

Image Classification Project

Submitted by:

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**INTRODUCTION**

* Business Problem Framing

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. We are trying to give you an exposure of how an end to end project is developed in this field.

The idea behind this project is to build a deep learning-based Image Classification model on images that will be scraped from e-commerce portal. This is done to make the model more and more robust.

We have to make a Deep learning model by using some scraped images from amazon and predict the photo whether it is a saree or jeans or trouser.

* Motivation for the Problem Undertaken

In this project we are going to predict the photo label. Using some using some scraped images from amazon.

**Analytical Problem Framing**

* Mathematical/ Analytical Modeling of the Problem

In this model I used tensorflow opencv to convert the images into the numpy arrays.

* Data Sources and their formats

I have scraped all the images from amazon website using selenium web scraping. I have downloaded the images into jpg format.

Data includes the three categories sarees, trousers and jeans each category have 200 photos of each.

* Data Preprocessing Done

For making a good and efficient model data preprocessing must be done. In this process of deep learning model we read the jpg images into the python by using opencv and convert theses images into numpy array and use them from model building .

While reading data, we get data in the structured or unstructured format. A structured format has a well- defined pattern whereas unstructured data has no proper structure. In between the 2 structures, we have a semi-structured format which is a comparably better structured than unstructured format.

Cleaning up the text data is necessary to highlight attributes that were going to want our deep learning system to pick up on. Cleaning (or pre- processing) the data typically consists of a number of steps:

* Data Inputs- Logic- Output Relationships

The relation of output variable is directly related to the input variable. If input variable are good then the predicted output will also positive. More the input we provide to our model more the accuracy we get from our model.

* Hardware and Software Requirements and Tools Used

In this project I have used the jupyter notebook with python 3.8 for model preparation following libraries are used for this model:-

1. Numpy
2. Pandas
3. Tensorflow
4. Matplotlib
5. opencv
6. keras

**Model/s Development and Evaluation**

1. Identification of possible problem-solving approaches (methods)

In this model first I find the problem and start working for its solution. On the way to solution I decided to make a Classification model for this using Deep learning.

1. Testing of Identified Approaches (Algorithms)

In this model I used Deep learning CNN approach. CNN approach of deep learning is good at image classification. We made a neural network of images using CNN and make prediction using this model.

1. Key Metrics for success in solving problem under consideration

In this problem I am using classification model and use Accuracy Score for model selection.

**CONCLUSION**

1. Key Findings and Conclusions of the Study

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. In this project we collect the data from scraping and make them useable for reading the machine. The machine understands the data and make prediction about the data label.