



## Image Scraping and Classification Project

Submitted by:

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# **ACKNOWLEDGMENT**

The background information relating to the project has been provided by fliprobo as a part of the internship phase.

The data was collected from various websites to aid this project.

Related guidance has been provided by fliprobo for the completion of this project

## INTRODUCTION

- **Business Problem Framing**  
To build a deep learning-based Image Classification model on images that will be scraped from the e-commerce portal.
- **Conceptual Background of the Domain Problem**  
Images are one of the major sources of data in the field of data science and AI. This field is making appropriate use of information that can be gathered through images by examining its features and details.
- **Review of Literature**  
There is not much research performed as the Data and related information was provided by the source itself, which was been taken into consideration based on the information given by Flip Robo.
- **Motivation for the Problem Undertaken**  
The Project was assigned by flip Robo as part of the internship phase for better understanding the concept and getting the idea of the industry.

## Analytical Problem Framing

- Data Sources and their formats

900 images from each category from e-commerce portal, Amazon.com. The clothing categories used for scraping are:

- Sarees (women)
- Trousers (men)
- Jeans (men)
- .

- Data Pre-processing Done

The data is in folder format which has images in jpg format saved in form of category to perform ML

- Hardware and Software Requirements and Tools Used

The system with a 16-core processor has been used, the operating system was Windows 10, Anaconda 3 has been used for performing ML

Libraries:

```
import pandas as pd
```

```
import NumPy as np
```

```
import seaborn as sns
```

```
from keras.preprocessing.image import load_img, img_to_array
```

```
import matplotlib.pyplot as plt
```

```
import os
```

```
from keras.layers import Dense, Input, Dropout,  
GlobalAveragePooling2D, Flatten, Conv2D, BatchNormalization,  
Activation, MaxPooling2D  
  
from keras.models import Model, Sequential  
  
from tensorflow.keras.optimizers import Adam  
  
from sklearn.metrics import accuracy_score
```

## **Model/s Development and Evaluation**

- **Testing of Identified Approaches (Algorithms)**

CNN model has been used which gave 80% accuracy

4 convolutional layers

2 fully connected layers

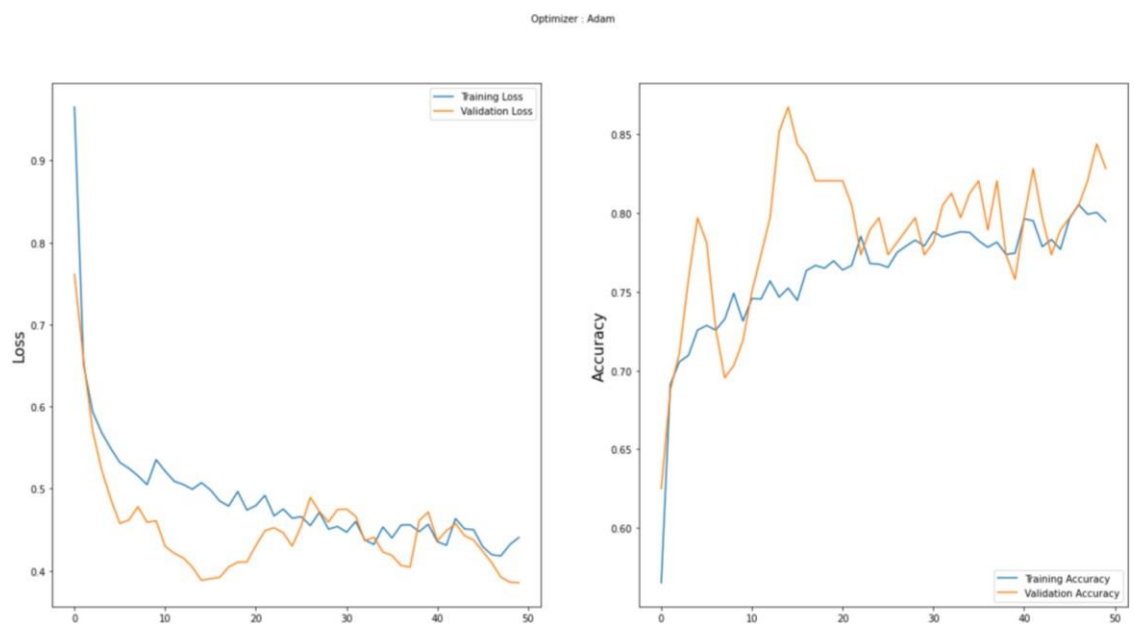
The convolutional layers will extract relevant features from the images and the fully connected layers will focus on using these features to classify well our images.

- **Visualizations**

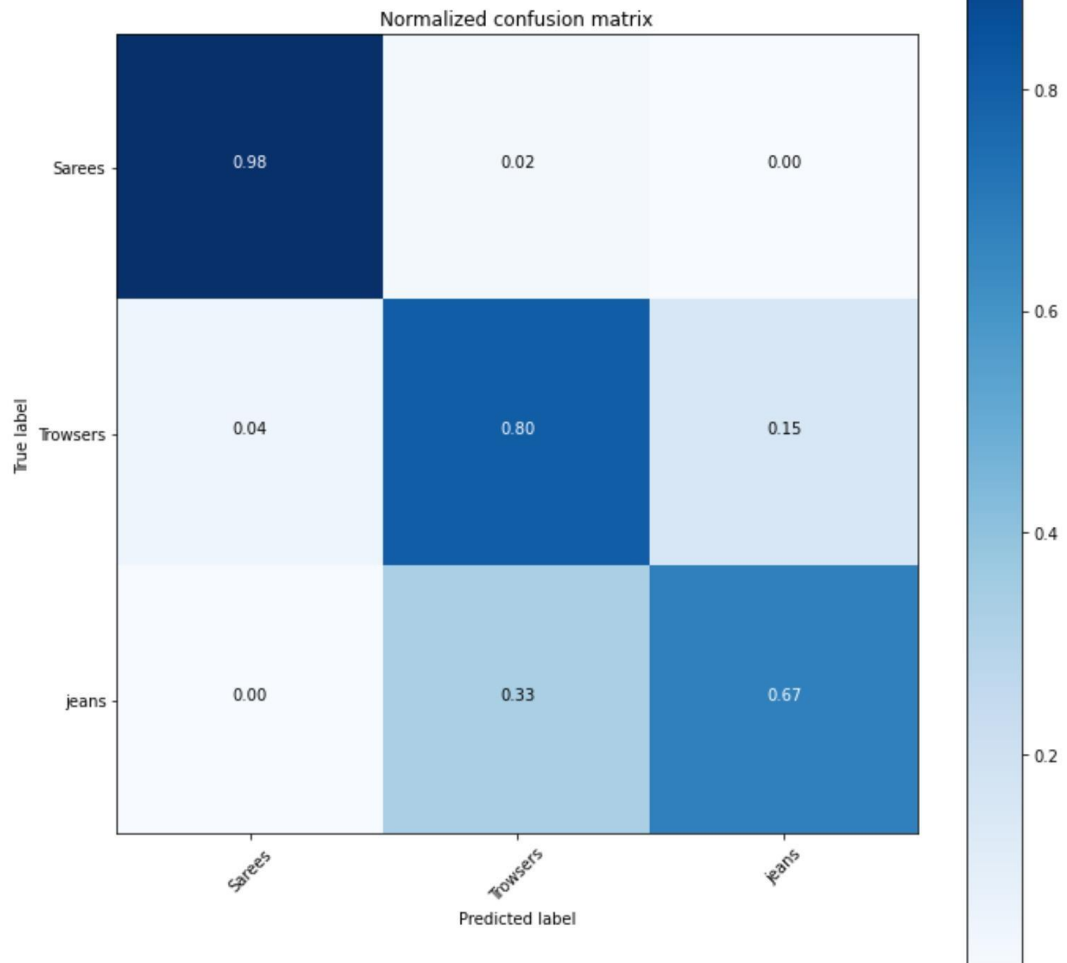
Random images from dataset



## Loss and Accuracy on the train and validation sets



## Confusion matrix



- Interpretation of the Results

CNN model has been used which gave 81% accuracy , accuracy score was used measuring accuracy between prediction and test label's

## CONCLUSION

- Key Findings and Conclusions of the Study

The model has a great performance for 80% accuracy. As the data wasn't simulated and has been extracted from real-world applications. The performance was quite reasonable

- Learning Outcomes of the Study in respect of Data Science

Adding more data and minor tweaks can improve the accuracy can help to increase the accuracy.

- Limitations of this work and Scope for Future Work

As per observation under random images, there was a point where the model confuses between Jeans and Trousers as the input images had some similar features which were considerably difficult to distinguish between to classes.