A MINI PROJECT REPORT
ON
“IMAGE CLASSIFICATION SYSTEM”

BY

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GROUP 19

AIM :- Image classification website

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Chapter 1
Introduction

1.1
Purpose

Identify the product whose software requirements are specified in this document. Describe the scope of the product that is covered by this SRS, particularly if this SRS describes only part of the system or a single subsystem.Describe the different types of user that the document is intended for, such as developers, project managers, marketing staff, users, testers, and documentation writers.[3] Describe what the rest of this SRS contains and how it is organized. Suggest a sequence for reading the document, beginning with the overview sections and proceeding through the sections that are most pertinent to each reader type.

1.2
Project Scope

Recycling contamination occurs when waste is incorrectly disposed of — like recycling a pizza box with oil on it (compost). Or when waste is correctly disposed of but incorrectly prepared — like recycling UN rinsed jam jars. it becomes very difficult to recycle the waste the same goes to metals like iron , copper , aluminum etc. and e-waste like mobiles , computers and circuits if we somehow manage to profile them in write time then we can easily recycle them and also sell to any recycling Industries.

1.3
1.3.1
Project Goals and Objectives

Goals

1. Building an image classifier We'll train a convolutional neural network to classify an image as either cardboard, glass, metal, paper, plastic, or trash with the Tensorflow library, Our modeling pipeline: 1. Organize the images into different folders 2. Train model 3. Make and evaluate test predictions.

1.3.2

Organize images into different folders

We split images up into train, validation, and test image folders with a 50–25–25 split. Next, We to create a bunch of destination folders according to the Image Net directory convention. This means it will have an outer folder (we called it data) with three subfolders: train, validation, and test. Within each of those folders, there is a folder named cardboard, glass, metal, paper, plastic, and trash.

1.3.3 Objectives

1.3.4 What is resnet34?

A residual neural network is a convolutional neural network (CNN) with lots of layers. In particular, resnet34 is a CNN with 34 layers that's been pretrained on the ImageNet database. A pretrained CNN will perform better on new image classification tasks because it has already learned some visual features and can transfer that knowledge over (hence transfer learning).

1.3.5

Finding a learning rate

We find a learning rate for gradient descent to make sure that my neural network converges reasonably quickly without missing the optimal error

1.3.6

Image Classification:-

Image classification is a complex procedure which relies on different components. Here, some of the presented strategies, issues and additional prospects of image orders are addressed. The primary spotlight will be on cutting edge classification methods which are utilized for enhancing characterization precision. Moreover, some essential issues, identifying with grouping execution are additionally

Chapter 2
System Design

5.1

System Requirements Definition

In this module the data that is retrieved for Profiling, The main aim of Data Cleaning is to identify and remove errors duplicate data, in order to create a reliable data-set. This improves the quality of the training data for analytic and enables accurate Decision-making.

5.1.1

Functional requirements

In this module we are going to implement the machine learning, we are going to train the given data set using our algorithm and then extract the knowledge. the extracted knowledge will be converted into certain file format such as JSON. The elements of module are explained below

5.1.2

Data Preprocessing

It is a technique that is used to convert the raw data into a clean data set. In other words, whenever the data is gathered from different sources it is collected in raw format which is not feasible for the analysis.

5.1.3

Training data set

It is the one used to train an algorithm to understand how to apply concepts such as neural networks, to learn and produce results. It includes both input data and the expected output

5.1.4

Test data set

It is used to evaluate how well your algorithm was trained with the training data set. In AI projects, we can't use the training data set in the testing stage because the algorithm will already know in advance the expected output which is not our goal.

5.1.5
Machine Learning algorithm

Machine learning algorithms are programs (math and logic) that adjust themselves to perform better as they are exposed to more data. The “learning” part of machine learning means that those programs change how they process data over time, much as humans change how they process data by learning.

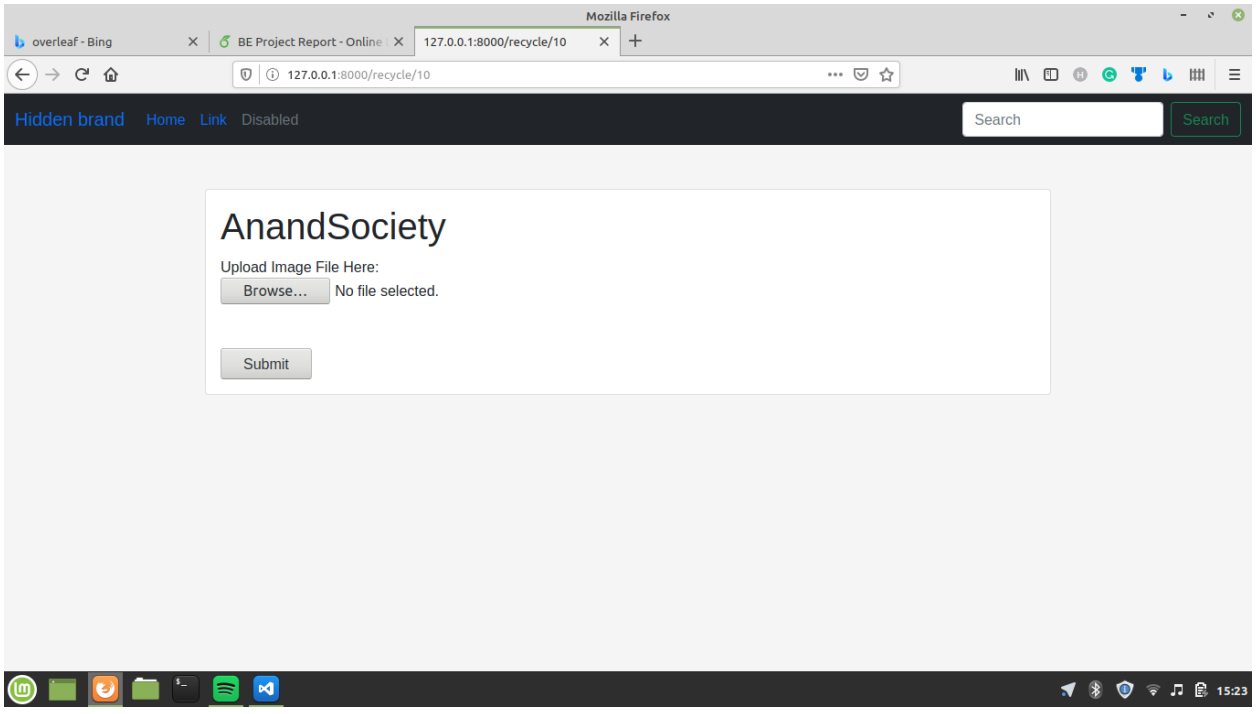
5.1.6
Knowledge extraction

Machine learning deals with understanding intelligence for the design and development of algorithms that can learn from data and improve over time. The original definition was “the artificial generation of knowledge from experience”. The challenge is to discover relevant structural patterns and/or temporal patterns (“knowledge”) in such data.

Chapter 3
Implementation

6.1
Image classification algorithm

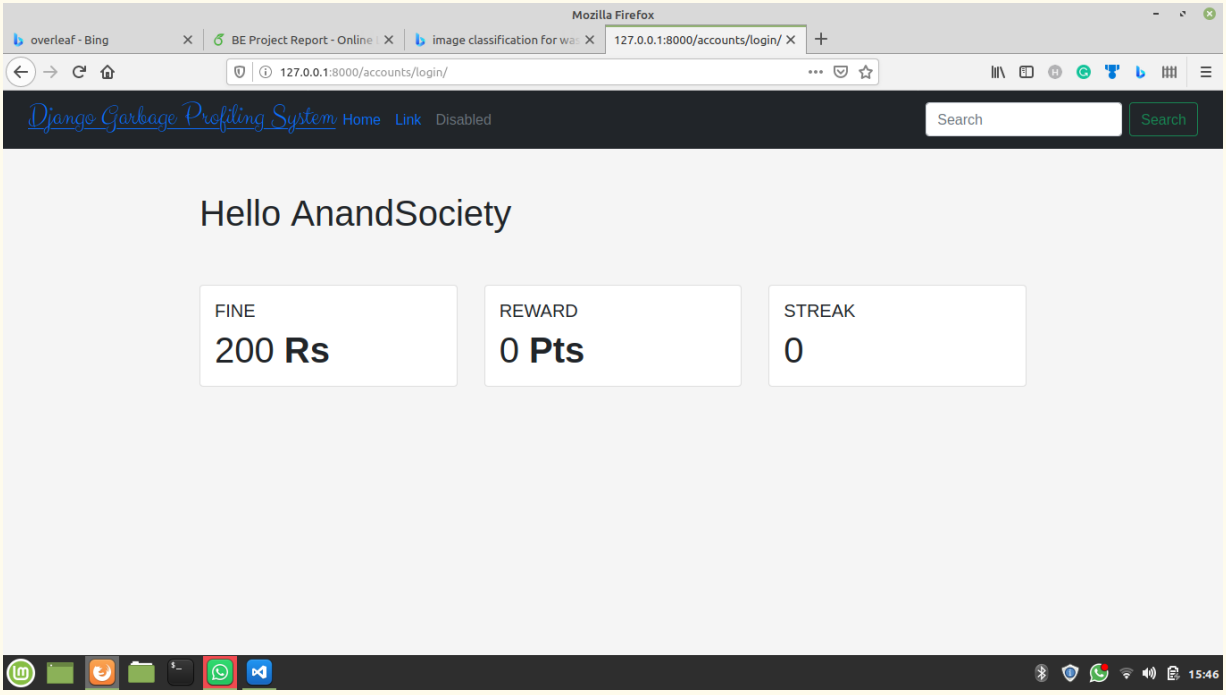
The image classification algorithm uses tensorflow framework, which was created by google. It uses libraries such as numpy matplotlib, keras .
The algorithm was trained with 5000 images, The size as dataset was increased by using process image augmentation(flipping image ,rotating image right etc).

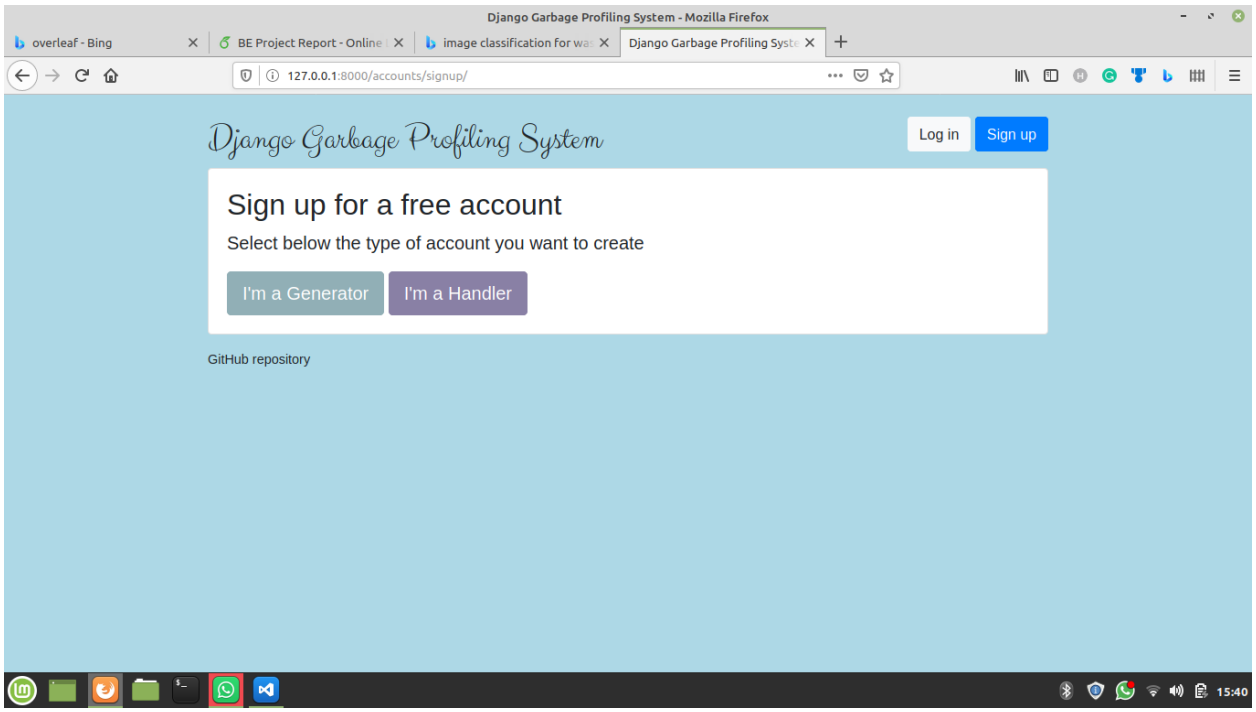


6.2
Login and Registration

Users input their credentials on the website's login form. That information is then sent to the authentication server where the information is compared with all the user

credentials on file. When a match is found, the system will authenticate users and grant them access to their accounts.
Django provide us with an easy to use authentication system ,the system is password based authentication. In registration process user need to provide necessary information such as (e-mail,phone,name ,username).

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Log in
Sign up
Sign up for a free account
Select below the type of account you want to create
I'm a Generator
I'm a Handler
GitHub repository
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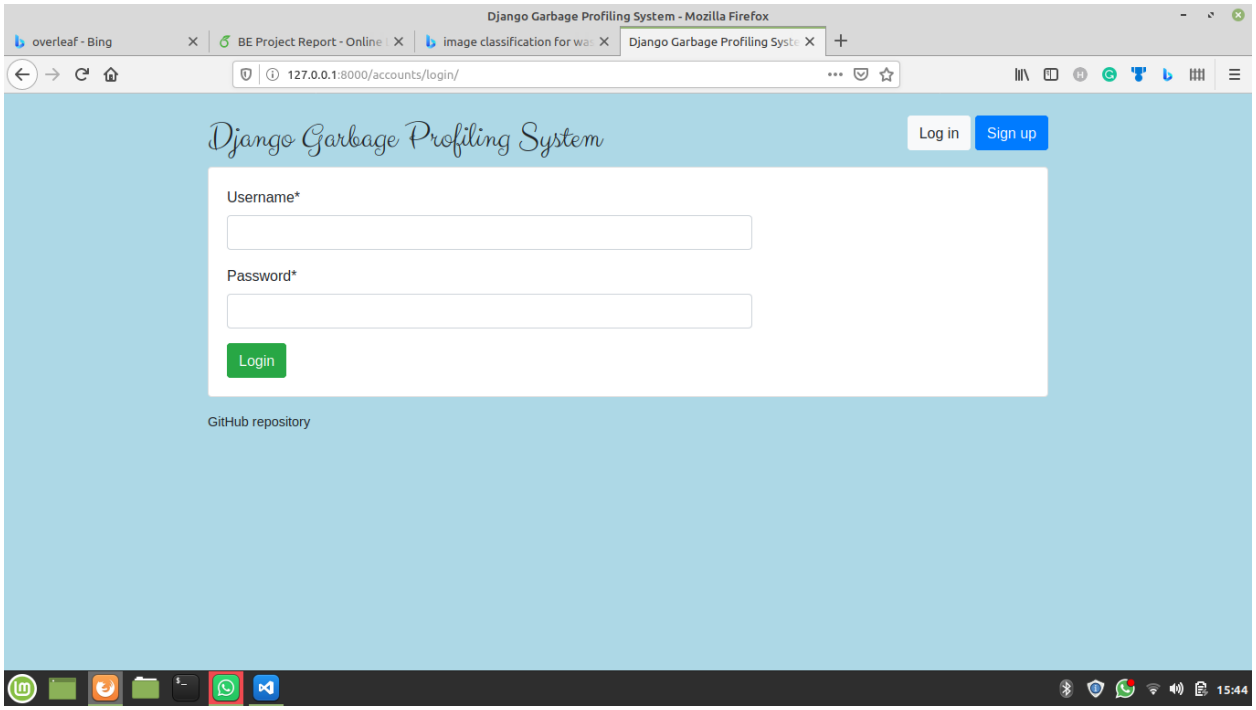
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Log in
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