

Fashion Redefined with Virtual Grooming and Shopping Assistant

INTRODUCTION

The revolution in the fashion industry is going very fast than we expect. By seeking desired products in malls to get desired stuff without taking a single step outside from the home, people are enjoying it more.

The online fashion industry now has more dynamic styles to grab their prospects to convert them into potential customers. If you are an online business insider, it is obvious that you put your efforts into engaging and entertaining your customers with your best. people love to spend money on what attracts them.

Online fashion has been adopting more technical ways. Still, they are confused about what they are lacking. When people do online shopping, they need someone to assist them in a well-mannered way. Quick responses and a helper seems like they made for each other. This is the on-demanding online fashion shopping consumers want when they shop at an online fashion store.

In this project, we are going to develop a [virtual assistant\(chatbot\)](#) that will change the complexity of the online fashion industry for your customer and for you as well.

In the fashion industry, chatbots, also known as *intelligent assistants*, represent one of the most important roles played by artificial intelligence today.

Chatbots are real computer programs able to conduct and manage a dialogue through the exchange of text or audio messages, simulating intelligent conversations with human beings.

On a basic level, there are two types of chatbot:

Intelligent bots: using artificial intelligence and machine learning, these bots learn over time, based on user searches.

For example, intelligent bots are used to help users through the buying process in online stores. In this case, it's essential for chatbots to be integrated into e-commerce systems so as inventory, stock, and merchandise orders can be managed in the best way, therefore giving the user a smooth and satisfying online buying experience.

The complexity of these bots means they are currently still in the testing phase (imagine the problems that could arise if a bot automatically completed the buying process wrongly by itself, for example).

Simple bots: these bots are based on standard rules and are used to guide a straightforward conversation along a specific path.

In this case, the chatbot can be used to help businesses learn more about customers and prospects, such as frequently asked questions or additional data about tastes and buying habits. Once integrated into the messaging services of various brands of the fashion and retail world, this type of bot is able to respond to simple queries, carry out straightforward tasks, and even interact in more complex ways.

LITERATURE SURVEY

EXISTING PROBLEM-

As we know today all the fashion industries are trying to bloom in their own best version and are always engaged in the platform of challenges and competing with other fashion industries. So lot of evolution took place till now if we compared with past year. In past year industries faced a lot of difficulties. One of the biggest problem was customer service. It was seen that sometimes people were not happy with service of the owners or the staffs. As we know we all are human and its quite difficult to do our work with full perfections like a machine so at the end of the day they also gets exhausted with the queries of the customer and customers also used to get dissappointed for not getting their answers or choices according to their satisfaction. So to avoid such kind of issues now all most all the fashion industries prioritize the use of chatbot assistance service.

SOLUTIONS-

To avoid above discussed problems regarding customer services today we all prioritize the service of chatbot assistance. So it helps us in the following ways-

Chatbot not only provides 24/7 hr services to the user and also it act as user friendly.

It is very fast in communication and thus it can easily meet the needs of user.

Chatbots can provide valuable support to the brand by creating a positive customer experience, introducing first-time customers to the brand, offering not only the direct commercial service but also the brand.

PROPOSED SYSTEM-

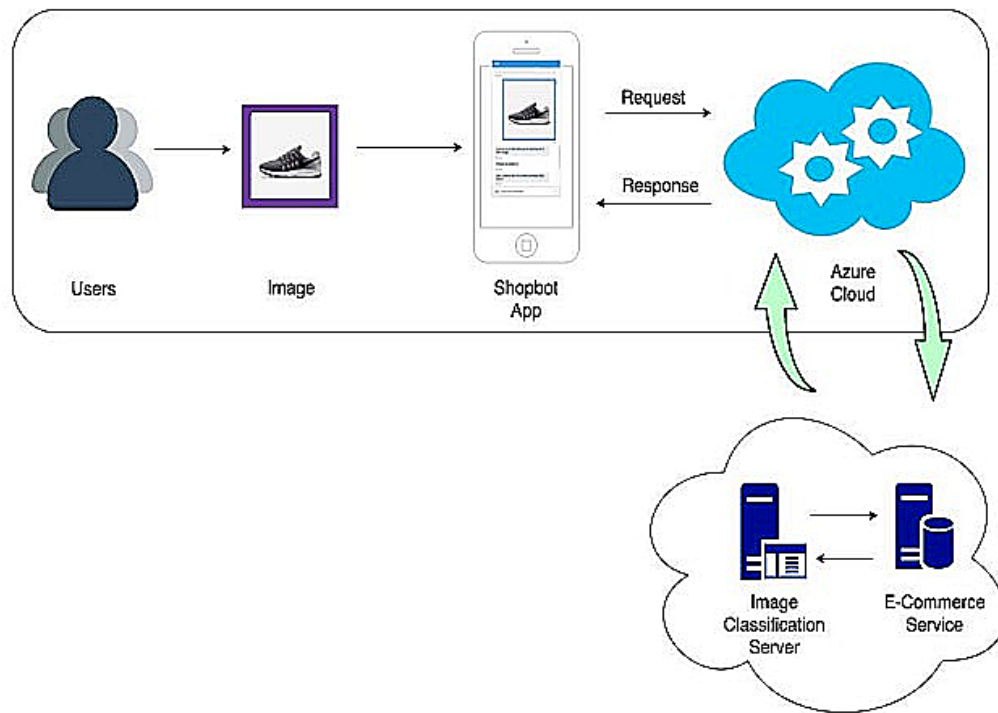
In many industries it is seen that they cannot make the chatbot the use of chatbot in a

proper way so as it may again disappoint the user. So while building our chatbot we focus on the following things -

1. It is important to set out the initial range of questions that the bot will be able to ask and therefore will be able to efficiently respond to, and this must be done during the design stage. From the very moment the chatbot opens a dialogue box, the user needs to be instantly made aware of what input the bot expects.
2. Coherence in the context of the industry, fashion and retail in this case, represents one of the winning features of a chatbot. It is best to set a high standard of linguistic accuracy and correctness, with the idea of reducing possible meaning misinterpretation to a minimum during user-bot interaction.
3. Personalising and “humanising” conversations can make bots more believable for end users and makes it easier to foster an empathic human-machine connection. In this case, the bot instruction phase, which takes time, imagination and, more than anything, a well-defined process, is fundamental. For example, a bot can start asking a user questions relevant to their age, gender, preferences and clothing styles, all through a friendly conversation; this makes it easy to navigate the catalogue by suggesting a range of options based on the user’s tastes and progressively learning which products the user prefers.
4. In order to guarantee the best customer experience to the user, you will need to design user-friendly interfaces designed to reduce complexity and foster customer.
5. For fashion and retail companies, it is recommended to aim to integrate your own chatbot service into apps that are popular with users, without them having to download them all over again.

THEORETICAL ANALYSIS

BLOCK DIAGRAM



SOFTWARE REQUIREMENTS FOR BUILDING OF CHATBOT

TECHNOLOGIES USED-

- IBM Watson Assistant
- IBM Cloud
- Node-red
- IBM Cognos Analytics
- Visual Recognition

ANALYSIS

Basically, if we see chatbot is a normal text or voice type where the assistant will ask the customer some basic questions about user's choice .

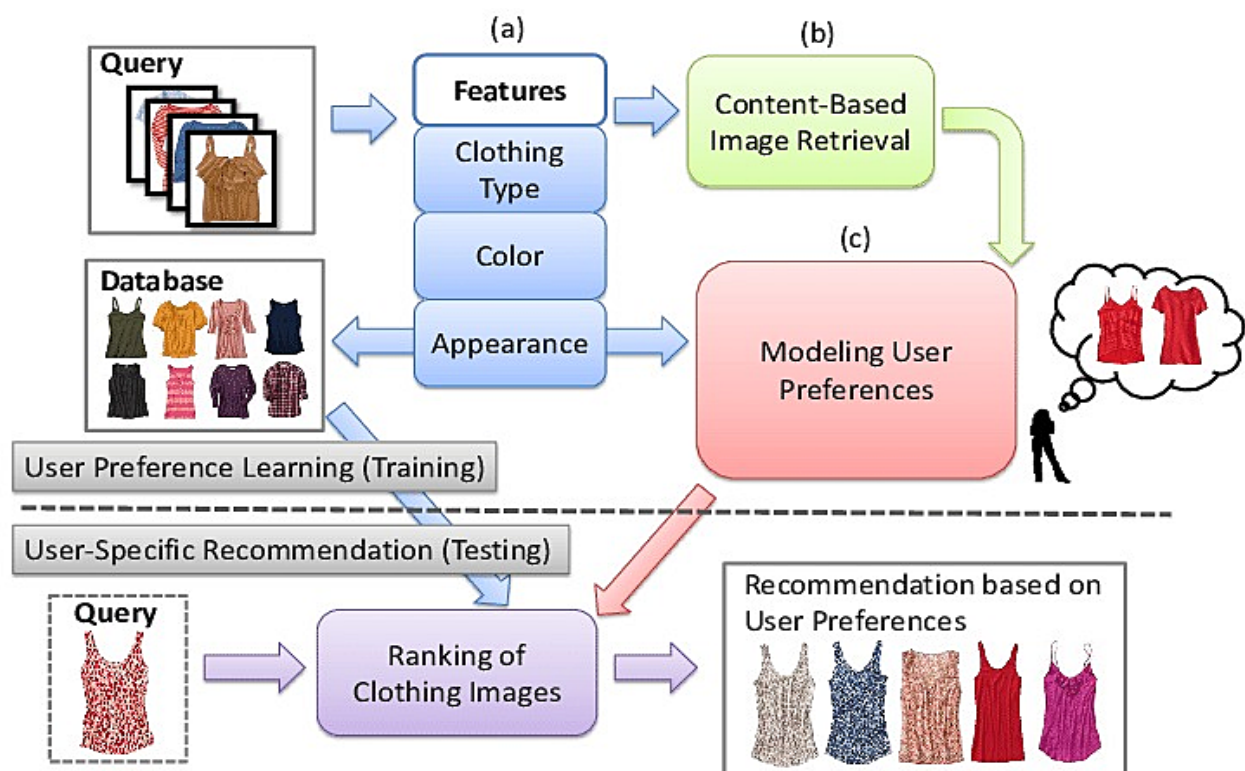
Normally, it will greet the customer and it will ask what kind of clothes the user is interested on and also it will ask for the size, color, physical features of the materials then also it will also ask about the occasion based like ethnic ,partywear, casual wear etc.

But in our chatbot the implementation will be -

It will ask for the picture of the user and also it will detail the users physical look with the help of IBM Watson Visual Recognition.

Moreover it will ask more questions about the users physical appearance i.e. height if undefined by the picture and will also ask for users need based on that the assistant will show the collection of the clothes. So these are the noble uniqueness that we are going to implement in our chatbot.

FLOWCHART



RESULTS

Fashion Recommendation using CNN

Fashion Recommendation:

With the rapid growth of online market for clothing, footwear, hairstyle, and makeup, consumers are getting increasingly overwhelmed with the volume, velocity and variety of production. Fashion Recommender Systems can tackle with choice overload by suggesting the most interesting products to the users. However, recommender systems are unable to generate recommendation unless some information is collected from users. Indeed, there are situations where a recommender system is requested for recommendation while no or little information is provided by users.



Upload Image Here To Identify the Fashion Products

Choose... Choose File No file chosen



Fashion Recommendation using CNN

Fashion Recommendation:

With the rapid growth of online market for clothing, footwear, hairstyle, and makeup, consumers are getting increasingly overwhelmed with the volume, velocity and variety of production. Fashion Recommender Systems can tackle with choice overload by suggesting the most interesting products to the users. However, recommender systems are unable to generate recommendation unless some information is collected from users. Indeed, there are situations where a recommender system is requested for recommendation while no or little information is provided by users.



Upload Image Here To Identify the Fashion Products

Choose... Choose File 37738.jpg

**Result: The classified fashion product is :
Shirts**

ADVANTAGES

- Improve Lead Generation.
- Reduce Customer Service Costs.
- Monitor Consumer Data to Gain Insights.
- Devise a Conversational Marketing Strategy.
- Balance Automation with Human Touch.
- Meet Customer Expectations.
- Achieve Scalability of support.

DISADVANTAGES

- Limited Responses for Customers. Although using chatbots may provide faster customer service overall, they aren't perfect all the time.
- Customers Could Become Frustrated. Because many chatbots work from a limited data base, they can't improvise.
- Complex Chatbots Could Cost More.
- Not All Business Can Use Chatbots.

APPLICATIONS

Retail and e-commerce

In a competitive market like retail and e-commerce, you need to engage in personalized conversations with customers to grab their attention and get them to a purchase decision.

The fashion industry was among the first to recognize the value chatbots can bring to its online commerce. A chatbot in ecommerce can supply that missing link between the

customer and the retailer creating a personalized approach to each user while keeping the convenience of online shopping.

Travel and hospitality

Just like e-commerce and retail, customers in travel and hospitality prefer personalized experiences. Chatbots can provide a range of services in customer service from customizing itineraries to managing bookings and reservations.

Banking, finance, and fintech

Customer issues in banking and finance often require immediate attention. Chatbots provide fast and accurate responses, making them increasingly popular in this space.

Healthcare

Chatbots have proven to be very helpful in the healthcare industry, especially in recent times when hospitals and other institutions are required to minimize queues and gatherings.

Media and entertainment

Right from delivering snapshots of the latest news, to assisting customers with their subscription management, chatbots applications in the media and entertainment industry play a vital role .

CONCLUSION

As it is seen that earlier fashion industries had struggled a lot in satisfying the needs of the customers. so now it literally became very easy and smooth to overcome such challenges through the proper use of chatbot assistant service. Now it became easy for all the user to do shopping in the platform of online without any kind of difficulties. Thus in our project we developed a chatbot assistant service to help the user in get proper guidance and recommendation not only it is also user friendly here it can reach the expectation of the user without any kind of disappointment. so along with greetings it will also show also latest collection of dresses, accessories and all other latest fashion highlights and along with the recommendation of discounts and offers.

FUTURE ENHANCEMENTS

In the coming generation chatbot can totally be implemented into artificial chatbot. Some fashion industries have already adopted this method. Artificial chatbots portray similar intelligence like human which involves decision making, recognising languages and translating them whereas normal chatbot involves in straightforward responses according to the user queries and needs. Thus AI technique is more user friendly than normal virtual assistant chatbot.

Some of the biggest and most well known fashion brands like Tommy Hilfider, Burberry etc have already adopted this technique which analyses customer sentiments using IBM AI research tools to identify key themes in colours silhouettes and style.

BIBLIOGRAPHY

- S. Bell and K. Bala. Learning visual similarity for product design with convolutional neural networks. *ACM Transactions on Graphics (TOG)*, 34(4):98, 2015.
- T. Deselaers and V. Ferrari. Visual and semantic similarity in imagenet. In *Computer Vision and Pattern Recognition (CVPR)*, 2011 IEEE Conference on, pages 1777–1784. IEEE, 2011.
- A. Dosovitskiy and T. Brox. Generating images with perceptual similarity metrics based on deep networks. In *Advances in Neural Information Processing Systems*, pages 658–666, 2016.
- R. He and J. McAuley. Ups and downs: Modeling the visual evolution of fashion trends with one-class collaborative filtering. In *Proceedings of the 25th International Conference 6 on World Wide Web*, pages 507–517. International World Wide Web Conferences Steering Committee, 2016.
- V. Jagadeesh, R. Piramuthu, A. Bhardwaj, W. Di, and N. Sundaresan. Large scale visual recommendations from street fashion images. In *Proceedings of the 20th ACM SIGKDD international conference on Knowledge discovery and data mining*, pages 1925–1934. ACM, 2014.
- I. Kanellopoulos and G. Wilkinson. Strategies and best practice for neural network image classification. *International Journal of Remote Sensing*, 18(4):711–725, 1997.
- A. Krizhevsky, I. Sutskever, and G. E. Hinton. Imagenet classification with deep convolutional neural networks. In *Advances in neural information processing systems*, pages 1097–1105, 2012.
- J. McAuley, C. Targett, Q. Shi, and A. Van Den Hengel. Image-based recommendations on styles and substitutes. In *Proceedings of the 38th International ACM SIGIR Conference on Research and Development in Information Retrieval*, pages 43–52. ACM, 2015.

APPENDIX

app1.py

```
import numpy as np
import os
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
from flask import Flask, request, render_template
from werkzeug.utils import secure_filename
from gevent.pywsgi import WSGIServer

app = Flask(__name__)

model = load_model("fashionmodels.h5")
@app.route('/')
def index():
    return render_template('index.html')

@app.route('/predict',methods = ['GET','POST'])
def upload():
    if request.method == 'POST':
        f = request.files['image']
        print("current path")
        basepath = os.path.dirname(__file__)
        print("current path", basepath)
        filepath = os.path.join(basepath,'uploads',f.filename)
        print("upload folder is ", filepath)
        f.save(filepath)
        img = image.load_img(filepath,target_size = (64,64))
        x = image.img_to_array(img)
        print(x)
        x = np.expand_dims(x,axis =0)
        print(x)
```

```

    preds = model.predict_classes(x)
    print("prediction",preds)
index    =['Accessories','Bags','Belts','Caps','Casual Wear','Footwear','Jackets','Jeans','Jewellery','Kids
Wear','Kurtis & Salwars','Ladies Bags & Purses','Ladies Jeans','Ladies Pants','Ladies Watch','Makeup
Accessories','Mens Pants','Mens Wallet','Mens Watch','Mens Wear','One Piece','Outwear','Perfumes &
Sprays','Sarees','Shirts','Shorts','Skirts','Sunglasses','T-Shirts','Ties & Wardrobes','Tops','Vests','Womens
Wear']

    text = "The classified fashion product is : " + str(index[preds[0]])
    return text
if __name__ == '__main__':
    app.run(debug = True, threaded = False)

```

index.html

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

```
<head>
```

```
    <meta charset="UTF-8">
```

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

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

```
    <title>Fashion Classification</title>
```

```
    <link href="https://cdn.bootcss.com/bootstrap/4.0.0/css/bootstrap.min.css" rel="stylesheet">
```

```
    <script src="https://cdn.bootcss.com/popper.js/1.12.9/umd/popper.min.js"></script>
```

```
    <script src="https://cdn.bootcss.com/jquery/3.3.1/jquery.min.js"></script>
```

```
    <script src="https://cdn.bootcss.com/bootstrap/4.0.0/js/bootstrap.min.js"></script>
```

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

```
        <style>
```

```
            .bg-dark {
```

```
                background-color:    #4B92BB!important;
```

```
            }
```

```
            #result {
```

```

        color: #0a1c4ed1;
    }
    body
{
    background-image: url("https://wallpaperaccess.com/full/327148.jpg");
    background-size: cover;
}

</style>
</head>

<body>
    <nav class="navbar navbar-dark bg-dark">
        <div class="container">
            <a class="navbar-brand" href="#">Fashion Recommendation using CNN</a>
        </div>
    </nav>
    <div class="container">
        <div id="content" style="margin-top:2em">
            <div class="container">
                <div class="row">
                    <div class="col-sm-6 bd">
                        <h3>Fashion Recommendation: </h3>

                        <br>
                        <p style="text-align:justify">With the rapid growth of online market for
clothing, footwear, hairstyle, and makeup, consumers are getting increasingly overwhelmed with the
volume, velocity and variety of production. Fashion Recommender Systems can tackle with choice
overload by suggesting the most interesting products to the users. However, recommender systems
are unable to generate recommendation unless some information is collected from users. Indeed,
there are situations where a recommender system is requested for recommendation while no or little
information is provided by users.</p>
                        
                        </div>
                        <div class="col-sm-6">
                            <div>

                                <h4>Upload Image Here To Identify the Fashion
Products</h4>

```

```
        <form action = "http://localhost:5000/" id="upload-file" method="post"
enctype="multipart/form-data">
            <label for="imageUpload" class="upload-label">
                Choose...
            </label>
            <input type="file" name="image" id="imageUpload" accept=".png, .jpg,
.jpeg">
        </form>
```

```
        <div class="image-section" style="display:none;">
            <div class="img-preview">
                <div id="imagePreview">
                </div>
            </div>
            <div>
                <button type="button" class="btn btn-info btn-lg "
id="btn-predict">Predict!</button>
            </div>
        </div>
```

```
<div class="loader" style="display:none;"></div>
```

```
<h3>
    <span id="result"> </span>
</h3>
```

```
</div>
</div>
```

```
</div>
</div>
</div>
```

```
</div>
</body>
```

```

<footer>
  <script src="{{ url_for('static', filename='js/main.js') }}" type="text/javascript"></script>

</footer>
<script>
  window.watsonAssistantChatOptions = {
    integrationID: "bab6bbae-ff5d-4127-a0bc-5cf329c9a2d4", // The ID of this integration.
    region: "eu-gb", // The region your integration is hosted in.
    serviceInstanceID: "78e0d3d3-322e-46c5-bf93-77f44e011e4f", // 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/loadWatsonAssistantChat.js";
    document.head.appendChild(t);
  });
</script>

</html>

```

[Note: Check out the Github link for more information.](#)

The End