as virtual try-on and fashion synthesis systems. This article sheds some light on different applications related to these systems, tracked the research progress through the years, and illustrated the field’s rapid growth. Although scientists have achieved significant milestones, still many unsolved matters remain. One main issue is the systems’ performance compared to human abilities; another important factor is the applicability of methods regarding computational effort and energy efficiency.

Another critical problem is the definition of a well-structured and uniform objective metric to assess the results.

12. FUTURE SCOPE

The basic needs of every person in the world need to be fulfilled at any cost. These needs include food, shelter and clothes. If we have all of these three boxes checked, we can survive in the world.

But it's not just about surviving, we need to live in the world. To live, our needs expand to a certain level. This level of expanding our needs may vary for different people. The more we earn, the higher the level of our needs go. Similarly, the people who sell the products to fulfill our needs, use different sources of selling. They range between a low level to high level of selling depending upon the quality of products to be sold out. Some products are sold out in small shops, even on roads while others are sold out in big shopping malls. Sometimes the same product is sold on both levels at the same price, but people prefer buying from big shopping malls. Most of these shopping malls have got more advanced in today's world and have developed the process of online shopping. This trend of online shopping has a great future ahead.

13.APPENDIX

Source code

#Register.html

```
<html>

<head>

<script type="text/javascript" src="formtest.js"> </script>

</head>

<body style="background:linear-gradient(rgba(205, 228, 243, 0.856),#f1eeefec);">

<form  method="POST" onsubmit="return validate()">

<br>

<center><h3 style="color:rgb(146, 69, 248);font-family: 'Times New Roman', Times, serif;" >Create  Account.. </h3></center>

</br>

<center>

<input type="text" id="first" placeholder="First Name" size="22%" style="height:5%;" required> 

<input type="text" id="last" placeholder="Last Name" size="22%" style="height:5%;" required></br></br>

<input type="date" id="birth" style="width:70%;"  required></br></br>

<input type="radio" id="gender" > <label>Male</label>    

<input type="radio" id="gender" > <label>Female</label></br></br>
```

```
<input type="number" id="contact" placeholder="Phone no" style="height:5%; width:70%;" required ></br></br>

<select id="state" style="width:70%;height:5%;" >

<option selected disabled hidden> -Choose State-</option>

<option>Tamilnadu</option>

<option>Bangalore</option>

<option>Delhi</option>

<option>Kerela</option>

<option>Nagpur</option>

<option>Andhra Pradesh</option>

</select></br></br>

<textarea id="home" placeholder="Your Address" rows="5" cols="52" required></textarea></br></br>

<input type="email" id="mail" placeholder="Email" size="50%" style="height:5%;" required></br></br>

<input type="password" id="pwd" placeholder="Password" size="50%" style="height:5%;" required></br></br></br>

<input type="checkbox" id="tick" > <label>I accept  the <b style="color: rgb(248, 26, 82);">Terms of use & privacy policies</b> </label></br></br>

</br>

<input type="submit" value="Register" style="width:30%; height:5%;background-color: rgb(33, 161, 33);color: rgb(237, 236, 243);">   

</center>

</form>

</body>
```

```
</html>
```

#login.html

```
<html>
   <head>
      <style>

         ::placeholder
         {
            color:rgba(252, 247, 247, 0.664);
            font-size: small;
         }
      </style>
      <script type="text/javascript" src="logintest.js"></script>
   </head>
<body background="citybg.jpg" style="background-size:cover;">
<div class="form-box" style="width: 350px;height:370px;position:relative;margin:9% auto;background: rgba(54, 51, 51, 0.671);padding:5px;">
<form method="POST"  onsubmit="return validate()" action="fash.html">
   <h3 style="text-align: center;font-size:xx-large;font-style: italic;color:rgb(149, 247, 149);">Login here..</h3>
</br>

    <img src="user.png">
```

```
 <input type="text" required  id="uname" placeholder="UserName" size="26%" style="border:none;outline: none;background: none;border-bottom:1px solid green;padding-bottom:8px;color:white;" ></br>


</br>

</br>

    <img src="secured-lock.png">

 <input type="password" id="passwd" required placeholder="Password" size="26%" style="border: none;outline: none;background: none;border-bottom:1px solid green;padding-bottom:8px;color:white;">

</br>

</br>

</br>

</br>

     <input type="submit" name="login" value="Sign in" style="background:none;width:62%;height:8%;color:rgb(233, 231, 240);border-color: green;font-size:medium;">

</br>

</br>

<p style="color:white;margin-left: 73px;">Don't have an account ? <a href="form.html" style="color: lightsalmon;">Register</a> </p>

</form>

</div>

</body>

</html>
```

#main.html

```
<html>

<head> <title>Fashion smart</title>

<link rel="stylesheet" href="fash.css">

<link
href="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/css/bootstrap.min.css"
rel="stylesheet" integrity="sha384-
EVSTQN3/azprG1Anm3QDgpJLIm9Nao0Yz1ztcQTwFspd3yD65VohhpuuCOm
LASjC" crossorigin="anonymous">

<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.0.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
MrcW6ZMFYlzcLA8Nl+NtUVF0sA7MsXsP1UyJoMp4YLEuNSfAP+JcXn/tWtI
axVXM" crossorigin="anonymous"></script>

<script>

  window.watsonAssistantChatOptions = {

    integrationID: "0f776b87-48a3-4e22-94a3-4f4ae2826506", // The ID of this
integration.

    region: "au-syd", // The region your integration is hosted in.

    serviceInstanceID: "5e86a50a-4ed5-4fce-b2c1-47eeddbf7f6e", // 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>
</head>
<body>
  <nav class="navbar navbar-expand-lg navbar-dark bg-gradient-info">
    <div class="container-fluid">
      <a class="navbar-brand px-3 bg-danger" href="#">Giftskill</a>
      <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
        <span class="navbar-toggler-icon"></span>
      </button>
      <div class="collapse navbar-collapse" id="navbarSupportedContent">
        <ul class="navbar-nav me-auto mb-2 mb-lg-0">
          <li class="nav-item">
            <a class="nav-link active px-4" aria-current="page" href="#">Home</a>
          </li>
          <li class="nav-item">
            <a class="nav-link px-4" href="#">Products</a>
          </li>
          <li class="nav-item">
            <a class="nav-link px-4" href="#">About</a>
```

```
            </li>
          </ul>
          <form class="d-flex">
            <input class="form-control me-3 mt-2 px-4" type="search" placeholder="Search" aria-label="Search">
            <button class="btn btn-outline-dark mt-2 " type="submit">Search</button>
          </form>
        </div>
      </div>
    </nav>
  </body>
```

#shirt.html

```
  <head>
  <link rel="stylesheet" href="style.css">
  </head>
  <body style="background:linear-gradient(#8ecbf493,rgba(198, 195, 195, 0.5)); margin: auto;">
    <header>
   <h1> Men's Fashion..</h1>
   </header>
   <br>
  <div class="card">
```

```
  <img src="shirt3.png" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>
<div class="card">
  <img src="shirt4.png" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>
<div class="card">
  <img src="shirt2.png" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>
<div class="card">
  <img src="image.png" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>
```

```
<div class="card">
  <img src="shirt 5.webp" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>

<div class="card">
  <img src="shirt 6.webp" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>
<div class="card">
  <img src="shirt7.jpg" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>
<div class="card">
  <img src="shirt8.jpg" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
```

```
  <p><button>Add to Cart</button></p>
</div>
<div class="card">
  <img src="shirt9.jpg" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>
<div class="card">
  <img src="shirt10.webp" alt="Denim Jeans" style="width:100%">

  <p class="price">$19.99</p>
  <p><button>Add to Cart</button></p>
</div>

 <br>
     <center><a href="shop.html">Go Back</a></center>
     <br>
</body>
```

#card.html

```
<!DOCTYPE html>
<html lang="en">
```

```
    <head>
        <meta charset="UTF-8">
        <meta http-equiv="X-UA-Compatible" content="IE=edge">
        <meta name="viewport" content="width=device-width, initial scale=1.0">
<link rel="stylesheet" href="card.css">
    </head>
    <body>
<div class="container">
    <div class="card">
        <div class="front">
            <img src="map.png" class="map">
            <div class="image">
                <img src="chip.png" width="40px">
                <img src="visa.png" width="70px">
            </div>
            <div class="cardno">****************</div>
            <div class="flexbox">
                <div class="box">
                    <span>Card holder</span>
                    <div class="holdername">Full name</div>
                </div>
                <div class="box">
                    <span>expires</span>
```

```
                <div class="expiration">
                    <span class="month">mm</span>
                    <span class="year">yy</span>

                </div>
            </div>
        </div>
    </div>
<div class="back">
    <div class="stripe"></div>
    <div class="box">
        <span>CVV</span>
        <div class="cvv">
            <img src="pattern.png" width="100%" height="130%">
        </div>
        <img src="visa.png" style="margin-top:30px;height: 13px;">
    </div>
</div>
    </div>
<form action="pay.html">
<div class="inputbox">
    <span>Card number</span>
    <input type="text" maxlength="16" class="cardnumber">
```

```
</div>
<div class="inputbox">
    <span>Card holder</span>
    <input type="text" class="cardholder">
</div>
<div class="flexbox">
   <div class="inputbox">
    <span>Expiration  mm</span>
    <select class="month-input">
        <option value="month" selected disabled hidden>month</option>
        <option value="01" >01</option>
        <option value="02" >02</option>
        <option value="03" >03</option>
        <option value="04" >04</option>
        <option value="05" >05</option>
        <option value="06" >06</option>
        <option value="07" >07</option>
        <option value="08" >08</option>
        <option value="09" >09</option>
        <option value="10" >10</option>
        <option value="11" >11</option>
        <option value="12" >12</option>
    </select>
```

```
</div>
<div class="inputbox">
   <span>Expiration  yy</span>
   <select class="year-input">
      <option value="year" selected disabled hidden>year</option>
      <option value="2021" >2021</option>
      <option value="2022" >2022</option>
      <option value="2023" >2023</option>
      <option value="2024" >2024</option>
      <option value="2025" >2025</option>
      <option value="2026" >2026</option>
      <option value="2027" >2027</option>
      <option value="2028" >2028</option>
      <option value="2029" >2029</option>
      <option value="2030" >2030</option>
      <option value="2031" >2031</option>
      <option value="2032" >2032</option>
   </select>
</div>
<div class="inputbox">
   <span>CVV</span>
   <input type="text" maxlength="4" class="cvv-input">
</div>
```

```
    </div>
    <input type="submit" value="submit" class="submit">
    </form>
    </div>

    <script>
        document.querySelector('.cardnumber').oninput=() =>{

document.querySelector('.cardno').innerText=document.querySelector('.cardnumber').value;
        }
        document.querySelector('.cardholder').oninput=() =>{

document.querySelector('.holdername').innerText=document.querySelector('.cardholder').value;
        }
        document.querySelector('.month-input').oninput=() =>{

document.querySelector('.month').innerText=document.querySelector('.month-input').value;
        }
        document.querySelector('.year-input').oninput=() =>{
            document.querySelector('.year').innerText=document.querySelector('.year-input').value;
        }
        document.querySelector('.cvv-input').onmouseenter=() =>{
```

```
        document.querySelector('.front').style.transform='perspective(1000px) rotateY(-180deg)';

        document.querySelector('.back').style.transform='perspective(1000px) rotateY(0deg)';

    }

    document.querySelector('.cvv-input').onmouseleave=() =>{

        document.querySelector('.front').style.transform='perspective(1000px) rotateY(0deg)';

        document.querySelector('.back').style.transform='perspective(1000px) rotateY(180deg)';

    }

    document.querySelector('.cvv-input').oninput=() =>{

        document.querySelector('.cvv').innerText=document.querySelector('.cvv-input').value;

    }


</script>

    </body>

</html>
```

#pay.html

```
<html>

  <head>

    <link href="https://fonts.googleapis.com/css?family=Nunito+Sans:400,400i,700,900&display=swap" rel="stylesheet">
```

```
</head>
  <style>
    body {
      text-align: center;
      padding: 40px 0;
      background: #EBF0F5;
    }
      h1 {
        color: #88B04B;
        font-family: "Nunito Sans", "Helvetica Neue", sans-serif;
        font-weight: 900;
        font-size: 40px;
        margin-bottom: 10px;
      }
      p {
        color: #404F5E;
        font-family: "Nunito Sans", "Helvetica Neue", sans-serif;
        font-size:20px;
        margin: 0;
      }
    i {
      color: #9ABC66;
      font-size: 100px;
```

```
      line-height: 200px;
      margin-left:-15px;
    }
    .card {
      background: white;
      padding: 60px;
      border-radius: 4px;
      box-shadow: 0 2px 3px #C8D0D8;
      display: inline-block;
      margin: 0 auto;
    }
  </style>
  <body>
    <div class="card">
    <div style="border-radius:200px; height:200px; width:200px; background:
#F8FAF5; margin:0 auto;">
      <i class="checkmark">✓</i>
    </div>
      <h1>Success</h1>
      <p>We received your purchase request;<br/> we'll be in touch
shortly!</p>
    </div>
  </body>
</html>
```

Github link: https://github.com/IBM-EPBL/IBM-Project-4962-1658744429

Demo link: **bandicam 2022-11-19 00-54-39-363.mp4**