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User Manual
Introduction to Machine Learning Project

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Contents

1. Python Version and Interpreter

The Python version and interpreter used for this project is version 3.10.0 .

2. Installing Necessary Libraries and Packages

2.0.1. gui.py

The necessary packages for the gui.py file are:

```
from tkinter import filedialog
from tkinter import messagebox
from ttkthemes import ThemedTk, ThemedStyle
from tkinter import ttk
from program_functions import process_webcam, set_age_model,
process_images, process_video
```

Their corresponding install commands are:

```
pip install ttkthemes
pip install mediapipe
pip install keras
pip install facenet-pytorch
```

2.0.2. program_functions.py

The necessary packages for the gui.py file are:

```
import os
import cv2
import numpy as np
from keras.models import load_model
import mediapipe as mp
from facenet_pytorch import MTCNN
```

Their corresponding install commands are:

```
pip install opencv-python
pip install numpy
pip install keras
pip install mediapipe
pip install facenet-pytorch
```

The version of keras and tensorflow used in this project is 2.15.0 and the version of facenet-pytorch is 2.5.3 .

2.0.3. Model Trainer

The breakdown and in-depth documentation of the model trainer will be found on the file model.ipynb which talks through the setup and background knowledge of the entire model trainer.

3. Instructions for Running Program

Place the gui.py file and the program_functions.py on the same python project. The Python IDE used to develop this application was Pycharm. The gui.py is the python file to run to interact with the for running the entire age prediction model. On running the this file the application opened will give you the option to :

- Process Webcam
- Process Video
- Process Images
- Select a Model

The user should begin with selecting a model (.h5/.keras) file from their local pc before selecting either of the processing use case scenarios.

3.1. Process Webcam

Selecting the Process Webcam option opens up a secondary window to show the live webcam feed which uses the selected age model to make predictions.

Pressing 'q' on the keyboard quits the window that opens up.

3.2. Process Video

When the process video button is clicked the program opens up a file dialog box for you to select a video file from your local PC to set as the input. After clicking Open you can select where you want to save the output video file and its name. After processing the video the program opens up a secondary window that runs the age prediction model on the selected video.

Pressing 'q' on the keyboard quits the window that opens up.

3.3. Process Images

When the process images button is clicked the program opens a file dialog box where you have to first select the input directory containing images that you want to process. Next, you need to select the output directory. This is followed by the processing step after which the selected output directory will contain the images from the input directory with bounding boxes and an age prediction made over them.

3.3.1.

Directory Requirements The image directory selected for processing images should contain files of formats like jpg, jpeg or png.