

Configuration Manual

MSc Research Project Data Analytics

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MSc Project Submission Sheet



School of Computing

Student Name:	Sugandha Sharma		
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Project Title:	Approach		Deep Learning
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Configuration Manual

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1 Introduction

This manual tells the detailed description on setting up a system on the device. The steps involve the setting of applications and packages required for the research project. The instructions of the entire steps will help to configure and optimize the system to meet the requirements of project. It involves the specifications of the system, software's, libraries, models that are used for the research project.

2 File Details

The Google Collab is used for data preparation and Jupyter notebook is used for evaluation and pretrained models.

3 System Specification

This section tells the configuration of the system. It tells the technical specification of the system. 8 GB of RAM would be appropriate to get the desired results. However, as my dataset was large so I have taken Google Collab Pro subscription.

The Mac specification is given in Figure:1

	MacBook Air
Hardware Overview:	
Model Name: Model Identifier: Model Number: Chip: Total Number of Cores: Memory: System Firmware Version: OS Loader Version: Serial Number (system): Hardware UUID: Provisioning UDID: Activation Lock Status:	MacBook Air Mac14,2 MLY13LL/A Apple M2 8 (4 performance and 4 efficiency) 8 GB 8419.80.7 8419.80.7 CRF77HFW7L 6800117E-B9A4-5BB3-AC90-7D2F7265FA7B 00008112-000C588C1EA3401E Enabled

Figure 1: Mac Specification

Google Collab Specification is shown is Figure 2.



Figure 2: Google Collab Specification

Software's 4

The software used are:

- Google Collab: Data Preparation and Refining •
- Jupyter Notebook: For evaluation and pre trained models. •

5 **Download and Install**

First, Python need to be installed. Jupyter Notebook comes in Anaconda Navigator. Initial step is to write a python code in Jupyter file. Google Collab is required for GPU. The anaconda image is given in Figure 3.



Figure 3: Anaconda Navigator

6 Project Related

During this research many packages, libraries and pretrained models need to be installed to get the results.

6.1 Importing Libraries

The library is imported from google drive. It becomes easier to download the large datasets. This method improves user convenience while allowing access to large datasets for research or study. The drive mounting is given in Figure 4.



Mounted at /content/drive

Figure 4: Mounting drive

Once the file is mounted the video datasets are read and can be utilized for further analysis.

6.2 Importing Files

There are some file references require to be declared to run the code. Many libraries such as NumPy, pandas, matplotlib, seaborn for plotting graphs, deepface models for detecting the facial emotions need to be initialized for running the code.

File libraries are in Figure 5 and Figure 6

```
import cv2
from deepface import DeepFace #Deep Face model us
import numpy as np
import argparse
import imutils
import sys
```

Figure 5

Figure 6

Pytorch package is also required so need to install. It improves the system's capabilities to provide the tools and functionalities required for efficient deep learning and machine learning activities. It is shown in Figure 7

[] !pip install facenet-pytorch
Collecting facenet-pytorch Downloading facenet_pytorch-2.5.3-py3-none-any.whl (1.9 MB)
<pre>.1.9/1.9 MB 16.3 MB/s eta 0:00:00 Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (from facenet-pytorch) (1.23.5) Requirement already satisfied: requests in /usr/local/lib/python3.10/dist-packages (from facenet-pytorch) (2.31.0) Requirement already satisfied: torchvision in /usr/local/lib/python3.10/dist-packages (from facenet-pytorch) (0.16.0+cu118) Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from facenet-pytorch) (0.16.0+cu118) Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests->facenet-pytorch) (3.3 Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests->facenet-pytorch) (3.3 Requirement already satisfied: cartifiz=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests->facenet-pytorch) Requirement already satisfied: torch=2.1.0 in /usr/local/lib/python3.10/dist-packages (from torchursion->facenet-pytorch) Requirement already satisfied: torch=2.1.0 in /usr/local/lib/python3.10/dist-packages (from torch=2.1.0->torchvision->facenet-pytorch) Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-packages (from torch=2.1.0->torchvision->facenet-pytorch) Requirement already satisfied: sympy in /usr/local/lib/python3.10/dist-packages (from torch=2.1.0->torchvision->facenet-pytorch) Requirement already satisfied: fspec in /usr/local/lib/python3.10/dist-packages (from torch=2.1.0->torchvision->facenet-py Requirement already satisfied: fspec in /usr/local/lib/python3.10/dist-packages (from torch=2.1.0->torchvision-></pre>
Successfully installed facenet-pytorch-2.5.3

Figure 7: PyTorch Package

6.3 Processing and Modelling

Data processing and Modelling takes place in Google Collab. Data cleaning, addressing missing values, encoding categorical variables, scaling numerical features, and dividing the dataset into training and testing sets are all included in this step. The data processing is taking place in Figure 8.



Figure 8: Pre-processing Dataset

Modelling : The selected model is trained using the training dataset, and its parameters are adjusted to identify patterns and relationships in the data. The model is tested on a different testing dataset after training to determine how well it applies. The dataset is split into train and test dataset in Figure 9



Figure 9: Modelling of dataset

There are some pretrained model used in the program for which few files need to be installed before running the code.



References

Bisong, E. (2019). Building machine learning and deep learning models on Google cloud platform: A comprehensive guide for beginners, Apress.