FLIP ROBO

IMAGE CLASSIFIER

Submitted by:

Neha Kamath

ACKNOWLEDGMENT

I would like to take this opportunity to thank my mentors at FlipRobo Technologies for their guidance and support in the completion of this project.

Index

Table of Contents

INTRODUCTION

- Background

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.

This task is divided into two phases: Data Collection and Model Building.

.

Analytical Problem Review

- ## Analytical Modeling

  Here, we need to scrape images from the internet. The clothing categories used for scraping will be:

  - Sarees (women)

  - Trousers (men)

  - Jeans (men)

  We need to scrape images of these 3 categories and build our data from it. That data will be provided as an input to our deep learning problem. We need to scrape minimum 200 images of each categories. There is no maximum limit to the data collection. We are free to apply image augmentation techniques to increase the size of your data but make sure the quality of data is not compromised.

  Remember, in case of deep learning models, the data needs to be big for building a good performing model. More the data, better the results.

- ## Data Sources

  Our primary source of data for this project has been the image data collected from the internet. The training dataset includes a total of 150 images whereas testing includes 49.

- ## Hardware and Software Tools

  The libraries and packages we have used on this projected are listed below:

  - Data Processing- Numpy(numerical data wrangling), Pandas(data analysis)

  - Data Visualization- Matplotlib, Seaborn (graphical representations)

  - Text Processing- RegEx and Natural Language Toolkit libraries

  - Deep Learning- Fastai

Model/s Development and Evaluation

- ## Possible problem-solving approaches (methods)

  The target image folder contain three categories such as women sarees, mens jeans, and mens trousers. Hence, the logical approach to building a suitable prediction model is to use neural network CNN models.

- ## Testing of Identified Approaches (Algorithms)

  Use a pre-trained ResNet18 Convolutional Neural Net model, and use transfer learning to learn weights of only the last layer of the network.

- ## Performance of model

  Model performance can be validated in myriad ways. One of the popular methods is using the confusion matrix. Diagonal values of the matrix indicate correct predictions for each class, whereas other cell values indicate a number of wrong predictions.

CONCLUSION

- Key Findings and Conclusions of the Study

This was just a simple instance of image classification. There are many more complex modifications we can make on the images. For example, we can apply a variety of filters on the image and the filters use mathematical algorithms to modify the image. Some filters are really easy to use, while others require a great deal of technical knowledge..

.