

Automated Facial Expression Recognition using Artificial Neural Networks



Team members



member 1:Alaa Fouad

id:20210169

member 2: Ahmed Mahmoud

id:20210116

member 3:Amr Gamal

id:20210636

member 4:Alaa Hamdy

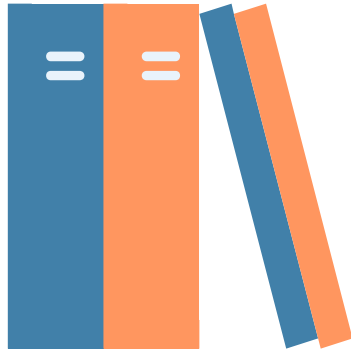
id:20210167

member 5:Fatma Mohammed

id:20210666

member 6:Israa Hossam

id:20210150



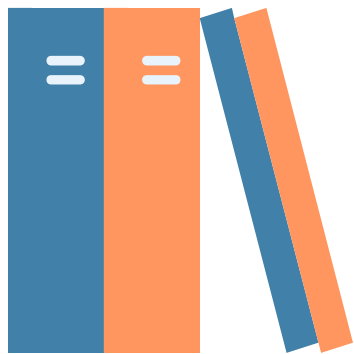
project idea and overview

Facial expression recognition is the task of classifying the expressions

on face images into various categories such as

anger, fear, surprise, sadness, happiness and so on.
Emotional facial

expressions can inform researchers about an
individual's emotional state.



02

Application similar to the project

Applications similar to the project

1



EQally
EQally
In-app purchases

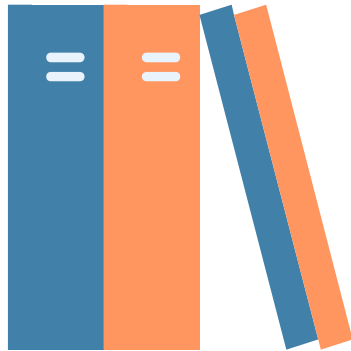
This app is developed by experts to help you to improve your emotional intelligence by learning, practicing and competing with others in micro-expression recognition.

3



Emotion Detector
Speckpro Digital

Boost emotional awareness with our cutting-edge Emotion Detector mobile app!



A Literature Review of Academic publications

•Papers

*Facial expression recognition using artificial neural networks

M Gargesha, P Kuchi, IDK Torkkola

Artif Neural Comput Syst, 1-6, 2002

"[https://scholar.google.com/scholar?](https://scholar.google.com/scholar?lookup=0&q=Automated+Facial+Expression+Recognition+using+Artificial+Neural+Networks.&hl=ar&as_sdt=0,5#d=gs_qabs&t=1702485068756&u=%23p%3DlGJ6fQ0Wg60J)

[lookup=0&q=Automated+Facial+Expression+Recognition+using+Artificial+Neural+Networks.&hl=ar&as_sdt=0,5#d=gs_qabs&t=1702485068756&u=%23p%3DlGJ6fQ0Wg60J](https://scholar.google.com/scholar?lookup=0&q=Automated+Facial+Expression+Recognition+using+Artificial+Neural+Networks.&hl=ar&as_sdt=0,5#d=gs_qabs&t=1702485068756&u=%23p%3DlGJ6fQ0Wg60J)"

*Automatic facial expression recognition system using Neural Networks

Shen-Chuan Tai, KC Chung

TENCON 2007-2007 IEEE Region 10 Conference, 1-4, 2007

"[https://scholar.google.com/scholar?](https://scholar.google.com/scholar?lookup=0&q=Automated+Facial+Expression+Recognition+using+Artificial+Neural+Networks.&hl=ar&as_sdt=0,5#d=gs_qabs&t=1702485137869&u=%23p%3Dxw9YKfUggfUJ)

[lookup=0&q=Automated+Facial+Expression+Recognition+using+Artificial+Neural+Networks.&hl=ar&as_sdt=0,5#d=gs_qabs&t=1702485137869&u=%23p%3Dxw9YKfUggfUJ](https://scholar.google.com/scholar?lookup=0&q=Automated+Facial+Expression+Recognition+using+Artificial+Neural+Networks.&hl=ar&as_sdt=0,5#d=gs_qabs&t=1702485137869&u=%23p%3Dxw9YKfUggfUJ)"

•Books

1-Neural Networks Made Simple

Basics and Applications of Neural Networks with Extra Chapter:

ChatGPT and Language Processing

2-Neural Networks

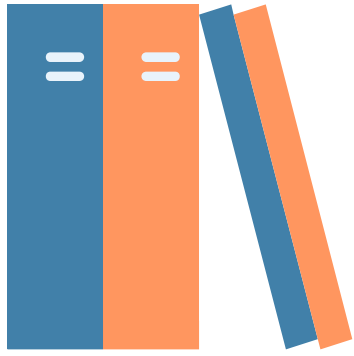
A Pathway To Deep Learning, Machine Intelligence, and Machine

Learning

3-Artificial Neural Networks

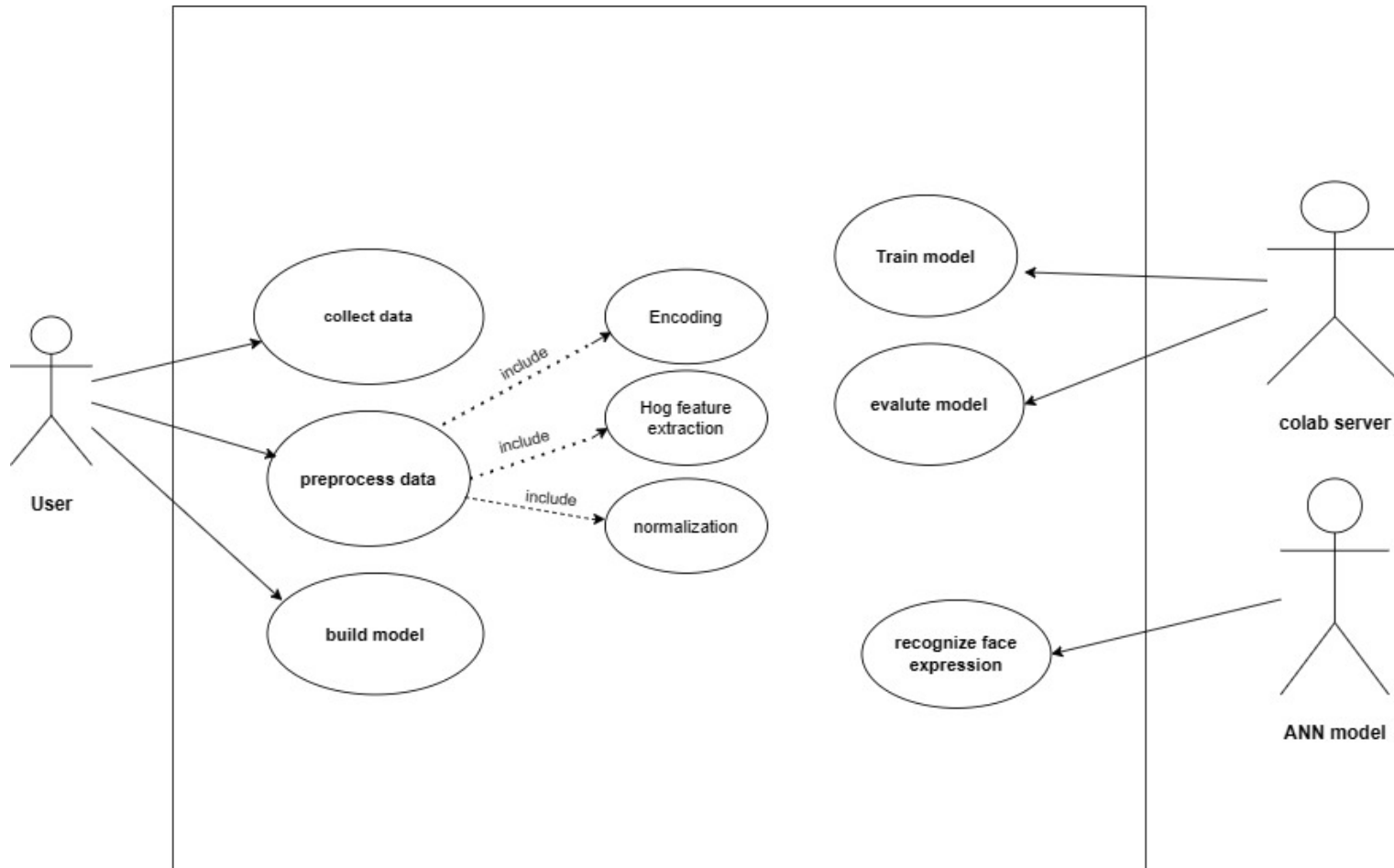
A Practical Course

Springer



04 Diagrams

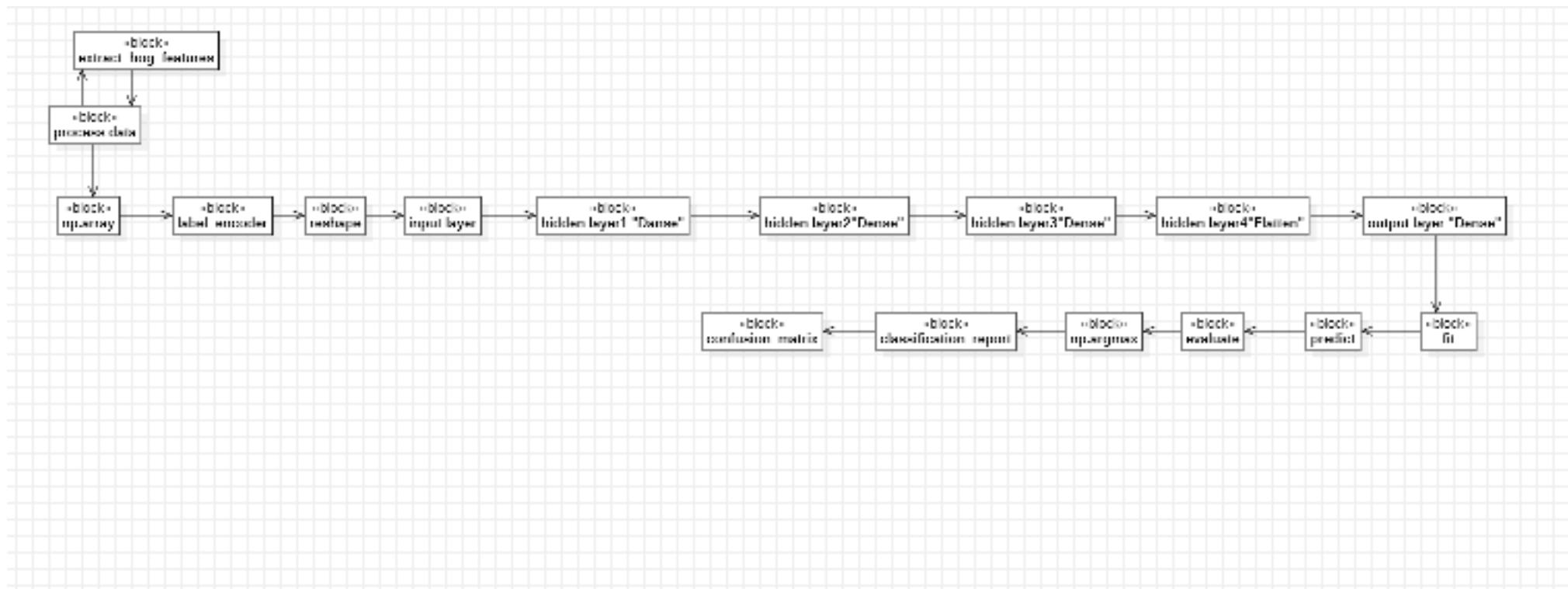
Use - case diagram



Block diagram



Block diagram



Flowchart



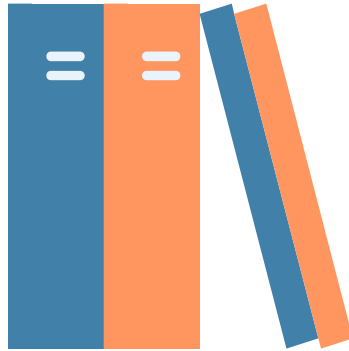


About dataset

The data consists of 48x48 pixel grayscale images of faces. The faces have been automatically registered so that the face is more or less centred and occupies about the same amount of space in each image.

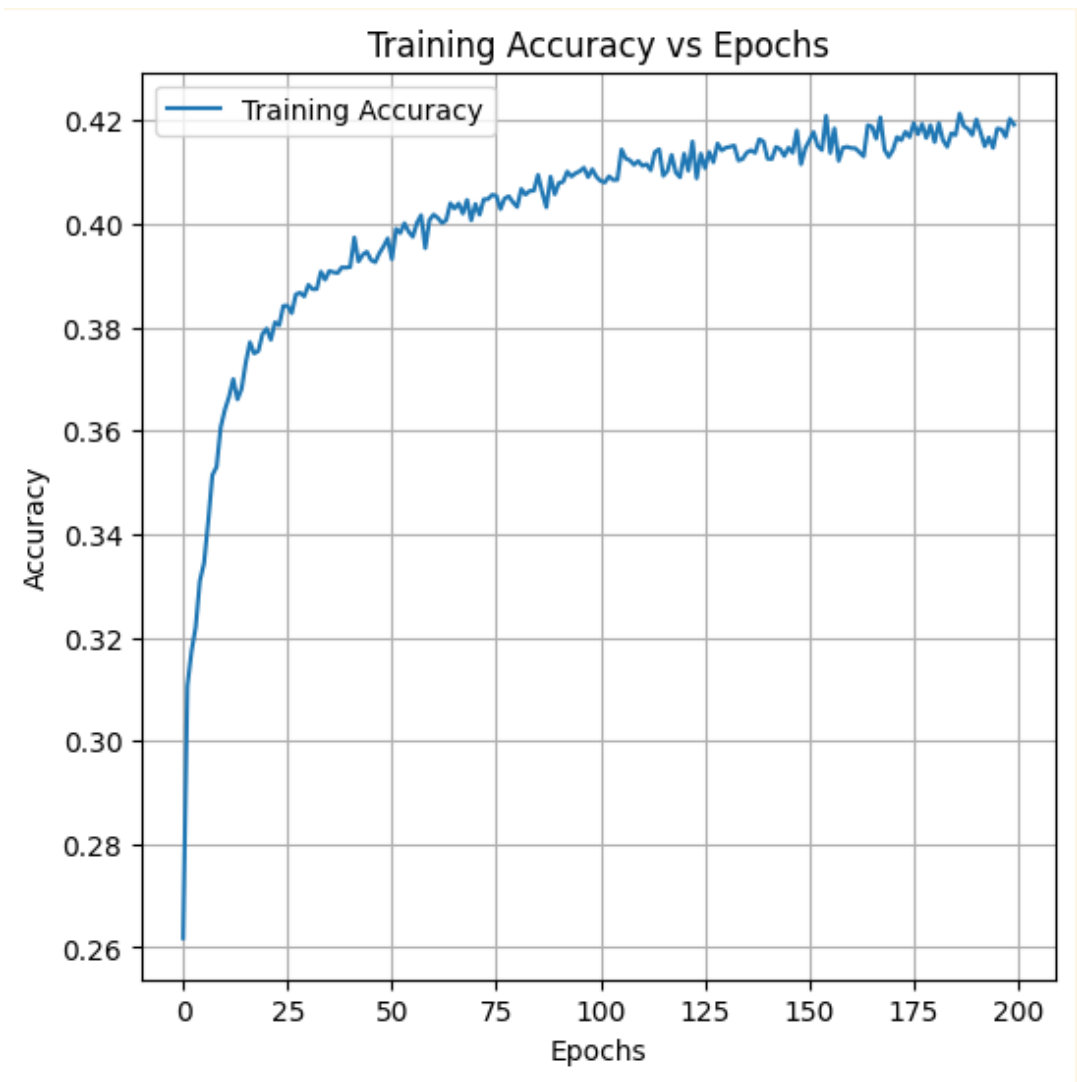
The task is to categorize each face based on the emotion shown in the facial expression into one of seven categories (0=Angry, 1=Disgust, 2=Fear, 3=Happy, 4=Sad, 5=Surprise, 6=Neutral). The training set consists of 28,709 examples and the public test set consists of 3,589 examples.

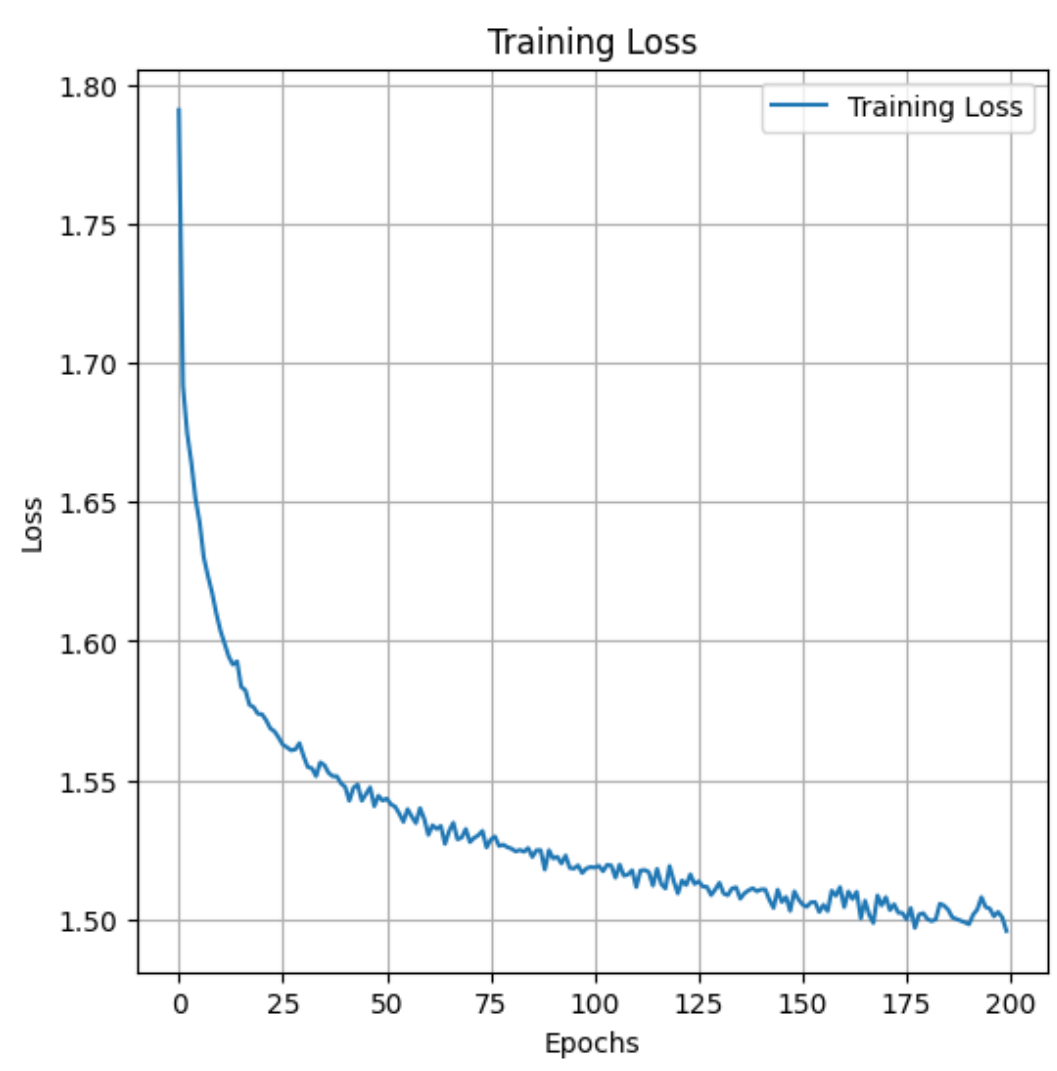
<https://www.kaggle.com/msambare/fer2013>

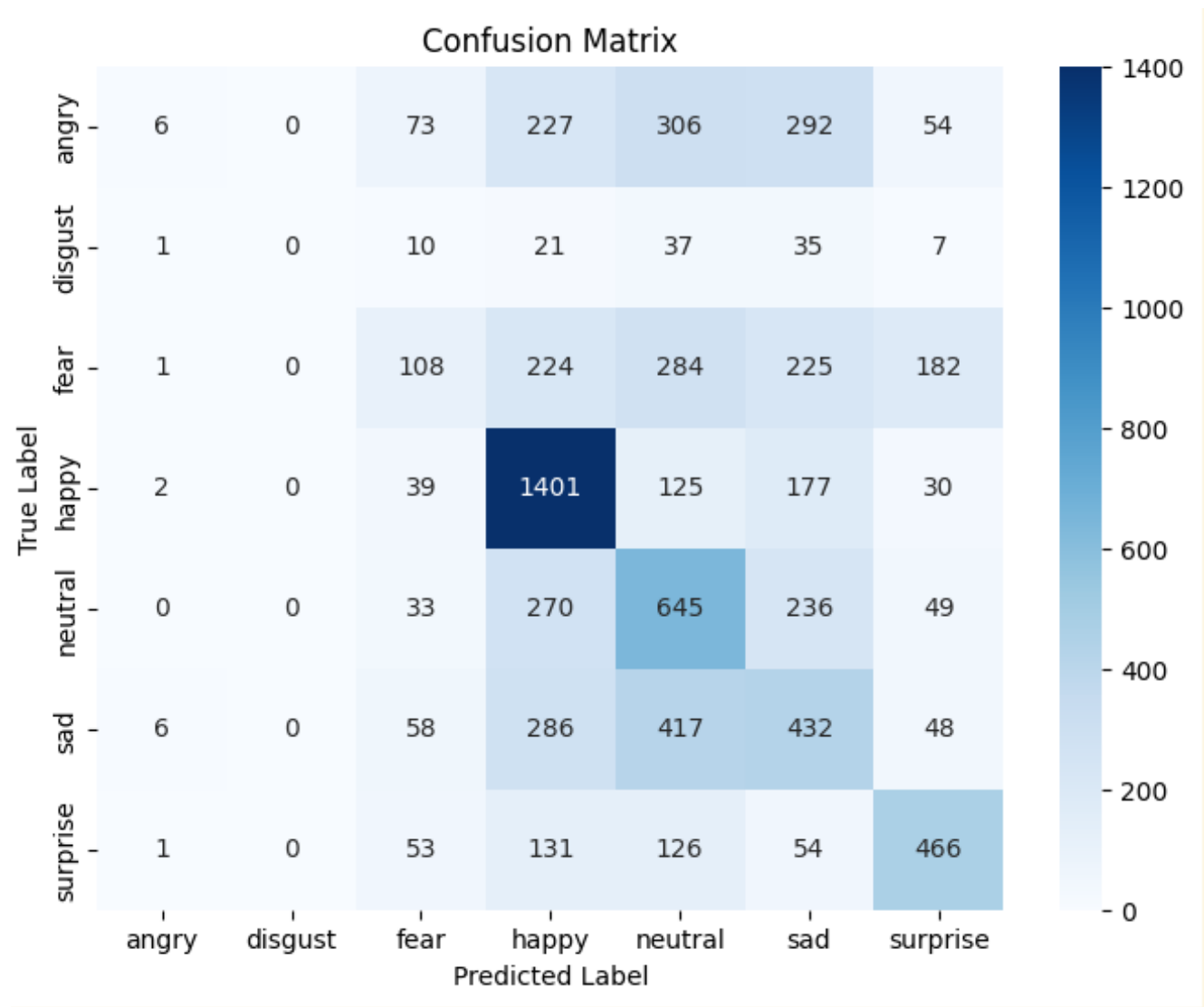


06

Plots that explain the experiments and testing



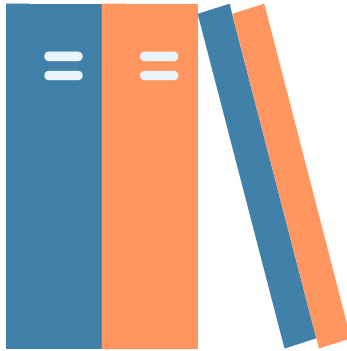






Used Libraries

.numpy
.matplotlib.feature
.skimage
.os
.sklearn
.keras
.warning
.seaborn



08

the behavior of the algorithm

- .read the images from dataset then call "extract _hog_feature" function which convert the images to gray cycle images and appplay HOG feature extraction to the images
- .store the modified images in four lists "train_feature_list, train_labels_list, test_feature_list , test_labels_list"
- . convert the four lists to numpy array
- .encode the labels of train and test labels lists
- .reshape the feature of train and test features lists
- .apply the ANN model to the training data
- .fit the training data
- .save the model
- .predict the test data

Project Link:

<https://github.com/AmrrGamal/AI-Project>

Thank You

