SMART FASHION RECOMMENDER

APPLICATION

PROJECT FINAL REPORT

In partial fulfillment for the award of Degree- Bachelor of Engineering in Computer Science and Engineering at CARE college of Engineering, Tiruchirapalli, Anna University November - 2022

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TITLE

ABSTRACT

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 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. To solve this problem, Content Based Information Retrieval (CBIR) has gradually become a research hotspot. CBIR retrieves picture objects based entirely on the content. The content of an image needs to be represented by features that represent its uniqueness. Basically, any picture object can be represented by its specific shapes, colors, and textures. These visual characteristics of the image are used as input conditions for the query system, and as a result the system will recommend nearest images and data sets. This research designs and implements a two-stage deep learning-based model that recommends a clothing fashion style. This model can use a deep learning approach to extract various attributes from images with clothes to learn the user's clothing style and preferences. These attributes are provided to the correspondence model to retrieve the contiguous related images for recommendaton.Based on data-driven, this thesis uses convolutional neural network as a visual extractor of image objects.

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 a content-based approach which involves characteristics of an item and second collaborative filtering approaches which consider the user's past behavior to evaluate its choices. This thesis proposes a fashion recommendation system which will recommend clothing images supporting 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 models in the images. We have created our own datasets through web scraping of different ecommerce websites. In this paper we have come up with an idea to build a content-based recommendation system using ResNet-50 convolutional neural network.

Keywords: Cloth Recommendation, Convolutional Neural Network, Similarity Measure.

Introduction

During the last few years, online shopping has been growing. 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.

The greater part (62%) of US buyers with Web access presently shop on-line, to some degree, at least a month, and 1% say they do not buy from the internet, as indicated by a current report byWalker Sands. 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 revealed 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. This is not an astute thought, in light of everything.

It has been explored on account of the way that the 1970s joined informational collection associations with PC vision, looking into the issue as indicated through two uncommon perspectives, the first being text-based and the second one being visual-based.

From the outset, the developments have been made only through information annotations that have been saved in a database to work the retrieval step, however, when the dimension of the image collections started to amplify the effort required to label them used to be as soon as unsustainable, to solve this issue, during the 1990s, content-based photograph retrieval was proposed. Starting now many searches for lines have seemed the use of one or the different isolated or combining them.

Recommendation systems make recommendations based on the information they are provided with and in the manner in which they are programmed. Going into details, most of the evaluation applied is

independent coming up with a brand-new recommendation algorithm, system, or model.

However, different researchers use already existing work as researchers use an already existing piece of work to come up with a new diagram or to truly improve the current one. The present analysis model focuses on the use of a current algorithmic program and, consequently, the use of a new research concept comes up with a recommender system.

Existing research and fashions have given us some inspirations of how to design fashion recommendation systems. Nevertheless, they also involve some common drawbacks. Therefore, in this study, our aim is to suggest a new method to assist personal choice making through supplying images and get suggestions based on provided contents.

The contribution of the research are follows:

- To design and implement a web-based clothing fashion style recommender system based on deep learning;
- A scheme for improving a person‟s clothing style by removing the features he/she doesn‟t like.
- These attributes served to a similar model to retrieve similar images as recommendations.
- Combined with more common content-based recommendation systems, our model can help to extend robustness and performance.

Literature survey

Myntra-Matching Clothes Recommendation:

On selecting a particular item to buy, Myntra automatically suggests a full set of clothes that are matching to the selected item. For example, on selecting a particular t-shirt, the system automatically generates a combination of watches, shoes, pants, etc. that are matching to the selected t-shirt. This system does not take into consideration private qualities of customers like skin color and existing clothes. It will only suggest clothes that already exist in its database.

Your Closet:

This is a mobile application that organizes the closet. The user interface is shown in. The application asks customers to input their clothes. It then matches each cloth with other clothes. For example, if there are 4 shirts and 4 pants, the application matches each shirt with each pant and thus provides 16 possibilities.The application does not make matches of clothes depending upon patterns, color and texture of clothes. It also does not have a recommendation system.

Your Closet App Magic Closet:

This system aims to retrieve clothes from online stores that are matching to the input clothes. These clothes must be fit for a particular occasion. In this system, the user takes a photo of them specifying if they want to use the top or bottom clothes along with the occasion they want to use it for. The system will search for clothing that matches the user query and satisfies the criterion of wearing aesthetically and wearing properly.

Which Clothes to Wear confidently?:

The basic problem the system addresses is: From the two given images corresponding to a pair of clothes, we have to determine if the pair of clothes matches or not. While there may be several aesthetics espoused by different individuals, it takes a simplistic approach in this problem. An example of shirts and ties is used. Various machine learning methods are used to classify if the clothes are matching or not such as Ridge Regression, Standard Neural Network and Siamese Neural Network.

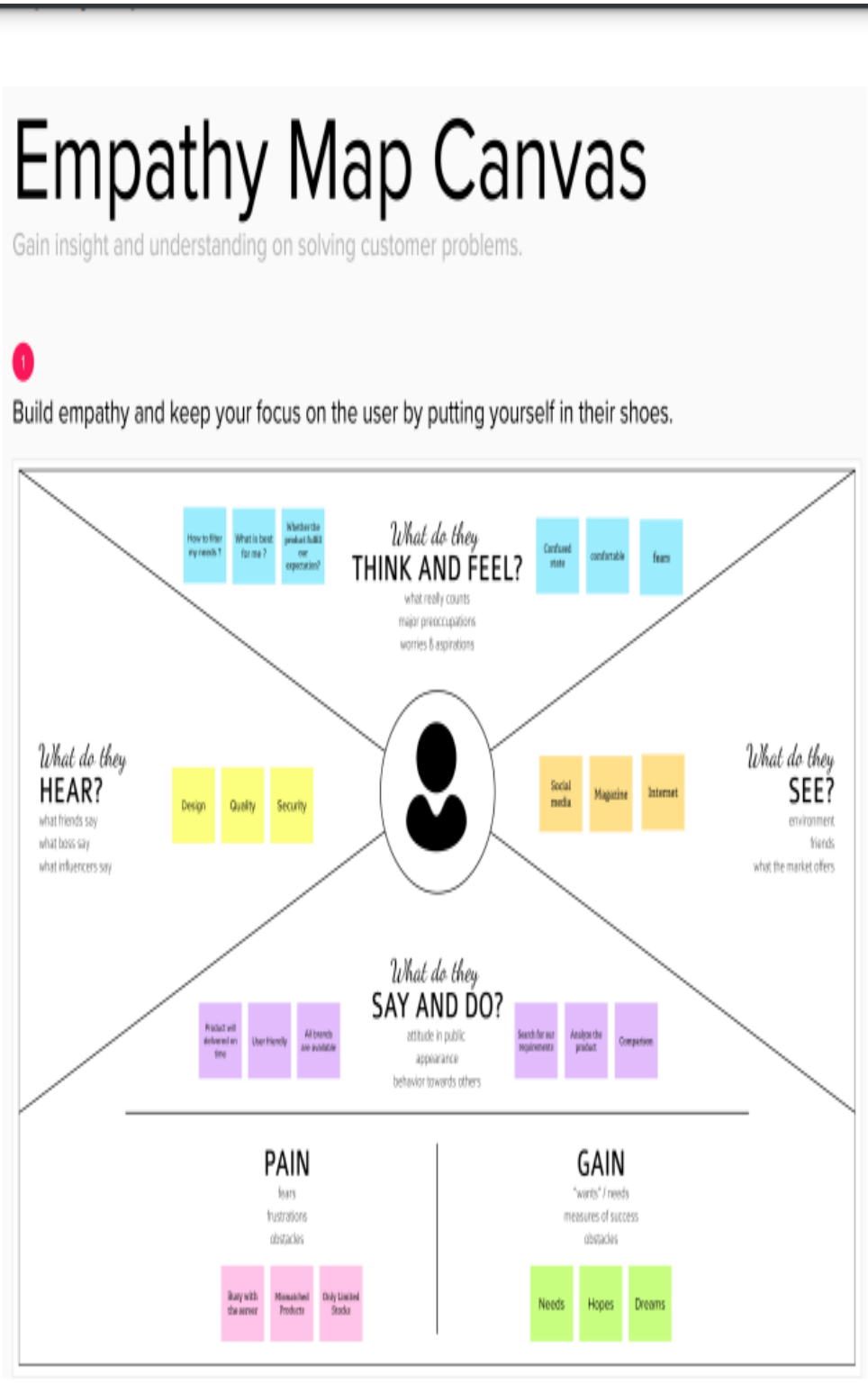
Personalized Clothing Recommendation Based on Knowledge Graph:

This system attempts to exploit the knowledge graph for providing clothing recommendations to the user keeping the user context in mind. The recommendation is done by calculating the similarity in the clothing ontology similar to users collection. Skin and Clothes matching seeded by Color SystemSelection: The main aim of the system is to suggest clothes to users based on skin color. The paper first finds out which color scheme is best suited to represent skin colors and then tries to find a way to recommend if clothes and skin color match. An automated system to determine the highest levels of color suitability between skin and clothing was made.

Discerning Advisor:

The system tries to recommend clothes based on the skin color of the customer. Using a neural network, first the skin color is detected. Fuzzy logic is used to map a skin color to the skin color of a fashion model, and clothes suited to that model are recommended. Garment Detectives: The garment detection is to detect the presence of clothes in images and somewhat locate their extents, where the localization can be defined from coarse (image) level to fine (pixel) level. A unified system is proposed for detecting and recognizing clothes in customer photos.

Empathy Map


Empathy Map Canvas
Gain insight and understanding on solving customer problems.
1
Build empathy and keep your focus on the user by putting yourself in their shoes.
What do they THINK AND FEEL?
what really counts
major preoccupations
worries & aspirations
How to filter my needs ?
What is best for me ?
Confused state
comfortable
fears
What do they HEAR?
what friends say
what boss say
what influencers say
Design
Quality
Security
What do they SEE?
environment
friends
what the market offers
Social media
Magazine
Internet
What do they SAY AND DO?
attitude in public
appearance
behavior towards others
User Friendly
Comparison
PAIN
fears
frustrations
obstacles
Mismatched Products
Only Limited Stocks
GAIN
"wants" / needs
measures of success
obstacles
Needs
Hopes
Dreams

Proposed system 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. The architecture used in the system is shown horizontally where the Model View Controller is explained as represented in Figure 1. The high-level part of the system is looked at using the vertical way.

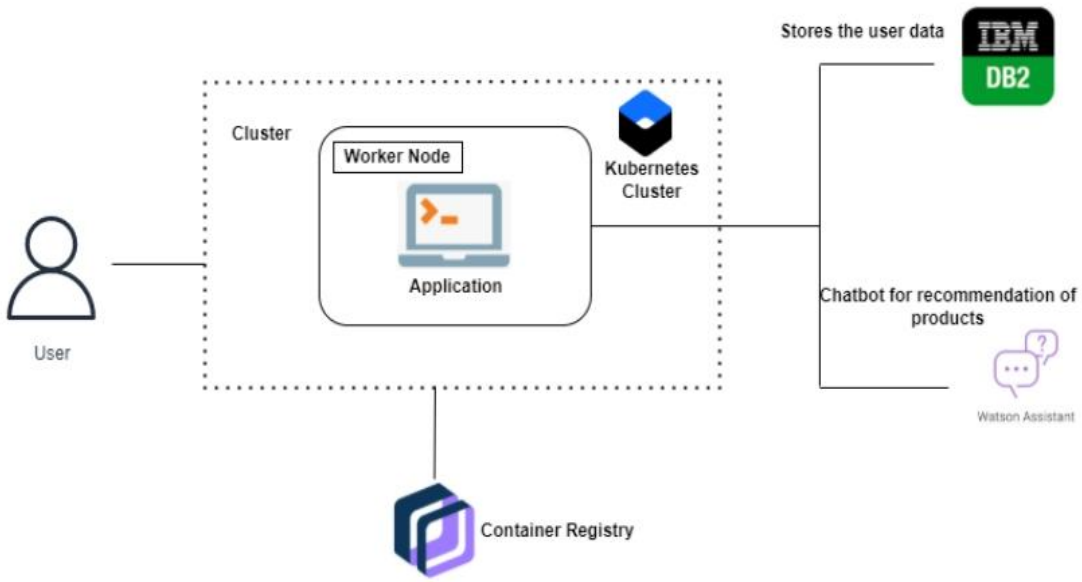
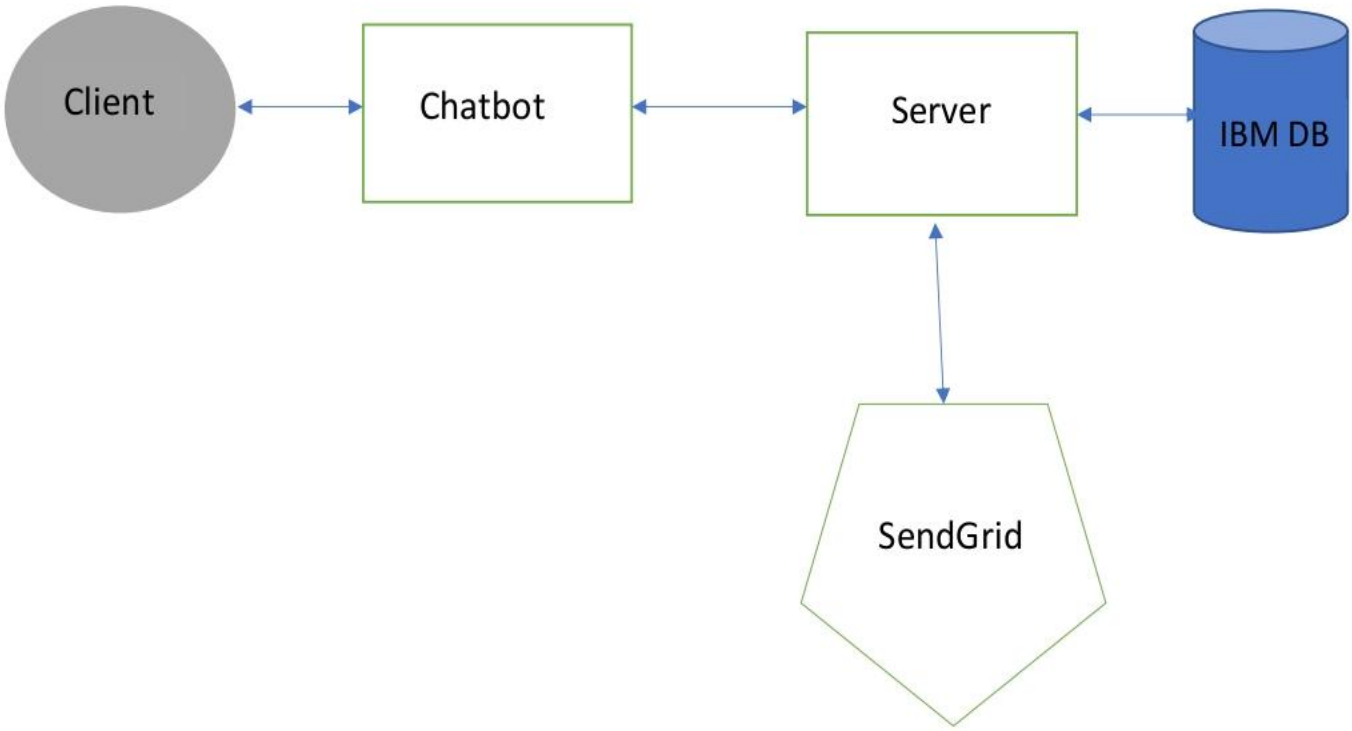


Figure 1. **System architecture**.

The system comprises the Client tre, which is the front end or View mode, middle term which is the system controller and the backend tre which is the model. The client side is where the users/customers log in in the system, browse for the system interface, provide input query images to the system, and get recommendations according to the input query. The middle truth is responsible for communication between the front end and the back end. It receives

user requests and sends them to the back end and in turn accepts responses from the back end and sends them to the user. The internet works to provide access to the site with a strong security check, provided by both firewall and password protection policy.Any unauthorized access is detected and prevented by the firewall.



a. The vertical classification system model

The recommendation system works with the data set to track user input data features and extracted features from the data set upon which new predictions and recommendations are made. The recommendation browses the dataset for user data and available dataset features. Receives Recommendations User Web ServerSends response to user Database Stores User input data Stores dataset features.

Data Recommender Makes Recommendations Recommender Algorithm Determines the Similarity between Clothes Figure 2. Vertical architecture of the system.It uses the algorithm to go over the input user data and determine similarities between users input data and stored dataset features. Finally, it makes recommendations. By looking at Figure 1 and Figure 2, we realize that the recommender system does not interact directly with the users at any point. When the repository stores data, the recommender filters the data it needs from the repository using the algorithm. When a signal is sent to the algorithm about what data is needed for filtering, the algorithm computes the similarity. The similarity results are then transferred to the recommender system which in turn sends recommendations to the web server and finally to the respective user.

b. Dataset and classification

In this project, we worked with the Deep Fashion dataset, which is gathered from researchers from the Chinese Hong Kong University. It has over one million diverse trend pics and wealthy annotations with additional data about landmarks, categories, pairs etc. The dataset consists of 5 distinct types of predicting subsets that are tailor-made towards their tasks.

c. Design of deep learning module

There are many classification algorithms or classifiers in use today. The most notable and the most implemented classifiers and feature extractor are implemented to solve a problem of cloth / fashion recommendation Design process. (1)are weight vectors, are fully connected output layers that actually perform classification and are the CNN without the last layer. They are used as feature extractors.

Results and Evaluation

This section focuses on evaluating our system and deciding the stage at which it is able to fulfill the purpose for which it was created. The performance of the system is analyzed in detail through several tests, from small scale to large scale. Firstly, the unit tests are done at the lower stages and then we proceed to the whole test system. In the training implementation module, we are performing the movement throughout the area, freezing the base layers of the organization i.e., the VGG16 layers, and training the model on the dataset for 5 epochs. This trains the external layers to figure out how to characterize the pictures. We then unfreeze the lower layers and train the model for 5-7 epochs until the approval exactness settles. We keep the best achievable loads (best on approval exactness) and use it for the suggestion model. The training implementation code is presented below.

Step 1: Training the whole network for 5 epochs first

Step2:Checkpoint_callback=modelcheckpoint(„, /model/vgg_weights_best_patern.hdf5‟.

Step.3: Monitor=‟val_acc‟, verbose=0 save_best_only=true,
save_weights_only=false, mode=auto‟, period=1)

Step 4: Tf_model.ft_generator(Train_generator, Samples_per_epoch=nb_train_sample,
Nb_epoch=10, Validation data=validaton_generator,
Nb_val_samples=nb_validaton_samples, Verbose=1, Inital_epoch=5,
Callbacks=[checkpoint_callback]

Step 5 : end

1. Visual recommendation module implementation

To get proposals, we wished to construct a vault of pictures. This archive would be a unique application. If the suggestion was cultivated for shopping, the storehouse would have contained pictures from online retail locations like Amazon, eBay, Pinterest, Instagram, etc. A subset of pattern datasets was used to test our proposed approach. At that point, the

information had already been cleared of unimportant photos. Then, the photos were passed by means of the organization and design vector pictures have been created from each photo. For getting the suggestion, we first needed to build the individual style profile. This is brought out by taking one or more noteworthy pictures of the client's ideal after things as they were entered and by making their style vector. These vectors are then blended to shape the framework of the individual style profile.

The proposed scheme is further below, as follows: we will utilize a closeness calculation, which and the design vector of each picture in the vault with the style profile grid. This gives us a score dependent on the quantity of component coordinates (i.e., how great is the degree of similarity of a picture to the individual's style profile).

Step 1: def similarity (feature_data, inp_ feature_data):

Step 2: nun_samp=inp_feature_data. size

Step 3: print (unm_samp) Sim_score = [] for i in range (1 en (feature_data)): score=0 **Step 4**: show_sample (data_images[i])

Step 5: print (feature_data[i]) score _m = inp_feature_data - feature_data[i]

Step 6: print (Soore_ m) score= nun_samp-np. Count_nonzero (score_m) sim_score [i]=score

Step 7: print (score) sim Score

Step 8: end

i.User management services:

The system provides a platform through which a user can visit the system and provide his/her choices regarding the fashion images for best recommendation.

ii. Fashion vector for images in repository and input fashion vector:

The system is responsible for making fashion vectors for images in the repository and fashion vector images provided by the user to the system, for the similarity measures and for making recommendations. After making the fashion vector, some predictions are made, as illustrated The system is responsible for making recommendations to users based on their user data. The user data compiled in the dataset is filtered by the recommender system through the recommender algorithm.

Step1: Def similarity (feature_data, inp_feature_data); Num_samp=inp_feature_data.size

Step2: print (num_samp) Sim_score = () For i in range (len (feature_data)); score = 0 show_sample (data_images[i]) print(feature_data[i]) Romanian Journal of Information Technology and Automatic Control, Vol. 31, No. 4, 123-136, 2021 131 http://www.rria.ici.ro

Step3: Score_m inp_feature_data-feature_data[i] print (score_m)

Step4:Score=num_samp-np.count_nonzero(score_m) Sim_score[i]=score print(score)

Step 5: Return sim_score

Step 1: Similarities=similarity(feature_data,inp_feature_data)

step.2.items(),

key=operator.itemgetter(1),reverse=(true)

Num_reco=30

data=feature_data.size

For I in range(num_reco) Ind =

sorted_similarites[i][0]

print (sorted_similarites)

Print (“score:”, sorted_similartes[i][1])

Show_sample(data_images[ind])

Step 3: end

By accessing the system, users are able to access and view their content- based recommendations. However, all the recommendations are made based on the similarity between user inputs and user inputs. As long as there is a level of similarity, we make the best recommendations.

iv. Recommender to the query images in dataset:

We can see that our model can capture the best matching style by including the length, shape, color, fabric and pattern of the cloths, as illustrated in three query images examples. In the first example, the model captures deep features including the blouse category, fabric, repeated floral pattern and the regular ft style. As seen, the five recommended images display different clothes. The second example shows that the model captures the wool fabrics, the contrast color stretches and the turtleneck. The third example shows that the model can capture the cotton fabrics and the printed letters. Our model can capture the style with high accuracy, meaning that our system achieves its purpose. It can be noted that our system can perform for all the involved categories like pattern, style, fabric etc. The highest similarity score shows that the input images and the recommended ones are similar. This figure also illustrates that the system can work best for pattern recommendation and recommend top similar images in different colors, shapes, and styles.

v.Recommendations to the query images outside the dataset:

It‟s natural to ask if the model you made works with images which are not part of the dataset. We randomly downloaded three online images illustrating expensive clothes.

The model is checked for different categories like pattern, style, fabric. The highest score shows that the image is more similar to the input query. So, our model obtains a high similarity score for different categories.

System Result and Accuracy

Finally, this subsection evaluates the system and shows the testing results and the accuracy of our model. After adding the model on top of the convolutional base, freezing the weights of all layers except of the top ones, and training the model for 5 epochs, the following accuracy was obtained, as shown in Figure.

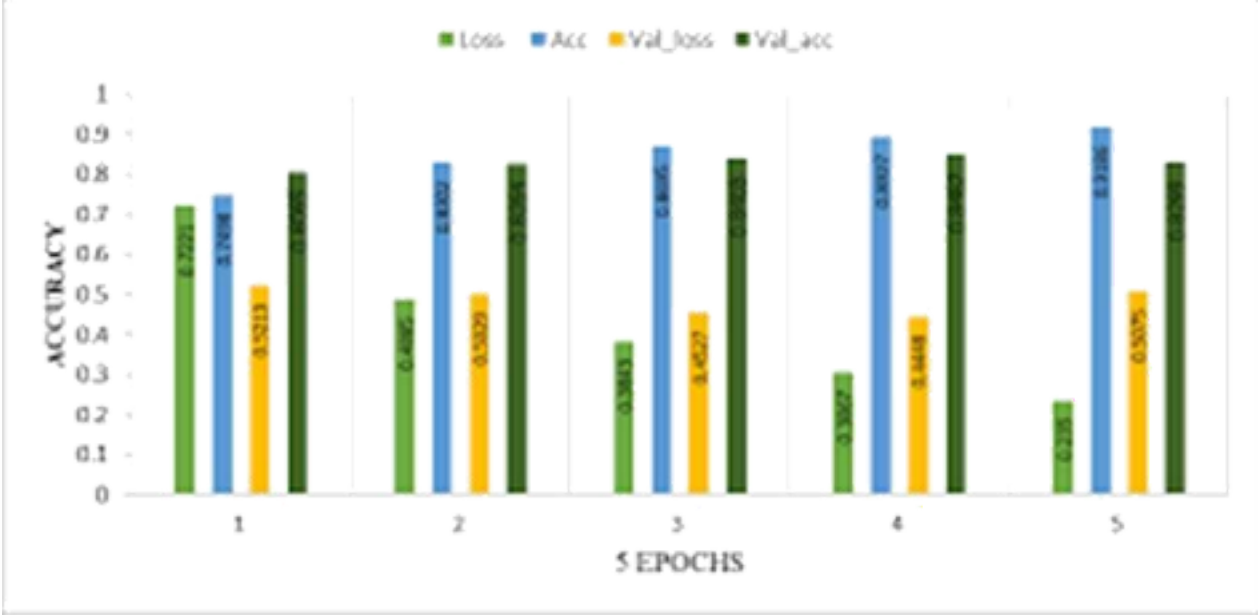


Figure 9. Model accuracy after freezing the layers for 5 epochs

After calculating the mean accuracy for 5 epochs, the obtained results areas follows:

Validation: accuracy = 0.836000; loss = 0.489109

This part of the sentence “After calculating the mean accuracy for 5 epochs” is mentioned also below, after Figure 10, and these values mentioned for accuracy and loss (0.836000 and 0.489109) are not illustrated in Figure 9, but in Figure.

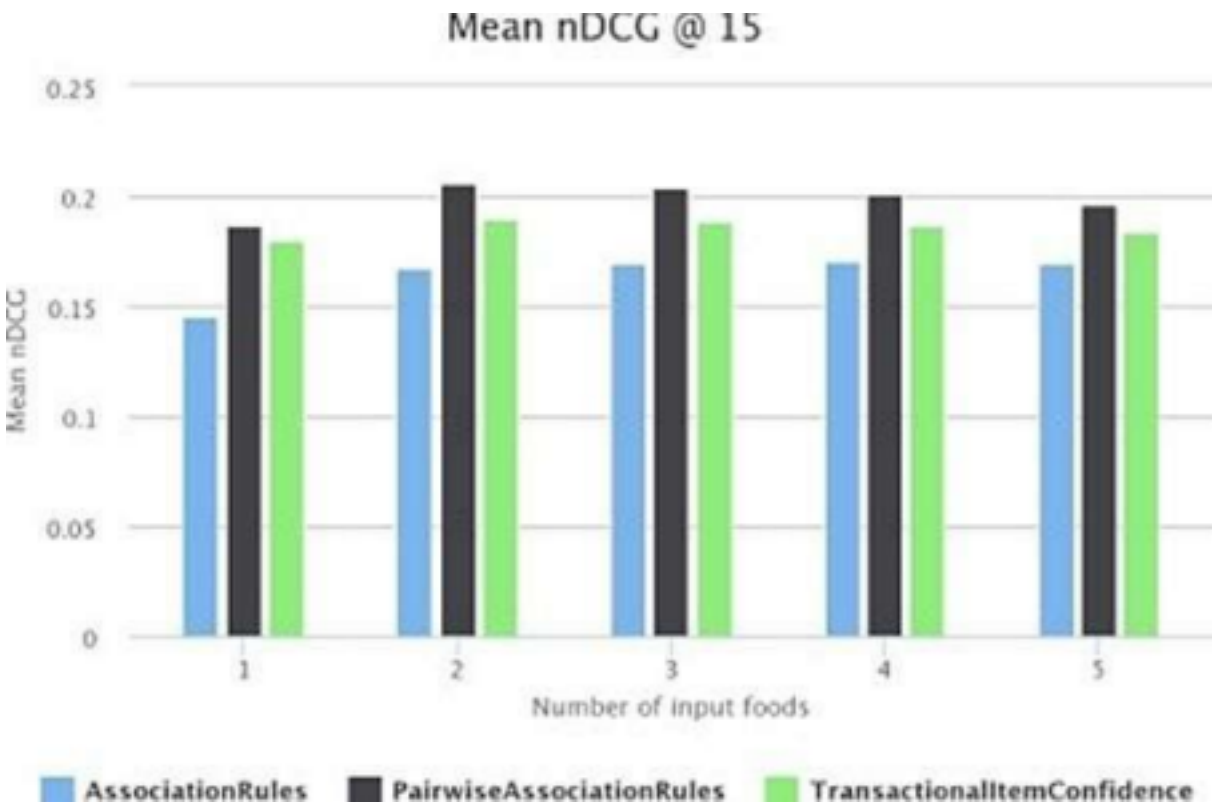


Figure 10. Model accuracy for 5 epochs

After calculating the mean accuracy for 5 epochs, the final result is as follows:

Validation: accuracy = 0.864750; loss = 0.516400 These values mentioned for accuracy and loss (0.864750 and 0.516400) are not illustrated in Figure 10.

The accuracy of our model was compared with the one of Alex Net's model. It can be clearly noticed that our model gives a better accuracy when compared to Alex Net, as shown in Figure 11.

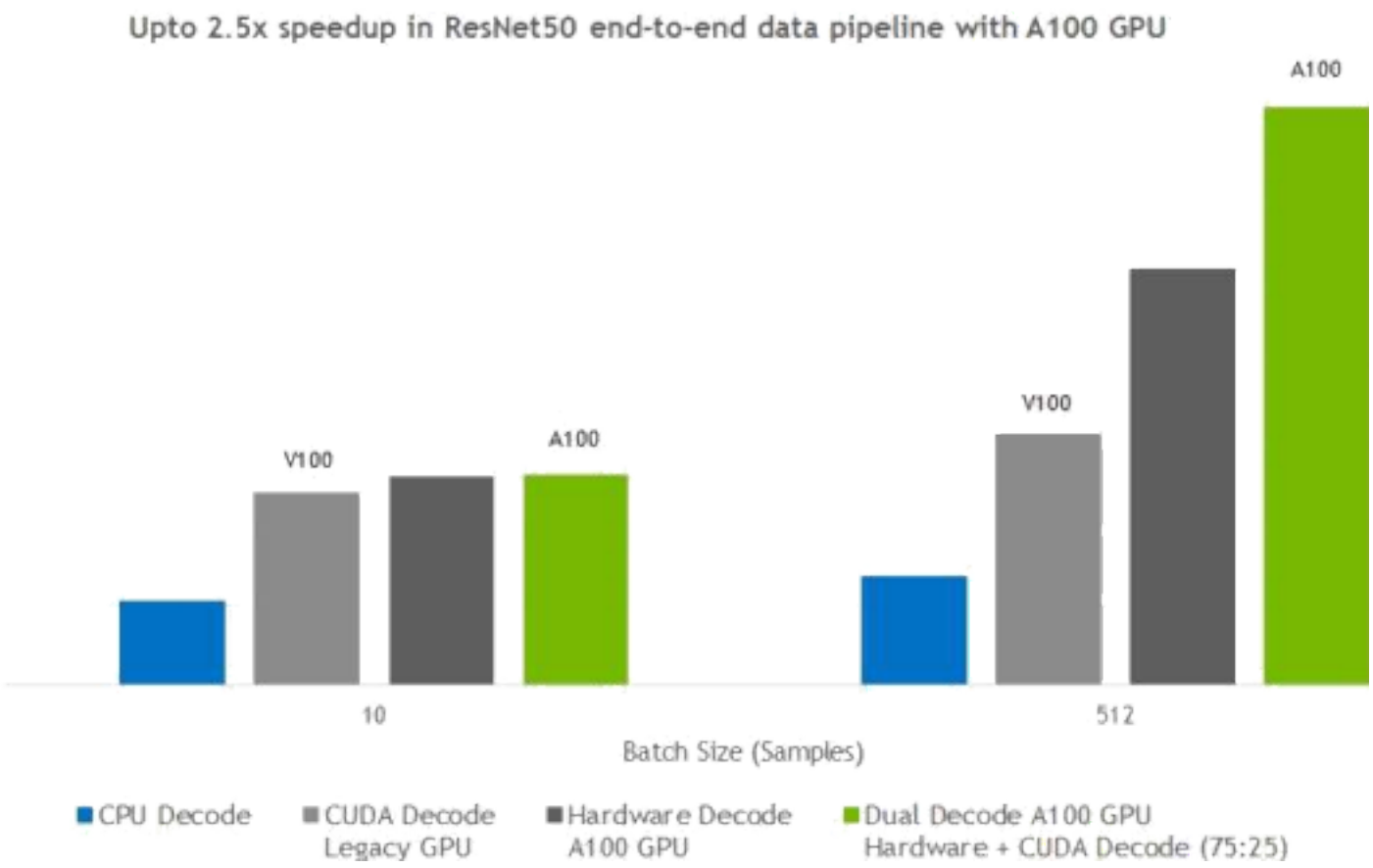


Figure 11. Accuracy and loss

Recommender systems are still developing and, as extra research is being done, extra areas and weaknesses that need greater study are also developing. Recommender systems have proved to be a great solution to the overload of web data, an important problem affecting the users. With the ever-growing records and choices, recommender systems enable the customers to access the data they need within minutes, just by a mere mouse click or by a single keystroke. Table 2 shows the comparison with other models regarding the accuracy and the loss values.

Source Code

fashion.html

```
<html>
   <head>
      <meta name="viewpoint" content="width=device-width,
      inital-scale=1.0"> <ttle>FASHION VIBE</ttle>
      <style>
       *{
   margin: 0;
   padding: 0;
     font-family:"Century Gothic", CenturyGothic, AppleGothic,
    sans-serif,'Courier New', Courier, monospace;
   box-sizing: border-box;
   background: fixed;


}

.footer
{
   width:100%;
   height: 20%;
   display:flex;
   background:#121212;
   margin-top: 5%; color:
   #7DE5ED; padding-left:
   22%;
```

```
    align-items: center;
    text-align: center;

}
.hero{
    width: 100%;
    height: auto;
    background-color:#8f8f8f
    ; color: #525252;

}
nav{
    background:
    #7DE5ED; width:
    100%;
    padding: 10px 10%;
    display: flex;
    align-items: center;
    justify-content:
    space-between; positon:
    fixed;

}
.logo{

    width:200px;
    height:50px;
```

```
    text-decoration:none;
text-align: center;
      color:#001128;
   }
   .user-pic{
      width: 40px;
      border-radius: 50%;
      cursor: pointer;
      margin-left: 30px;
   }
   nav ul{
      width: 100%; text
      align: right; font
      weight: bold;
   }
   nav ul li{
      display:
      inline-block;
      list-style: none;
      margin: 10px
   20px; }
   nav ul li a{
      color: rgb(252, 252,
      5); text-decoration:
      none;
   }
```

```
.Banner
{
   float:left;
   width: 100%;
   height: 400px;
   background-color: #121212;
   color: #7DE5ED;
   margin-top: 10%;
   text-align: center;
}
.Bannerimg1
{
   float: left;
   width:50%;
   height: 400px;
   background-color: #525252;
}
.Bannerimg2
{
   float: right;
   width:50%;
   height: 400px;
   background-color: #525252;
}
.Ad Content
{
   width:45%;
```

```
   height: 400px;
   margin-left:
55%; color:
#7DE5ED;
text-align: center;
padding: 100px; }
.Adcontent2
{
   width:45%;
   height: 400px;
   margin-left: 5%;
color: #7DE5ED;
text-align: center;
padding: 100px; }

.columnst {
   float:left;
   margin-left:7%;
   margin-top:
   10%;
   width:230px;
   height:400px;
   background-color:transparent;
   border: 2px solid #74bde0;
   border-color:transparent;

}
```

```
.column {
   float:left;
   margin-left:7%;
   margin-top: 10%;
   width:230px;
   height:400px;
   background-color:transparent;
border: 2px solid #74bde0;
border-color:transparent; }
.columnend
{
   float:left;
   margin-left:7%;
   margin-top: 10%;
   margin-bottom: 10%;
   width:230px;
   height:400px;
   background-color:transparent;
   border: 2px solid #74bde0;
   border-color:transparent;

}
.Bottom
{
   height:50px;
   width:230px;
   text-align: center;
```

```
    margin-top:300;
    background:
    #000000e8; color:
    rgb(252,252,5);
    padding: 5%;
}
.depimg
{
    foat:lef;
    width:228px;
    height:300px;
    background-color:transparent;
    border: 2px solid #74bde0;
    border-color:transparent;
}
.image
{
    width: 100%;
    height: 100%;
    object-ft: contain;
}
.search{
    width: 330px;
    margin-lef: 40%;
    color: #7DE5ED;
    positon:fxed;
}
```

```
.srch{
    width: 200px;
    height: 40px;
    background:
    #7DE5ED;  border:  2px
    solid                #121212;
    margin-top: 13px;
    margin-right:13px ;
    color: #FCE700;
    font-size: 16px;
    align-items: center;
    padding: 10px;
    border-botom-lef-radius: 25px;
    border-top-lef-radius: 25px;
    border-botom-right-radius: 25px;
    border-top-right-radius: 25px;

}

.btn{
    width: 60px;
    height: 40px;
    border: 2px solid
    #000000dd;
    background:#000000dd;
    margin-top: 13px;
```

```
    color: rgb(252, 252, 5);
    align-items: center; font
    size: 15px;
    border-botom-lef-radius: 25px;
border-top-lef-radius: 25px;
border-botom-right-radius: 25px;
border-top-right-radius: 25px; }
.btn:focus{
    outline: none;
}

.srch:focus{
    outline: none;
}
.sub-menu-wrap{
    positon:absolute;
    top: 100%;
    right: 2%;
    width: 320px;
    max-height: 0px; overfow:
    hidden; transiton: max
    height 0.5s;

}
 .sub-menu-wrap.open-menu
      { max-height: 400px;
}
```

```
.sub-menu{
    background:rgb(252, 252,
    5);padding: 20px;
    margin: 10px;
    border-radius: 8%;


}
.user-info{
    display: fex;
    align-items:
center; }
.user-info h3{
    font-weight:
500; }
.user-info img{
    width: 60px;
    border-radius: 50%;
margin-right: 15px; }
.sub-menu hr{
    border: 0;
    height: 1px;
    width: 100%;
    background: #525252;
margin: 15px 0 10px; }


.sub-menu-link{
    display: fex;
```

```
    align-items: center;
    text-decoraton:
    none; color:
    #525252;
    margin: 12px 0 ;
}
.sub-menu-link p{
    width: 100%;
}
     .sub-menu-link
  img{ width: 40px;
    background:
    #e5e5e5;
    border-radius: 50%;
    padding: 8px;
    margin-right: 15px;
}
      .sub-menu-link
      span{ font-size:
              22px;
    transiton: transform
0.5s; }
.sub-menu-link:hover
span{ transform:
translateX(5px); }
.sub-menu-link:hover p{
    font-weight: 600;
```

```
}
.hello{
   margin-botom: 200px;
   text-align: lef;
   positon:absolute; right:
    10px;

}

      </style>
   </head>

   <body>

         <nav>
            <a class="logo" href="MadFinalhome.html"><h2>FASHION
            VIBE</h2></a> <ul>
                <li><input class="srch" type="search" name="" placeholder="TYPE
                TOSEARCH"> <a href="#"><buton class="btn">SEARCH</buton></a></li>
                <li><a href="#">HOME</a></li> <li><a
                href="#">FEATURES</a></li>
                <li><a href="#">ABOUT</a></li>
                      </ul>
 <img src="htps://storagedemo-madzh.s3.jp-tok.cloud-object
                storage.appdomain.cloud/images/profle.jpeg"
                                                                        class="us
                er-pic"onclick="toggleMenu()">
```

```
<div class="sub-menu-wrap" id="subMenu">
  <div class="sub-menu">
    <div class="user-info">
                    <img src="htps://storagedemo-madzh.s3.jp
tok.cloud-object-storage.appdomain.cloud/images/profle.jpeg">
      <h2>NAME</h2>
    </div>
    <hr>

    <a href="#" class="sub-menu-link">
                    <img src="htps://storagedemo-madzh.s3.jp
tok.cloud-object-storage.appdomain.cloud/images/profle.jpeg">
      <p>EDIT PROFILE</p>

    </a>

    <a href="#" class="sub-menu-link">
                    <img src="htps://storagedemo-madzh.s3.jp
tok.cloud-object-storage.appdomain.cloud/images/setngs.jpeg">
      <p>SETTING & PRIVACY</p>

    </a>

    <a href="#" class="sub-menu-link">
                    <img src="htps://storagedemo-madzh.s3.jp-tok.cloud
object-storage.appdomain.cloud/images/help.jpeg">
      <p>HELP</p>
```

```
            </a>

            <a href="/Login" class="sub-menu-link">
              <img src="htps://cdn-icons
              png.fatcon.com/512/56/56805.png"> <p>LOGOUT</p>

            </a>
          </div>
        </div>

    </nav>

  <div class="Banner">
                        <div class="Bannerimg1"> <img img class="image"
src="fashionimagebanner.webp"></div>
    <div class="Adcontent">
      <h1><br>THE JOY OF DRESSING IS AN ART.</br></h1>
      <br>Let's have a look on it--------></br>
    </div>
  </div>

  <div class="rowstart">
                <div class="columnst"> <div class="depimg"><img class="image"
src="sarees.webp"> </div> <div class="Botom">WEDDING SAREES</div> </div>

          <div class="columnst"> <div class="depimg"><img class="image" src="Salwar
kameez.webp"> </div> <div class="Botom">SALWAR KAMEEZ</div> </div>
```

 <img class="image" src="Kurts.webp"> CASUAL KURTIS

 <img class="image" src="bridal lehenga.webp"> BRIDAL LEHENGA

 <img img class="image" src="lovablekidsatre.webp">

<h1 class="kids">
LOVABLE KIDS ATTIRE</br></h1>

-------Smiles are always in FASHION --------- </br>

 <img class="image" src="Modern vibe.webp"> MODERN VIBE

 <img class="image" src="festvemood.webp"> FESTIVE MOOD

 <img class="image" src="skinny dress.webp"> SKINNY DRESS

 <img class="image"

```
src="Max girls.webp"> </div> <div class="Botom">MAX GIRLS</div>
</div> </div>


 <div class="Banner">
                                <div class="Bannerimg1"> <img img class="image"
src="mensfashion.webp"></div>
    <div class="Adcontent">
      <h1><br>HANDSOME MEN ATTIRE</br></h1>
       <br>Always DRESS well, Keep it SIMPLE but SIGNIFICANT.....</br>
    </div>
 </div>


 <div class="row">
          <div class="column"> <div class="depimg"><img class="image" src="polo t
shirts.webp"> </div> <div class="Botom">POLO T-SHIRTS</div> </div>

                    <div class="column"> <div class="depimg"><img
class="image" src="menhoodies.webp"> </div> <div
class="Botom">HOODIES</div> </div>

           <div class="column"> <div class="depimg"><img class="image" src="men
casuals.webp"> </div> <div class="Botom">MEN CASUALS</div> </div>

          <div class="column"> <div class="depimg"><img class="image" src="formal
shirts.webp"> </div> <div class="Botom">FORMAL SHIRTS</div> </div> </div>


 <div class="Banner">
    <div class="Bannerimg2"> <img class="image" src="adornments.webp"></div>
    <div class="Adcontent2">
```

```
        <h1><br>PERSONAL ADORNMENTS</br></h1>
        <br>ADORNMENT is never anything except a REFLECTION of the HEART!!!</br>
      </div>
  </div>
  <div class="rowend">
      <div class="columnend"> <div class="depimg"><img class="image" src="women
ornmanets.webp"> </div> <div class="Botom">JEWELLERY</div> </div>

   <div class="columnend"> <div class="depimg"><img class="image"
src="watch.jpg"> </div> <div class="Botom">WATCHES</div> </div>

                <div class="columnend"> <div class="depimg"><img
class="image" src="htps://5.imimg.com/data5/TQ/NK/MY-45888708/men-belts
500x500.jpg"> </div> <div class="Botom">BELTS</div> </div>

                <div class="columnend"> <div class="depimg"><img class="image"
src="https://encrypted-tbn0.gstatc.com/images?q=tbn:ANd9GcQSWDKgpQeZ-3VNR7-
9SfaVGVvqOawrkZiLdNfSpjNNQJNI6hl8cJg0Qs_DZfpJtzUst0&usqp=CAU"> </div>
<div class="Botom">HANDBAGS & CLUTCHES</div> </div>

  </div>


<script>
  let subMenu = document.getElementById("subMenu");
  functon toggleMenu(){
     subMenu.classList.toggle("open-menu");
  }
  window.watsonAssistantChatOptons = {
```

```
            integratonID: "1a8c11c0-839e-4442-8b03-59f7c12ce5f5", // The ID of this
integraton.
      region: "au-syd", // The region your integraton is hosted in.
        serviceInstanceID: "bada3725-51e6-42fe-bccc-3e2603433478", // The ID
of your service instance.
      onLoad: functon(instance) { instance.render(); }
    };
   setTimeout(functon(){
      const t=document.createElement('script');
          t.src="htps://web-chat.global.assistant.watson.appdomain.cloud/versions/" +
(window.watsonAssistantChatOptons.clientVersion || 'latest') +
"/WatsonAssistantChatEntry.js";
      document.head.appendChild(t);
    });
  </script>
  </body>
  <footer>
    <div class="footer">
      <div class="hello">
        <a href="Feedback.html">feedback</a>
      </div>
      <div >
        <H1>THANK YOU FOR PURCHASING. .....WELCOME
      AGAIN!!!!</H1> </div>
    </div>
  </footer>
</html>
```

server.py

```
from fask import Flask,
render_template, request import os




appFlask = Flask(_name )
picFolder = os.path.join('statc','images')
appFlask.confg['UPLOAD_FOLDER'] = picFolder



@appFlask.route('/')
@appFlask.route('/out')
def index():
   return render_template("login.html")


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


     @appFlask.route('/index',methods = ['POST',

                              'GET'])


def my_forum_posts():
```

```
    return render_template('index.html')


@appFlask.route('/Feed',methods = ['POST', 'GET'])def
my_forum_posts1():
    return render_template('Feedback.html')



if name == "_main ":
appFlask.run(debug=True)
```

fashion.css

```
{
    margin: 0;
    padding: 0;
       font-family:"Century Gothic", CenturyGothic, AppleGothic,
     sans-serif,'Courier New', Courier, monospace;
    box-sizing: border-box;
    background: fxed;


}


.footer
{
    width:100%;
    height: 20%;
    display:fex;
    background:#121212;
```

```
    margin-top: 5%; color:
    #7DE5ED; padding-lef:
    22%; align-items:
    center; text-align:
    center;

}
.hero{
    width: 100%;
    height: auto;
    background-color:#8f8f8f;
    color: #525252;

}
nav{
    background:
    #7DE5ED; width:
    100%;
    padding: 10px 10%;
    display: fex;
    align-items: center;
    justfy-content: space-between;
    positon: fxed;

}
.logo{
```

```
    width:200px;
    height:50px;
    text-decoraton:none;
    text-align: center;
    color:#001128;
}
.user-pic{
    width: 40px;
    border-radius: 50%;
    cursor: pointer;
    margin-lef: 30px;
}
nav ul{
    width: 100%; text
    align: right; font
    weight: bold;
}
nav ul li{
    display:
    inline-block;
    list-style: none;
    margin: 10px 20px;
}
nav ul li a{
    color: rgb(252, 252,
```

```
5); text-decoraton: none;
}
.Banner
{
   foat:lef;
   width: 100%;
   height: 400px;
   background-color: #121212;
   color: #7DE5ED;
   margin-top: 10%;
   text-align: center;
}
.Bannerimg1
{
   foat: lef;
   width:50%;
   height: 400px;
   background-color: #525252;
}
.Bannerimg2
{
   foat: right;
   width:50%;
   height: 400px;
   background-color: #525252;
}
.Adcontent
```

```
{
   width:45%;
   height: 400px;
   margin-lef: 55%;
   color: #7DE5ED;
   text-align: center;
   padding: 100px;
}
.Adcontent2
{
   width:45%;
   height: 400px;
   margin-lef: 5%;
   color: #7DE5ED;
   text-align: center;
   padding: 100px;
}

.columnst {
   foat:lef;
   margin-lef:7%;
   margin-top: 10%;
   width:230px;
   height:400px;
   background-color:transparent;
   border: 2px solid #74bde0;
   border-color:transparent;
```

```
}
.column {
   foat:lef;
   margin-lef:7%;
   margin-top: 10%;
   width:230px;
   height:400px;
   background-color:transparent;
   border: 2px solid #74bde0;
border-color:transparent; }
.columnend
{
   foat:lef;
   margin-lef:7%;
   margin-top: 10%;
   margin-botom: 10%;
   width:230px;
   height:400px;
   background-color:transparent;
   border: 2px solid #74bde0;
   border-color:transparent;

}
.Botom
{
   height:50px;
```

```
    width:230px;
    text-align: center;
    margin-top:300;
    background:
    #000000e8; color:
    rgb(252,252,5);
    padding: 5%;
}
.depimg
{
    foat:lef;
    width:228px;
    height:300px;
    background-color:transparent;
    border: 2px solid #74bde0;
    border-color:transparent;


}
.image
{
    width: 100%;
    height: 100%;
    object-ft: contain;
}
.search{
    width: 330px;
    margin-lef: 40%;
```

```
    color: #7DE5ED;
    positon:fxed;
}
.srch{
    width: 200px;
    height: 40px;
    background: #7DE5ED;
    border: 2px solid #121212;
    margin-top: 13px;
    margin-right:13px ;
    color: #FCE700;
    font-size: 16px;
    align-items: center;
    padding: 10px;
    border-botom-lef-radius: 25px;
    border-top-lef-radius: 25px;
    border-botom-right-radius: 25px;
    border-top-right-radius: 25px;


}


.btn{
    width: 60px;
    height: 40px;
    border: 2px solid #000000dd;
    background:#000000dd;
    margin-top: 13px;
```

```
   color: rgb(252, 252, 5);
   align-items: center;
   font-size: 15px;
   border-botom-lef-radius: 25px;
border-top-lef-radius: 25px;
border-botom-right-radius: 25px;
border-top-right-radius: 25px; }

.btn:focus{
   outline: none;
}

.srch:focus{
   outline: none;
}
.sub-menu-wrap{
   positon:absolute;
   top: 100%;
   right: 2%;
   width: 320px;
   max-height: 0px; overfow:
   hidden; transiton: max
   height 0.5s;

}
 .sub-menu-wrap.open-menu
```

```
    { max-height: 400px;
}
.sub-menu{
   background:rgb(252, 252,
   5);padding: 20px;
   margin: 10px;
   border-radius: 8%;


}
.user-info{
   display: fex;
   align-items: center;
}
.user-info h3{
   font-weight: 500;
}
.user-info img{
   width: 60px;
   border-radius: 50%;
margin-right: 15px; }
.sub-menu hr{
   border: 0;
   height: 1px;
   width: 100%;
   background: #525252;
margin: 15px 0 10px; }
```

```
.sub-menu-link{
   display: fex;
   align-items: center;
   text-decoraton:
   none;              color:
   #525252;
   margin: 12px 0 ;
}
.sub-menu-link p{
   width: 100%;
}
    .sub-menu-link
 img{ width: 40px;
   background:
   #e5e5e5;
   border-radius: 50%;
   padding: 8px;
   margin-right: 15px;
}
    .sub-menu-link
    span{ font-size:
          22px;
   transiton: transform
0.5s; }
.sub-menu-link:hover
```

```
span{ transform:
translateX(5px); }
  .sub-menu-link:hover
  p{ font-weight: 600;
}
.hello{
   margin-botom:
   200px; text-align: lef;
   positon:absolute; right:
   10px;


}
```

test.js

```
<script>
      let subMenu = document.getElementById("subMenu");
      functon toggleMenu(){
         subMenu.classList.toggle("open-menu");
       }
      window.watsonAssistantChatOptons = {
               integratonID: "1a8c11c0-839e-4442-8b03-59f7c12ce5f5", // The ID
    ofthis integraton.
         region: "au-syd", // The region your integraton is hosted in.
           serviceInstanceID: "bada3725-51e6-42fe-bccc-3e2603433478", // The IDof
    your service instance.
         onLoad: functon(instance) { instance.render(); }
       };
      setTimeout(functon(){
```

```
    const t=document.createElement('script');
        t.src="htps://web-chat.global.assistant.watson.appdomain.cloud/versions/" +
(window.watsonAssistantChatOptons.clientVersion || 'latest') +
"/WatsonAssistantChatEntry.js";
    document.head.appendChild(t);
  });
</script>
```

chat.js

```
<script>
  let subMenu = document.getElementById("subMenu");
  functon toggleMenu(){

    subMenu.classList.toggle("open-menu");
  }
  window.watsonAssistantChatOptons = {
        integratonID: "1a8c11c0-839e-4442-8b03-59f7c12ce5f5", // The ID ofthis
integratons.
    region: "au-syd", // The region your integraton is hosted in.
     serviceInstanceID: "bada3725-51e6-42fe-bccc-3e2603433478", // The IDof your
service instance.
    onLoad: functon(instance) { instance.render(); }
  };
  setTimeout(functon(){
    const t=document.createElement('script');
        t.src="htps://web-chat.global.assistant.watson.appdomain.cloud/versions/" +
(window.watsonAssistantChatOptons.clientVersion || 'latest') +
"/WatsonAssistantChatEntry.js";
    document.head.appendChild(t);
  }); </script>
```

DISCUSSION

This scholarly article has provided a comprehensive review of the methods, algorithmic models and filtering techniques used in the recent fashion recommendation based research papers. However, this review paper has some limitations too. Primarily, the focus of this comprehensive review paper was to explore fashion recommendation-based articles published in last decade that

explicitly described their frameworks, algorithms, and filtering techniques. To achieve this goal, the articles were searched using keywords relevant to the topic title instead of using the PRISMA technique. However, it did not affect the article extraction methodology, because the authors included and studied all the research papers relevant to the research focus. However, future researchers should conduct a systematic literature review on the same topic. The initial keyword searching did not include “garment” and “outfit”; however, this did not influence the search results because we also studied the fashion recommendation articles that contained these keywords. The future research can also conduct a review of the datasets that have been used in fashion recommendation-based research articles. Additionally, further reviews of fashion recommendation systems can apply our proposed potential algorithms to any of the available fashion image datasets to evaluate the performance of the recommender systems.

CONCLUSION

Recommendation systems have the potential to explore new opportunities for retailers by enabling them to provide customized recommendations to consumers based on information retrieved from the Internet. They help consumers to instantly find the products and services that closely match with their choices. Moreover,different state-of-the-art algorithms have been developed to recommend products based on users‟ interactions with their social groups. Therefore, research on embedding social media images within fashion recommendation systems have gained huge popularity in recent times. This paper presented a review of the fashion recommendation systems, algorithmic models and filtering techniques based on the academic articles related to this topic. The technical aspects, strengths and weaknesses of the filtering techniques have been discussed elaborately, which will help future researchers gain an in- depth understanding of fashion recommender systems. However, the proposed prototypes should be tested in commercial applications to understand their feasibility and accuracy in the retail market, because inaccurate recommendations can produce a negative impact on a customer. Moreover, future research should concentrate on including time series analysis and accurate categorization of product images based on the variation in color, trend and clothing style in order to develop an effective recommendation system.

FUTURE SCOPE

Online selling and purchasing offer innumerable benefits to both sellers and buyers, and these advantages are also the reasons for the rising scope of eCommerceWell, to put it bluntly, the scope of e-business in the near future looks to be ever-increasing and growing, because the trend has really caught on here. E-commerce giant Amazon is keen to conquer the Indian market and has already invested a great deal, especially with its 49% stake in the Future Group.

Indian online retail giant Flipkart has already opened a few offline stores and plans more stores in smaller cities. They plan to combine online and offline stores to maximize their selling potental.Google and Tata Trust have launched a joint program „Saathi“ to increase internet and mobile penetration among rural women.The Government of India is also making a huge push for Ecommerce by providing numerous sops to startups, cyberparks, and so on through its Digital India program.As of now, there are close to 20,000 E-commerce companies in India, with many more expected to join the bandwagon every month.

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