IMAGE CLASSIFICATION PROJECT

Topics:

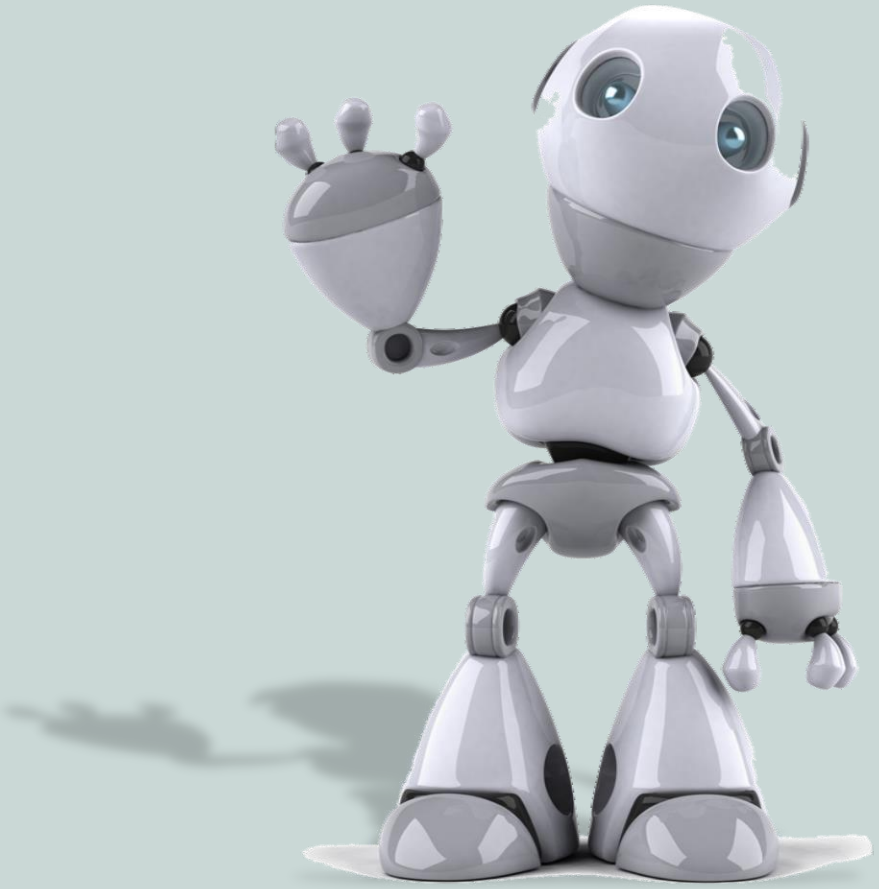
- Introduction
- Scope of Work
- Introduction to Dataset
- Context
- Libraries Used
- Working Flow of Project
- Frontend of Project

Introduction

- This project revolves around Machine Learning concepts like Data cleaning , Training and Testing of Models etc. This assignment presents an opportunity to apply these ML skills acquired during the course to a real world scenario, where understanding and predicting images is crucial for machine decision making.

SCOPE OF WORK

- Data Collection
- Data preprocessing
- Training Model
- Testing Model
- Interface designing
- Backend Designing
- Documentation
- Presentation



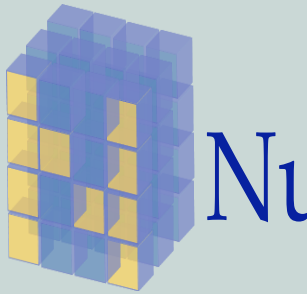
INTRODUCTION TO DATASET

	label	pixel1	pixel2	pixel3	pixel4	pixel5	pixel6	pixel7	pixel8	pixel9	...	pixel775	pixel776	pixel777	pixel778	pixel779	pixel780	pixel781	pixel782
0	2	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0
1	9	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0
2	6	0	0	0	0	0	0	0	5	0	...	0	0	0	30	43	0	0	0
3	0	0	0	0	1	2	0	0	0	0	...	3	0	0	0	0	1	0	0
4	3	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0
5	4	0	0	0	5	4	5	5	3	5	...	7	8	7	4	3	7	5	0
6	4	0	0	0	0	0	0	0	0	0	...	14	0	0	0	0	0	0	0
7	5	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0
8	4	0	0	0	0	0	0	3	2	0	...	1	0	0	0	0	0	0	0
9	8	0	0	0	0	0	0	0	0	0	...	203	214	166	0	0	0	0	0
10	0	0	0	0	0	1	0	0	0	0	...	164	177	163	0	0	1	0	0
11	8	0	0	0	0	0	0	0	0	0	...	9	10	9	9	8	1	0	0
12	9	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	...	0	0	0	0	0	0	1	0
14	2	0	0	0	0	1	1	0	0	0	...	0	0	118	190	162	82	0	0

15 rows × 785 columns

CONTEXT TO DATASET

- This Dataset is of Zalando's article images—consisting of a training set of 60,000 examples and a test set of 10,000 examples. Each example is a 28x28 grayscale image, associated with a label from 10 classes.
- Each image is 28 pixels in height and 28 pixels in width, for a total of 784 pixels in total and the pixel-value is an integer between 0 and 255.
- The training and test data sets have 785 columns. The first column consists of the class labels (see above), and represents the article of clothing. The rest of the columns contain the pixel-values of the associated image.
- Each row is a separate image
- Each value is the darkness of the pixel (1 to 255)



NumPy

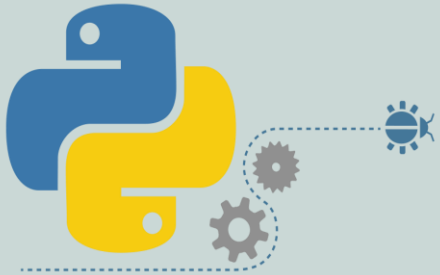
Pandas

matplotlib

Main Libraries Used are:

- NumPy
- Pandas
- Matplotlib
- Joblib
- Tkinter
- Sklearn

scikit learn



Working Flow of Project

- Step 1 : Load Dataset (Using Pandas)
- Step 2 : EDA Processing
- Step 3 : Data Cleaning (if required)
- Step 4 : Model Training and Model Testing (Using Logistic Regression Model)
- Step 5 : Import the Model (Using Joblib)
- Step 6 : Create a Frontend for Model (Using Tkinter)
- Step 7 : Working on Backend flow of Data
- Step 8 : Test the Project Working
- Step 9 : Publish and Share

Frontend Of Project

```python
def image_predictor(image_path):
    img = Image.open(image_path)
    resize_img = img.convert ("L").resize((28,28))

    img_array = np.array (resize_img)

    convert_to_oneD = img_array.flatten ()

    if convert_to_oneD.shape != (784,):
        predictor_result.config (text= f"The result is ")

    else:
        my_image = model.predict(convert_to_oneD.reshape(1,-1))
    return my_image


def upload_image ():
    # print ("Hello")
    filepath = filedialog.askopenfilename()

    myimg = Image.open(filepath)

    myimg.thumbnail((400, 400))
    img = ImageTk.PhotoImage(myimg)

    imgshow.config (image= img)
    imgshow.image = img

    result = image_predictor(filepath)
    predictor_result.config (text= f"The result is {items[result[0]]}")

app = tk.Tk()
```

Thank you

From :

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