EMOTION DETECTION USING GOOGLE API

BY

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This Report is presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled " **Emotion detection using Google API**" submitted by **Adil hasan** ID No: 201-15-3159 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial Fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 19/01/2023

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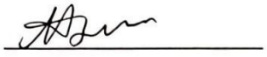

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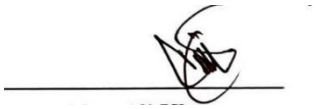

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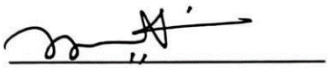

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Dr. S.M. Aminul Haque, Associate Professor,** Department of CSE Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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Finally, we must acknowledge with due respect the constant support and patience of our parents.

ABSTRACT

With artificial intelligence, we can detect faces. It is a medium in which people's attitudes are expressed through their mouths and can be expressed in the program with artificial intelligence. It is also possible to express the age of people through artificial intelligence. When we go to the hospital, we can recognize its facial features and publish its age and facial gestures in the form of reports. The features of a man's face, such as his eyes and lips, express his attitude. We can detect emotion by detecting landmarks. I can convert analog data to digital data through emotion detection. Through the gestures and movements of the people, his emotions are expressed through the fact that we can understand their mind and also guess what is going on by the expression of people's mouths during immigration. Early treatment becomes important when a comatose patient is hospitalized. And this project of mine will come in handy to determine her age and gender at that time. This project uses landmark detection of face to perform age detection which is very sophisticated. Landmark detection works by determining the eye-to-nose distance and the nose-to-lip distance. It also helps in determining the age of older and younger children

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CHAPTER 1

Introduction

1.1 Introduction

The touch of modern technology has greatly affected our world, artificial intelligence being one of them. We can do many tasks very easily with artificial intelligence. Facial recognition is a part of facial pattern recognition that uses image processing to automatically detect human gestures. Human emotion detection is a subject that expresses human emotions in the form of images. It can take the data from the image, analyze it, and publish it in the form of a report. What we can use facial recognition for In the medical profession, to identify criminals, one must determine age. When a person is sad, it is processed by image processing to express the facial expression as sad; if a person is surprised, it is expressed as a surprise; and sometimes, if a person is crying, it can be expressed as a cry. The main thing is to recognize human gestures through facial recognition. It is usually revealed that it is a wonderful invention of computer technology that uses facial landmarks by processing images to recognize the face. Emotion detection is a method that can express different facial expressions of different people and it is very good. This system still works when the dimensions of the human face are crooked. Basically, emotion detection can detect each person's emotions separately, and this method works by segmenting landmarks on the face of a person. Which is usually not seen in any other project. In the field of computer communication, this project can further enhance human work. When person is hospitalized, some information is needed, such as age and sex, the doctor spends a lot of time, but through my project, the doctor's time can be reduced. Every human's emotions are expressed through their faces, and we can convert those emotions into machine learning. Artificial Intelligence Human Emotion Detection is a project through which people can express their thoughts in machine language. It is capable of automatic age detection and gender detection Through this project of mine, the age of children can be determined very easily. Emotion detection is a technique that can help identify thieves. As we change our facial expressions, our facial expressions also change, and these subtle changes can be exposed through this project. We can use this project to check how people feel.

1.2 Motivation

Age and emotion can be detected very easily through facial recognition. When we go to the doctor, a lot of time is wasted trying to understand his age and normal facial recognition, but if an artificial intelligence facial recognition system is set up there, then maybe the doctor's precious time is reduced. can come, and if the immigration office has a facial recognition system, it can help a lot in identifying criminals.

1.3 Objective

Artificial intelligence is a means to automate many tasks to make them easier. Facial recognition is one of them. We usually map people's faces to see their gestures. However, if a machine is attempted to understand human gestures, it will fail miserably; however, through artificial intelligence, human facial gestures can be easily understood like any other. If he cries, our system detects his facial landmarks. It can easily interpret its crying by detecting movements of the eyes and lips if people show anger by expressing it through angry reactions, or if people are surprised. It can easily interpret its crying by detecting movements of the eyes and lips if people show anger by expressing it through angry reactions, or if people are surprised. reveal themselves in the form of surprises.

1.4 Expected Outcomes

Emotion detection can be used to detect offenders using landmark detection. which is one of the inventions of artificial intelligence that helps identify criminals by detecting facial landmarks when a criminal wants to cross an immigration border. A lot of time is wasted while seeing the patient in the doctor's chamber to get the age and gender list, but it can be done very easily using artificial intelligence-based emotion detection, and gender detection is one of the ways of artificial intelligence. If the information obtained automatically through it. [1]

1. Age detection
2. Gender detection
3. Land mark detection
4. Emotion detection
5. User friendly
6. Reliable and secure

1.5 Research Questions

We encountered various questions during the course of our investigation. Among the questions were:

- Which developer platform would you pick?
- Which facial regions will be used to develop?
- Can it capture images from both saved and immediate images?
- Can it make advantage of the front and back cameras?
- Can more than one face be detected?
- Can it produce a result that is 100 percent accurate?
- Which method is applied for gathering data?
- Is there a distinct database for each type of emotion?

1.6 Report Layout

Chapter 1: Introduction

I will discuss Introduction Motivation Objectives and Expected Outcomes in this chapter.

Chapter 2: Background

In this chapter I will discuss related work comparative analysis diff analysis scope of the problem and any kind of challenge. And compare it with other projects which will help me in project analysis.

Chapter 3: Requirement Specification

In this chapter I have done some implementation and from where I collected the data set and worked on the project through some software then I will discuss about use case model and data collection method.

Chapter 4: Design Specification

In this chapter I will discuss about front end design and back end design and also about input process and output process. Which will help a lot in my project analysis and make work easier

Chapter 5: Implementation and Testing

In this chapter, I will discuss some of the human research that I have implemented and conducted, as well as the experimental results analysis.

Chapter 6: Summary and Conclusion

In this chapter I will discuss the summary and conclusion of the entire project

CHAPTER 2

Background

2.1 Introduction

In this chapter, I will give an overview of the apps. I have worked with And with this, I will also show how emotion detection works. And contrast with others to demonstrate that my project is superior to theirs. In general, emotion detection is based on facial movements and landmarks. A person's face expresses his or her mind, which we can guess a little bit with the naked eye, but when this is explained to the computer, some algorithms have to be arranged, and this is how emotion detection works. I will usually work with a website that has already done this. I think I will try something new by looking at some apps that have worked on human emotion detection before and comparing my work with theirs so I can understand how

2.2 Related works

I compared it with some external apps to check its feasibility in my project. Below are the errors I have seen and some of the apps are name [2]

1 SkyBiometrys [3]

2 Face++ [4]

3 CrowdEmotions [5]

4 FaceMetrics [6]

5 Vision AI [7]

6 Bitext [8]

2.3 Comparative Analysis

- Facial recognition technology has improved dramatically over the past few years. In the latest round of testing conducted by the National Institute of Standards and Technology (NIST) in March 2020, showed that the best face identification algorithm had an error rate of just 0.08%. In 2014, the leading algorithm had an error rate of 4.1%. [9]
- NEC's face recognition system placed first in the 2018 Face Recognition Vendors Tests (FRVT) run by NIST, earning an error rate of below 0.5% — a considerable increase from 2014 and the jump again in 2020. [10]

- NIST discovered that more than 30 algorithms in the 2018 testing had accuracy levels higher than the greatest performance attained in 2014. In a time when we are transitioning to a more contactless society due to the COVID-19 epidemic, the ongoing research and development of face recognition technology is helping to build more use cases for the technology and contributes to these increases in overall accuracy.
- under ideal circumstances, facial recognition systems achieve virtually perfect accuracy, reaching a 99.97% recognition accuracy level. Perfect conditions are difficult to achieve in real-world operations, and algorithms are subject to a number of factors that reduce their accuracy.

2.4 Scope of the Problem

Creativity and perception are all significantly impacted by emotions. The multi-faceted nature of emotions is primarily brought on by physiological reactions and environmental factors. The vast number of applications that exist in the field of natural language attracts more interest in the area of emotional studies. In many applications, including affective computing, pervasive computing, market analysis, e-learning environments, and educational games, automatic emotion identification in texts can be seen as a crucial task. Multidisciplinary approaches built on a fresh knowledge of difficult situations are utilized to reframe challenges outside of their typical parameters. The current state of text emotion recognition is discussed in this study, along with the various difficulties that these methods now face. This refers to some of the notions for the future.

2.5 Challenge

All jobs in the world are challenging, but artificial intelligence-based emotion detection is one of them. Doing this requires landmark processing, which marks the shape of a human face with dots, which is quite a challenge as this project is a web-based project. and cannot be used on phones. I will usually work with a website that has already done this. I think I will try something new by looking at some apps that have worked on human emotion detection before and comparing my work with theirs so I can understand how successful my work is. In that continuum, no task in the world is easy, and artificial intelligence is one in the field of human emotion detection. Normally, it is difficult to detect the landmarks of a human face when it is

tilted, but through my project, I have shown that it is possible to detect angled faces, and I faced many challenges to do this. Businesses are using technology that recognizes human emotion to enhance customer service, select which applicants to interview, and maximize the emotional impact of advertising. However, authorities in the field have cautioned that such software is not always reliable because it is based on out-of-date psychological theories.

CHAPTER 3

Requirement Specification

3.1 Introduction

Image processing is a technique by which analog data from an image is converted into digital data. The data is then analyzed for emotion detection, a visualization that uses facial landmarks to determine age and gender. A state-of-the-art method uses artificial intelligence to measure the distance between eyes and lips to perform photo detection using landmarks that display smileys, cries, and surprises. Computers use facial landmarks to understand human facial expressions. and provides a result by determining the distance from the eyes to the lips. When a person is in distress, his face changes, and the computer identifies this change as a frown. And if a person is happy, he expresses the facial expressions of other people in a funny way. When a person is in distress, his face changes, and the computer identifies this change as a frown. And if a person is happy, he expresses the facial expressions of other people in a funny way.

3.2 Implementation Requirement

Below is the software I used to complete my project

Java script

Html and CSS

React-Bootstrap

React -Webcam

Tensor flow

Face Api.js

The library I worked in while completing my project This Google library has automatic face recognition capabilities.

3.3 Use Case Modeling and Description

There are some methods we can use to delete people's emotions, one of which is through a webcam. An image is taken, and it is input to face detection for testing, where the facial expression classifier is used to detect emotions. This we can provide from the photo gallery in addition to the webcam. But it is much easier to process the image with Wet Camp using human emotion detection to reveal human facial

expressions. It can also detect age and gender in addition to human facial expressions. Deep analysis of a human face requires face detection and future expression classification. Thus, the real-time process is complete.

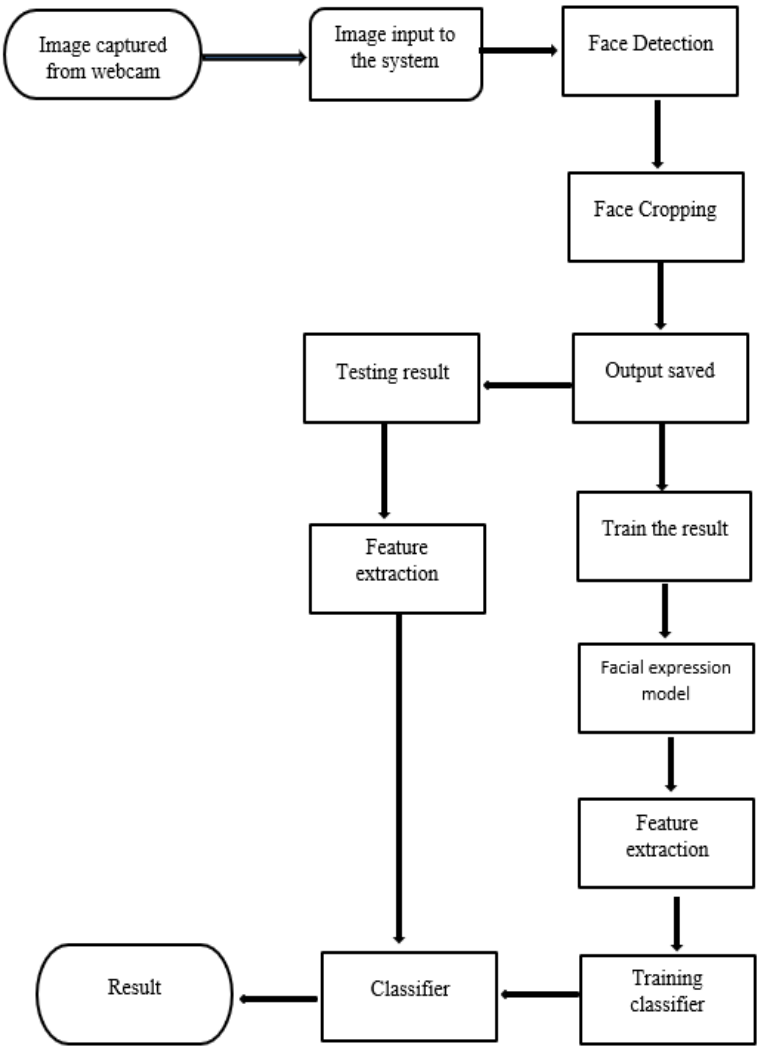

Figure 3.1 Use Case Model

3.4 Data collection method:

- camera
- Direct from webcam
- Data base

3.5 Logical data model

Happy Face: [11]

Nose _ to _ Left eye 27.70

Left _ to _ Right Eye 41.38

Nose _ to _ Left Mouth 9.55

Nose _ to _ Right Mouth 25.14

Nose _ to _ Right Eye 34.21

Surprised Face:

Nose _ to _ Left eye 31.17

Left _ to _ Right Eye 42.85

Nose _ to _ Left Mouth 12.80

Nose _ to _ Right Mouth 36.95

Nose _ to _ Right Eye 35.96

Sad Face:

Nose _ to _ Left eye 26.21

Left _ to _ Right Eye 38.72

Nose _ to _ Left Mouth 13.73

Nose _ to _ Right Mouth 30.56

Nose _ to _ Right Eye 32.29

Angry Face:

Nose _ to _ Left eye 31.18

Left _ to _ Right Eye 42.99

Nose _ to _ Left Mouth 10.16

Nose _ to _ Right Mouth 32.95

Nose _ to _ Right Eye 35.98

Disgusted Face:

Nose _ to _ Left eye 45.90

Left _ to _ Right Eye 57.90

Nose _ to _ Left Mouth 17.50

Nose _ to _ Right Mouth 34.64

Nose _ to _ Right Eye 49.83

Neutral Face:

Nose _ to _ Left eye 33.74

Left _ to _ Right Eye 44.85

Nose _ to _ Left Mouth 12.09

Nose _ to _ Right Mouth 25.07

Nose _ to _ Right Eye 37.76

CHAPTER 4

Interventional Results

4.1 Introduction

In this chapter I will show the front end design and back end design of my project. For each project I have designed some animation image frames in common with many useful front end designs. When I have input for deep analysis on the image, the input is taken by pressing the capture button and sent for analysis by pressing the analysis button. Landmark and expression detection recognizes a human emotion through deep analysis and reports it. One of the things I noticed while doing this project is that people's facial expressions vary and face a bit of a problem in analyzing them. The task can be done very easily by detecting landmarks on human faces.

4.2 front-end design

When the user uses my application, he will see a button called capture and save and analysis. Here some more information will be given: age detection, gender detection, emotion detection. Once the capture button is clicked an image will be taken then the analysis button will be pressed and the image will be analyzed and the expression will be [12]

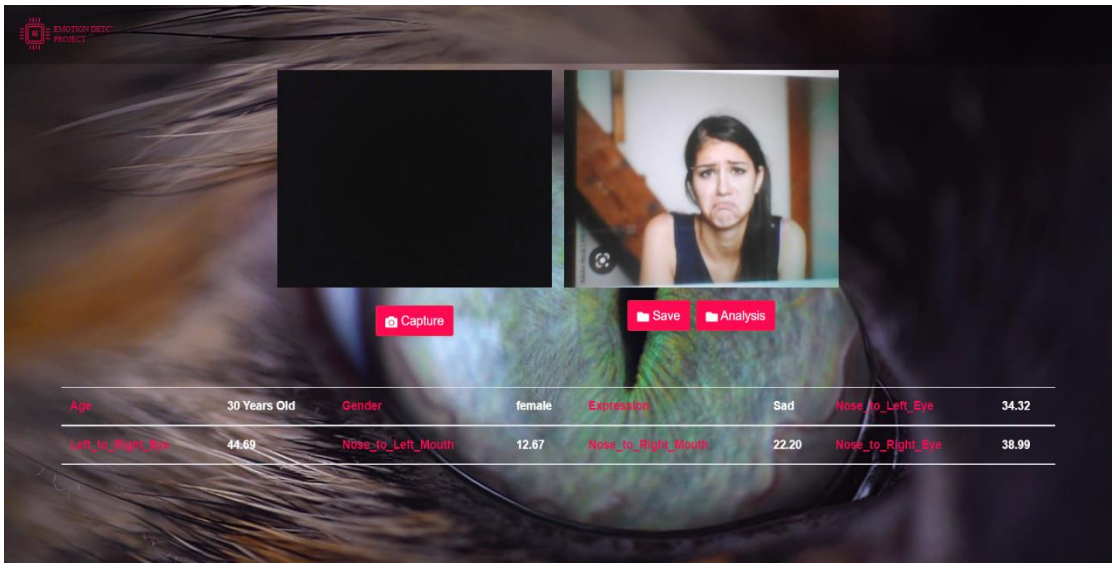

Figure 4.1 Home page

4.3 Back-end Design

Before launching the Human Emotion Detection Project, much research was done on the design of its camera. The design of the camera is usually done using React JS. Its performance is very successful. Computers need a good quality camera for emotion detection operation. This model is able to work properly. Google's help has been taken to implement the camera technology, this technology is new in the world today.

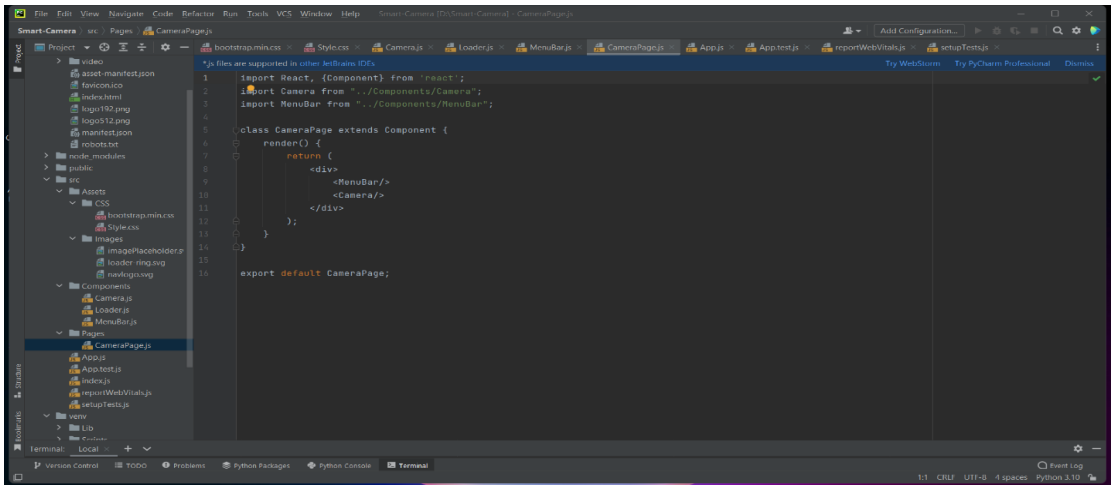

Figure 4.2 Camera page Model

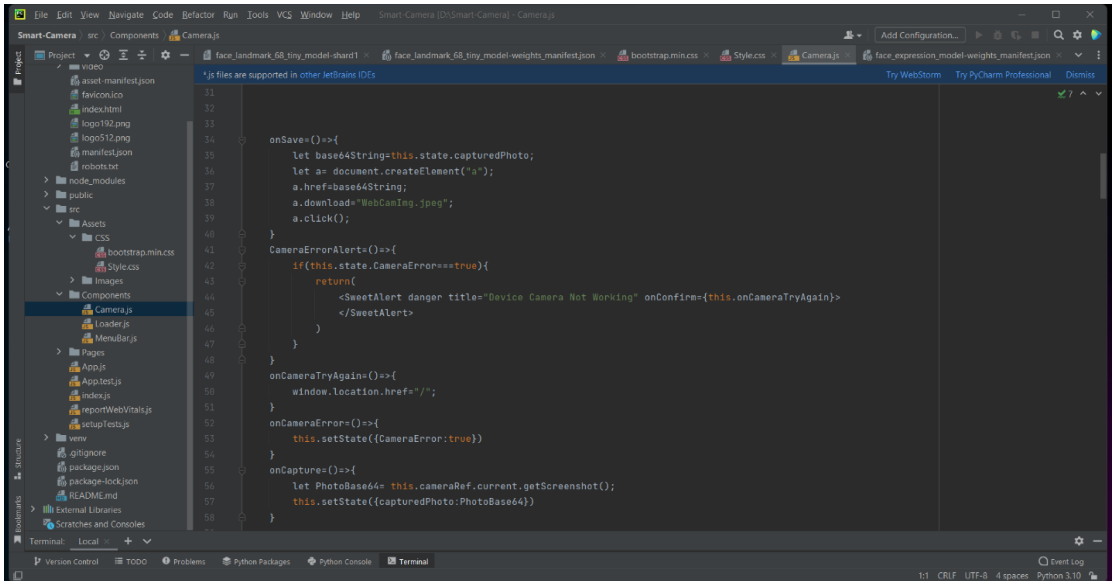

Figure 4.3 Camera page Model

The following figure 4.4 using the json viewer makes executing the CSS model very easily and in a short amount of time. And it plays a huge role in creating a CSS model. When we design a model in the computer, it is very easy to arrange the models easily and in alignment. And besides, the free models that Google has for emotion detection are used to arrange it beautifully, Jason Viewer. Its functioning is very easy. Projecting an artificial intelligence base requires the work of the Jason viewer

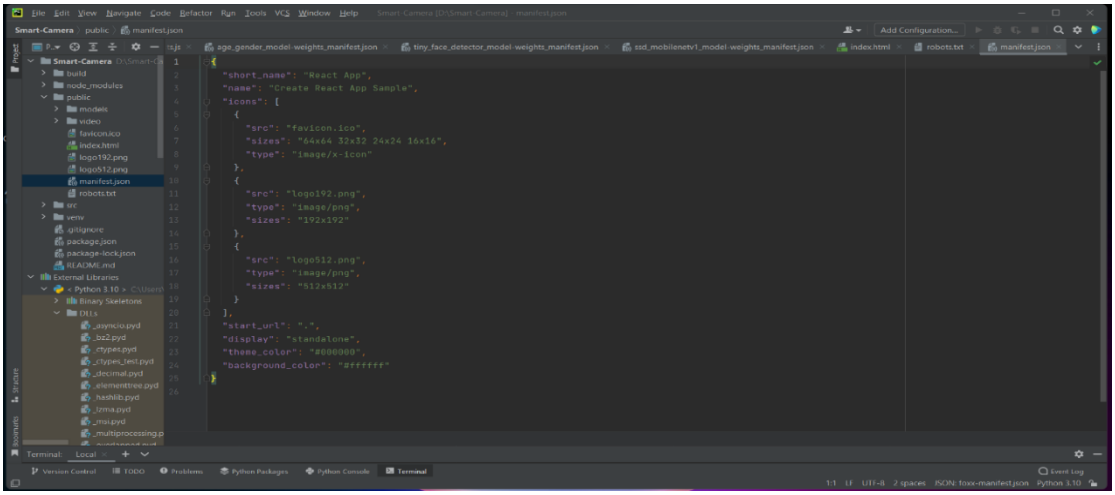

Figure 4.4 Json View Model

The following figure 4.5 To complete this project I added video animations that look very nostalgic. Through animation all objects are revealed in a beautiful form I have shown this work in this project by detecting emotions in the background through video processing a video is shown here the algorithm of that video is arranged here it is usually shown in mp4 format.

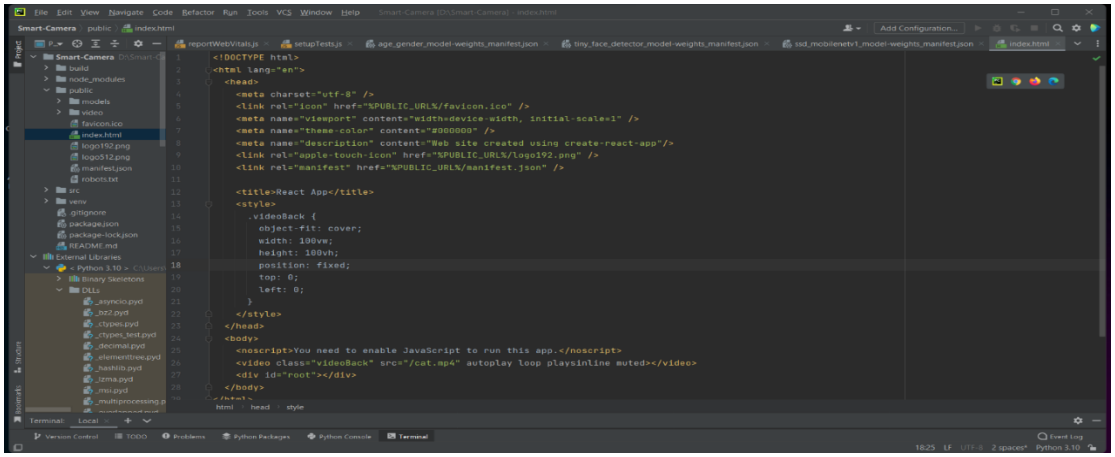

Figure 4.5 Animation wallpaper model

4.3.1 Expression feature and model

Here are some models for expressing human facial expression. It is usually used as a landmark to recognize human emotions. Some of the conditions for doing so are given below.

```
onFaceAnalysis=()=>{
    (async () => {
        this.setState({loaderDIV:""})
        await faceapi.nets.ssdMobilenetv1.loadFromUri('models/');
        await faceapi.nets.faceLandmark68Net.loadFromUri('models/');
        await faceapi.nets.faceExpressionNet.loadFromUri('models/');
        await faceapi.nets.ageGenderNet.loadFromUri('models/');
        const imgID = document.getElementById("imgID")
        const detection = await faceapi.detectSingleFace(imgID)
            .withFaceLandmarks()
            .withFaceExpressions()
            .withAgeAndGender();


        // age and gender
        let age=(detection['age']).toFixed(0);
        let gender=(detection['gender']);
        this.setState({age:age+ " Years Old",gender:gender})
```

Figure 4.6 On face analysis model

```
if(neutral>0.9 &&neutral<1.2 ){
    this.setState({expression:"Neutral"})
}
else if(happy>0.9 &&happy<1.2 ){
    this.setState({expression:"Happy"})
}
else if(sad>0.9 &&sad<1.2 ){
    this.setState({expression:"Sad"})
}
else if(angry>0.9 &&angry<1.2 ){
    this.setState({expression:"Angry"})
}
else if(fearful>0.9 &&fearful<1.2 ){
    this.setState({expression:"Fearful"})
}
else if(disgusted>0.9 &&disgusted<1.2 ){
    this.setState({expression:"Disgusted"})
}
else if(surprised>0.9 &&surprised<1.2 ){
    this.setState({expression:"Surprised"})
}
```

Figure 4.7 On face expression condition analysis model

```
Left_to_Right_Eye=(FaceLandmarksPoint)=>{
    let x1=  FaceLandmarksPoint['landmarks']['_positions'][37]['_x']
    let y1=  FaceLandmarksPoint['landmarks']['_positions'][37]['_y']
    let x2=  FaceLandmarksPoint['landmarks']['_positions'][46]['_x']
    let y2=  FaceLandmarksPoint['landmarks']['_positions'][46]['_y']
    let dist=Math.sqrt( (Math.pow((x1-x2),2))+(Math.pow((y1-y2),2)));
    this.setState({Left_to_Right_Eye:dist})
}
```

Figure 4.8 Left to right eye face landmarks point

```
Nose_to_Left_Eye=(FaceLandmarksPoint)=>{
    let x1=  FaceLandmarksPoint['landmarks']['_positions'][31]['_x']
    let y1=  FaceLandmarksPoint['landmarks']['_positions'][31]['_y']
    let x2=  FaceLandmarksPoint['landmarks']['_positions'][37]['_x']
    let y2=  FaceLandmarksPoint['landmarks']['_positions'][37]['_y']
    let dist=Math.sqrt( (Math.pow((x1-x2),2))+(Math.pow((y1-y2),2)));
    this.setState({Nose_to_Left_Eye:dist})
}
```

Figure 4.9 Nose to Left eye face landmarks point

```
Left_to_Right_Eye=(FaceLandmarksPoint)=>{
    let x1=  FaceLandmarksPoint['landmarks']['_positions'][37]['_x']
    let y1=  FaceLandmarksPoint['landmarks']['_positions'][37]['_y']
    let x2=  FaceLandmarksPoint['landmarks']['_positions'][46]['_x']
    let y2=  FaceLandmarksPoint['landmarks']['_positions'][46]['_y']
    let dist=Math.sqrt( (Math.pow((x1-x2),2))+(Math.pow((y1-y2),2)));
    this.setState({Left_to_Right_Eye:dist})
}
```

Figure 4.10 Left to right eye face landmarks point

```
Nose_to_Left_Mouth=(FaceLandmarksPoint)=>{
    let x1=  FaceLandmarksPoint['landmarks']['_positions'][31]['_x']
    let y1=  FaceLandmarksPoint['landmarks']['_positions'][31]['_y']
    let x2=  FaceLandmarksPoint['landmarks']['_positions'][49]['_x']
    let y2=  FaceLandmarksPoint['landmarks']['_positions'][49]['_y']
    let dist=Math.sqrt( (Math.pow((x1-x2),2))+(Math.pow((y1-y2),2)));
    this.setState({Nose_to_Left_Mouth:dist})
}
```

Figure 4.11 Nose to left mouth face landmarks point

4.4 Input Process

When we enter our image into the computer through the capture button and let it be analyzed by pressing the analysis button, it enters the device in the form of input and can identify human emotion and age. We usually use the webcam of the computer to give input. It recognizes landmarks on the human face and displays the results there. We can usually download the captured image and save it, which we can reuse later.

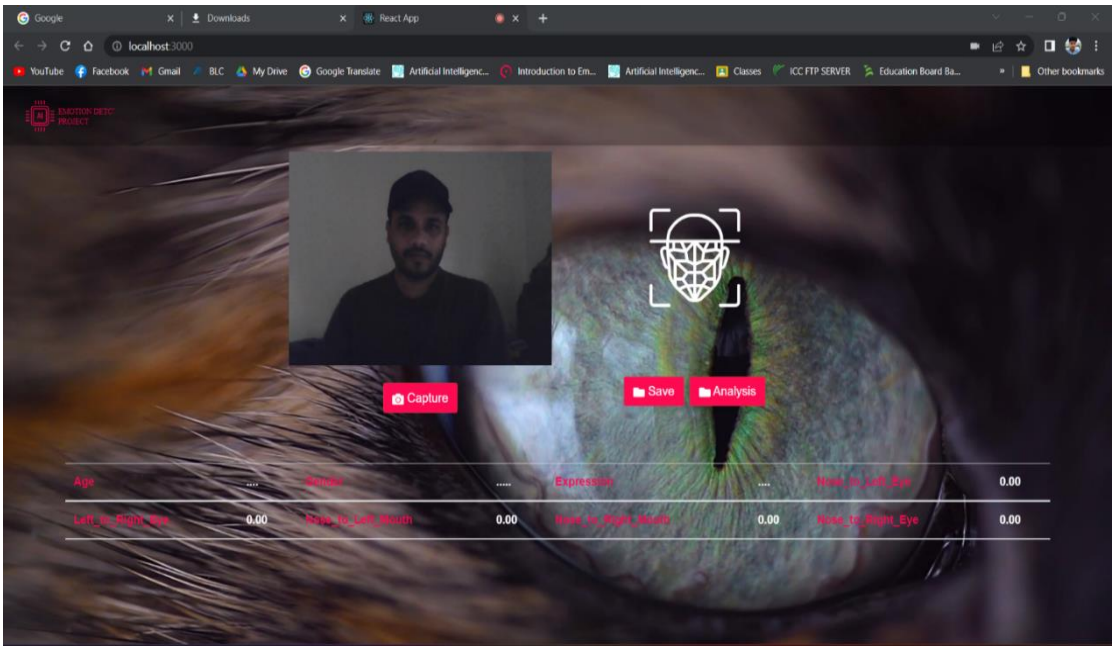

Figure 4.12 Input image for analysis

4.5 Output Process

When we input our image into the computer through the webcam, the image is analyzed. Here, the deep analysis of the image through landmark detection reveals the facial expression, which is shown as a happy face.

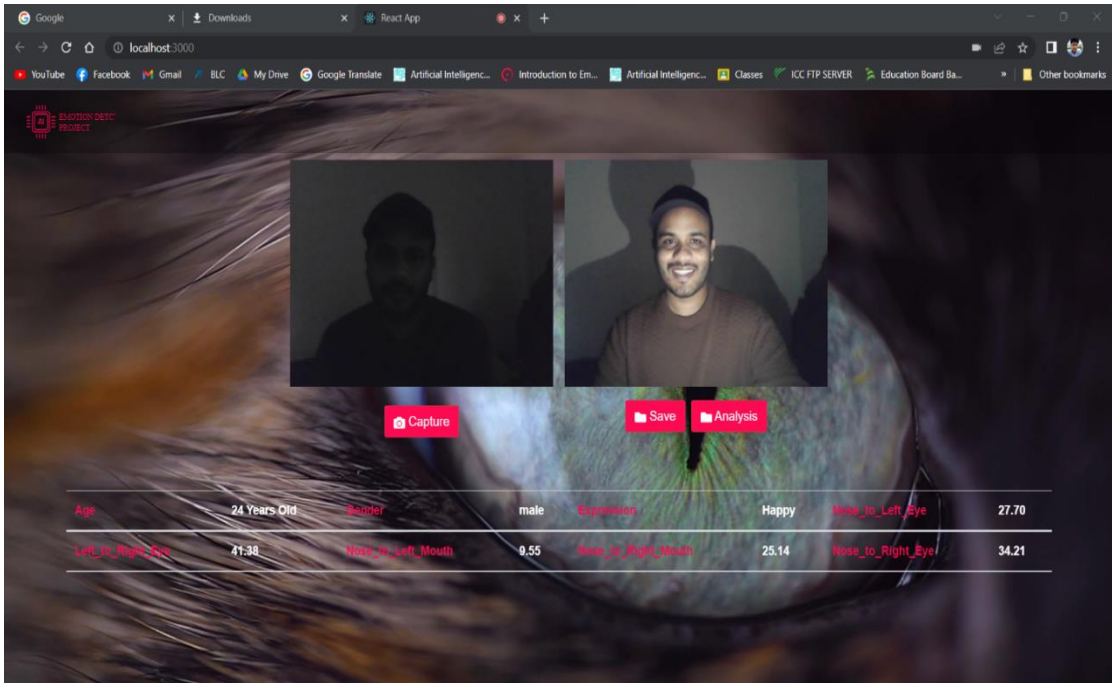

Figure 4.13 Happy Face analysis

Face Land Marks Point

Nose _ to _ Left eye 27.70

Left _ to _ Right Eye 41.38

Nose _ to _ Left Mouth 9.55

Nose _ to _ Right Mouth 25.14

Nose _ to _ Right Eye 34.21

Surprise Face: A surprise face is used to express ourselves through the computer when we are very surprised about something. It usually results in human face landmark detection.

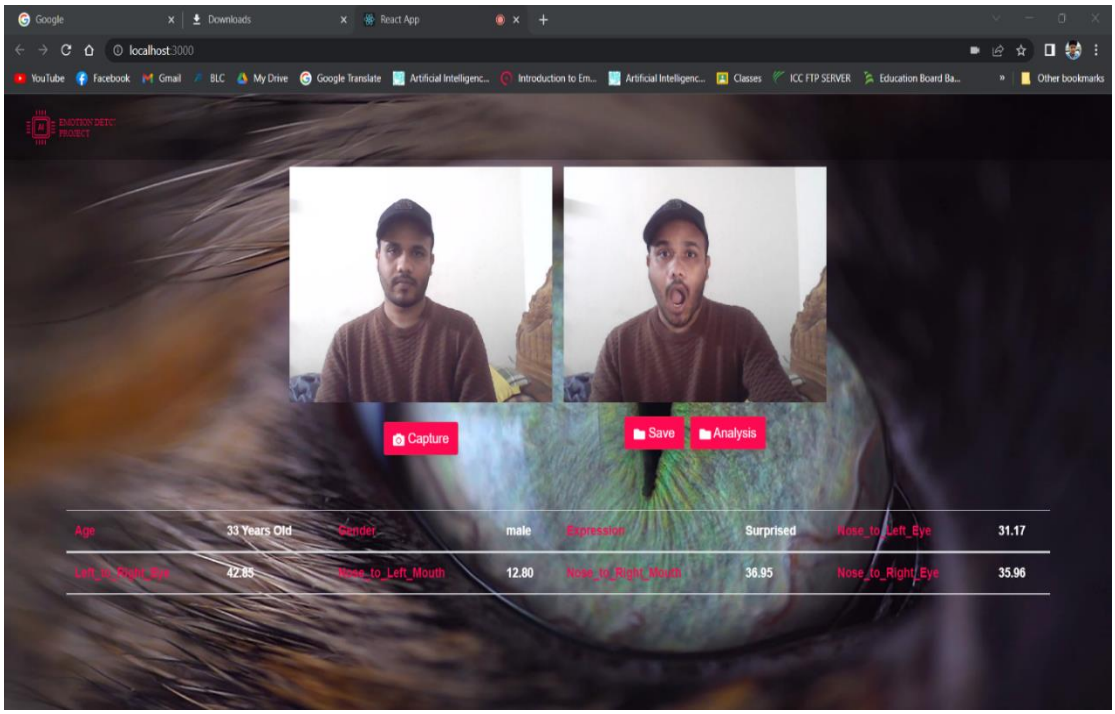

Figure 4.14 Surprised Face analysis

Face Land Marks Point

Nose _ to _ Left eye 31.17

Left _ to _ Right Eye 42.85

Nose _ to _ Left Mouth 12.80

Nose _ to _ Right Mouth 36.95

Nose _ to _ Right Eye 35.96

Sad face we usually analyze people's attitudes through their mouths. People's emotions are expressed through their faces. When a person is in trouble, those difficult things are expressed on his face, and through this, we can reveal his facial expressions through deep analysis.

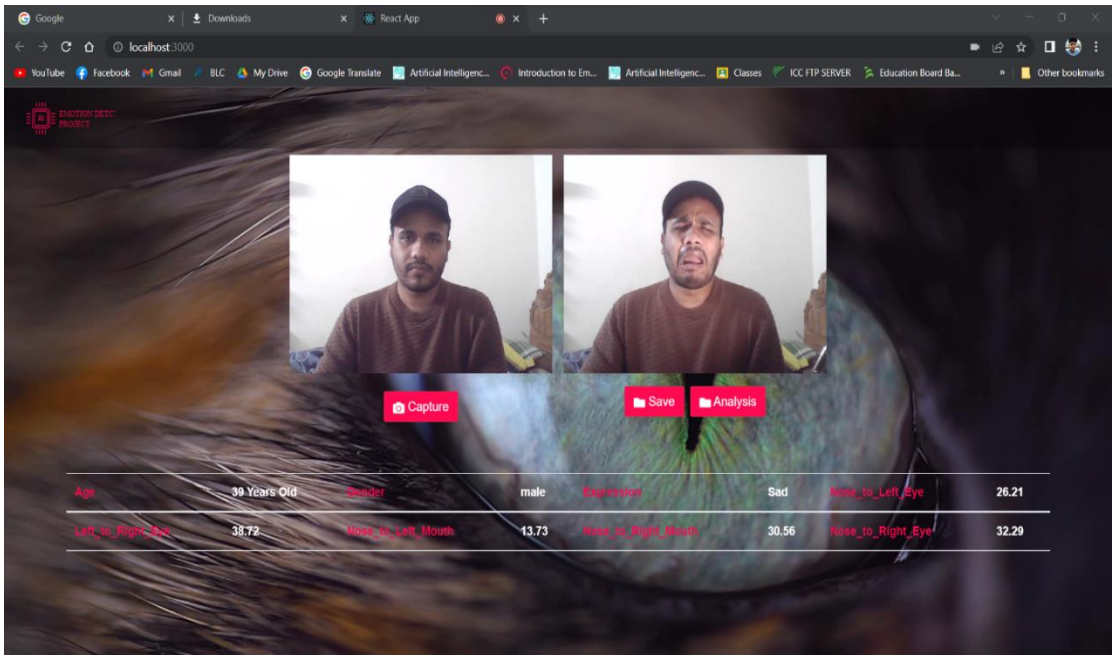

Figure 4.15 Sad Face analysis

Face Land Marks Point

Nose _ to _ Left eye 26.21

Left _ to _ Right Eye 38.72

Nose _ to _ Left Mouth 13.73

Nose _ to _ Right Mouth 30.56

Nose _ to _ Right Eye 32.29

When people are angry, their feelings are expressed in facial expressions that we can express through emotion detection. Usually when people are angry, we can detect their angry state by detecting their facial landmarks.

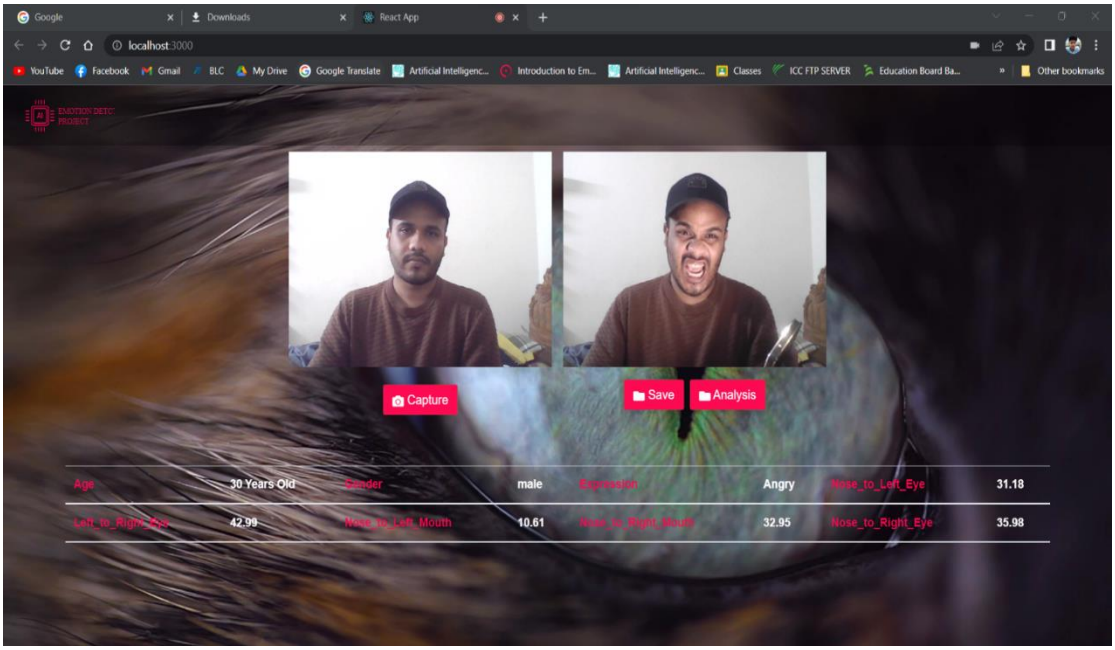

Figure 4.16 Angry Face analysis

Face Land Marks Point

Nose _ to _ Left eye 31.18

Left _ to _ Right Eye 42.99

Nose _ to _ Left Mouth 10.16

Nose _ to _ Right Mouth 32.95

Nose _ to _ Right Eye 35.98

When people are disgusted it may be because he has smelled something bad and disliked seeing something. Usually these feelings happen when people cannot accept something from their mind

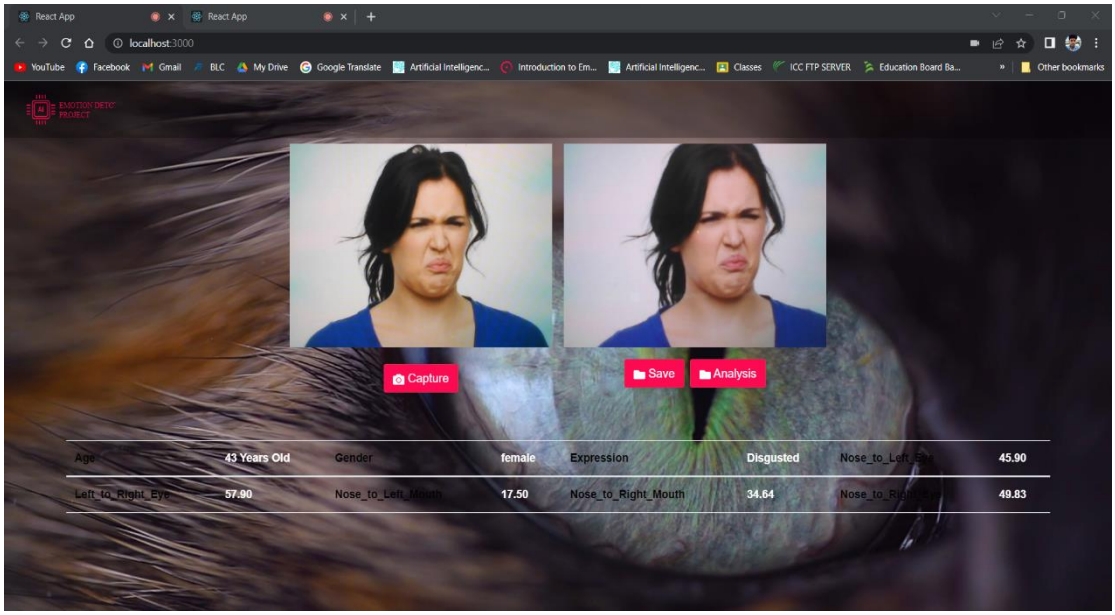

Figure 4.17 disgusted Face analysis

Face Land Marks Point

Nose _ to _ Left eye 45.90

Left _ to _ Right Eye 57.90

Nose _ to _ Left Mouth 17.50

Nose _ to _ Right Mouth 34.64

Nose _ to _ Right Eye 49.83

Natural face analysis is a method that usually does not change a person's face very much. As a result, it becomes much easier to identify human facial landmarks. Natural facial landmarks are mentioned below.

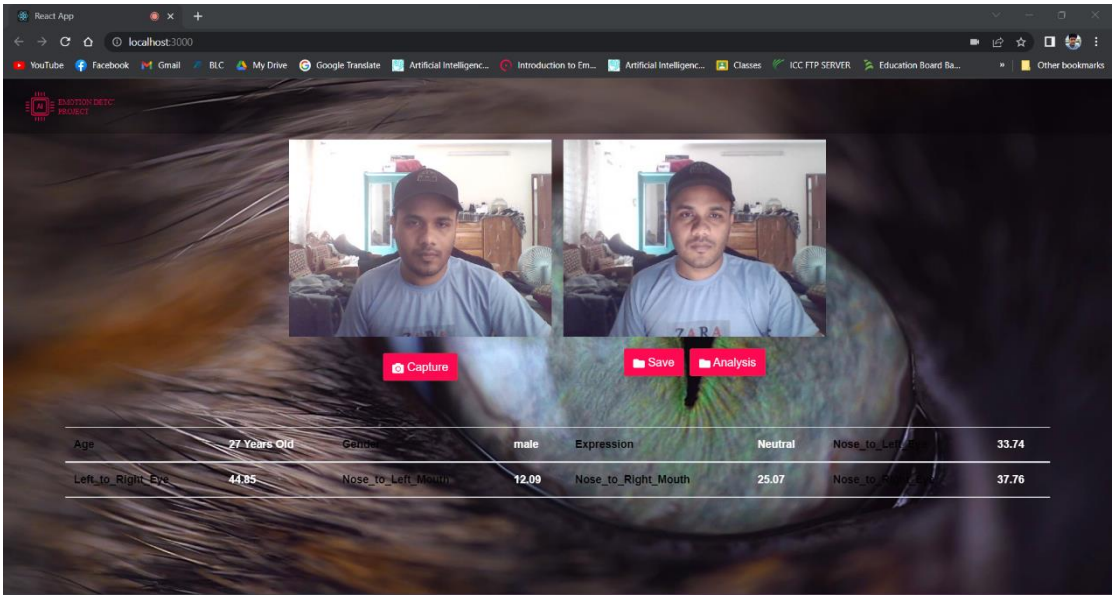

Figure 4.18 Neutral Face analysis

Face Land Marks Point

Nose _ to _ Left eye 33.74

Left _ to _ Right Eye 44.85

Nose _ to _ Left Mouth 12.09

Nose _ to _ Right Mouth 25.07

Nose _ to _ Right Eye 37.76

CHAPTER 5

Experimental Results and Discussion

5.1 Introduction

I'll need some implementation tools to express the image of a human face in machine language, such as a computer, Python, Tensor Flow, and Face API. When a person is angry, facial landmarks can be used to express the emotion in machine language. The world is improving now, along with the improvement of artificial intelligence. We have now made the impossible possible through artificial intelligence. A few days ago, people did not think that it would be possible to express the facial expressions of other people through computers, but it is now possible. Artificial intelligence plays a variety of roles in expanding the scope of human communication; most notably, we can express human facial expressions using landmark detection.

5.2 Experimental results

Here the experimental results from a number of images will be shown.

Input image Output image

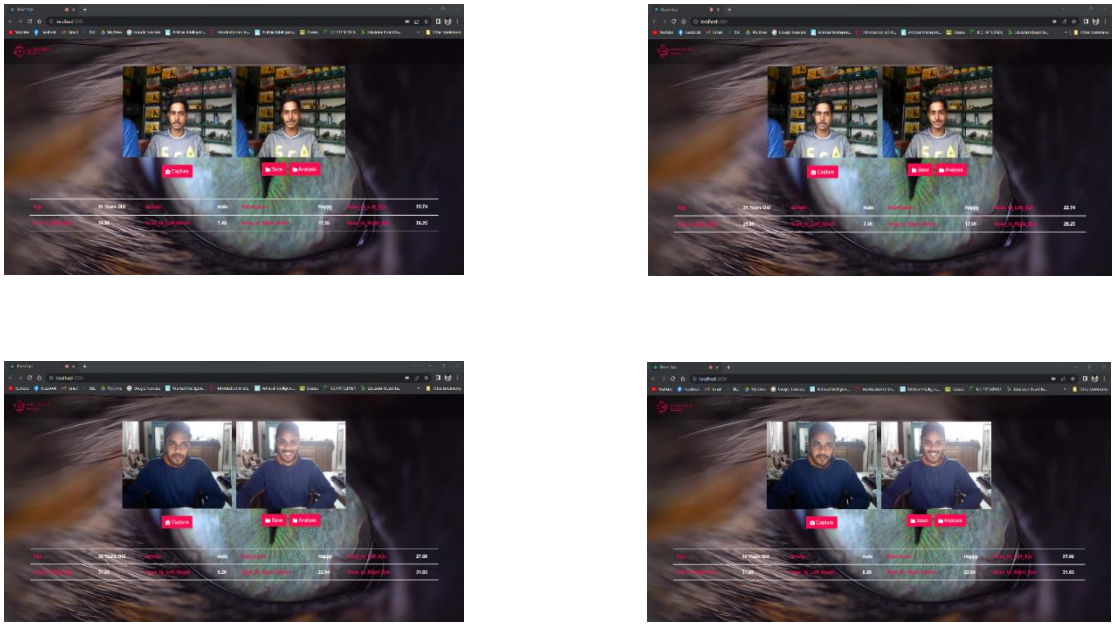

Figure 5.1 shows the input and output of Happy facial mood expression.

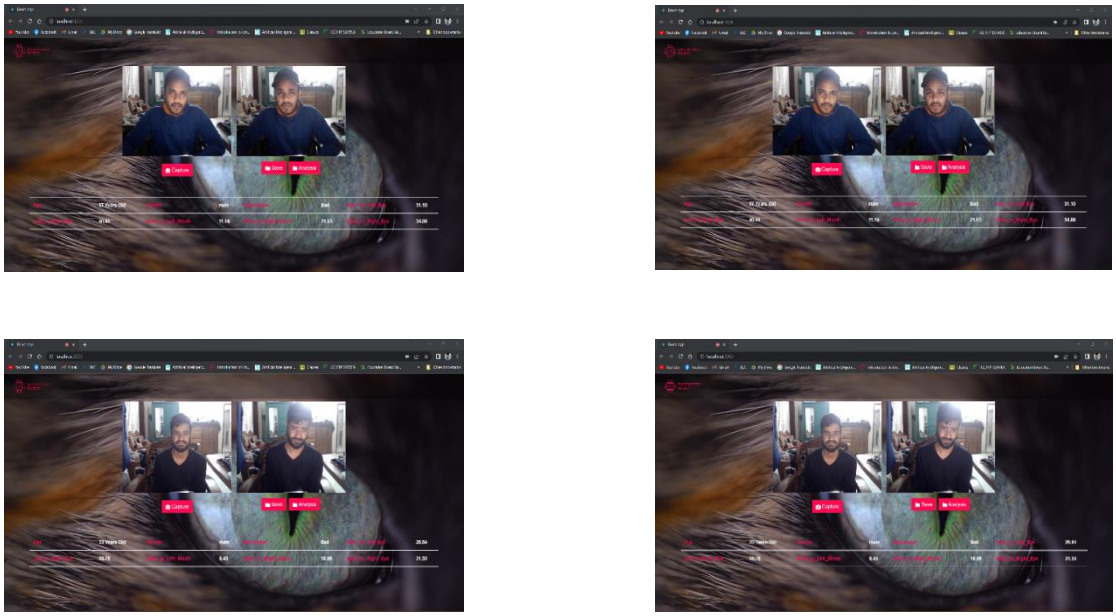

Figure 5.2 shows the input and output of sad facial mood expression.

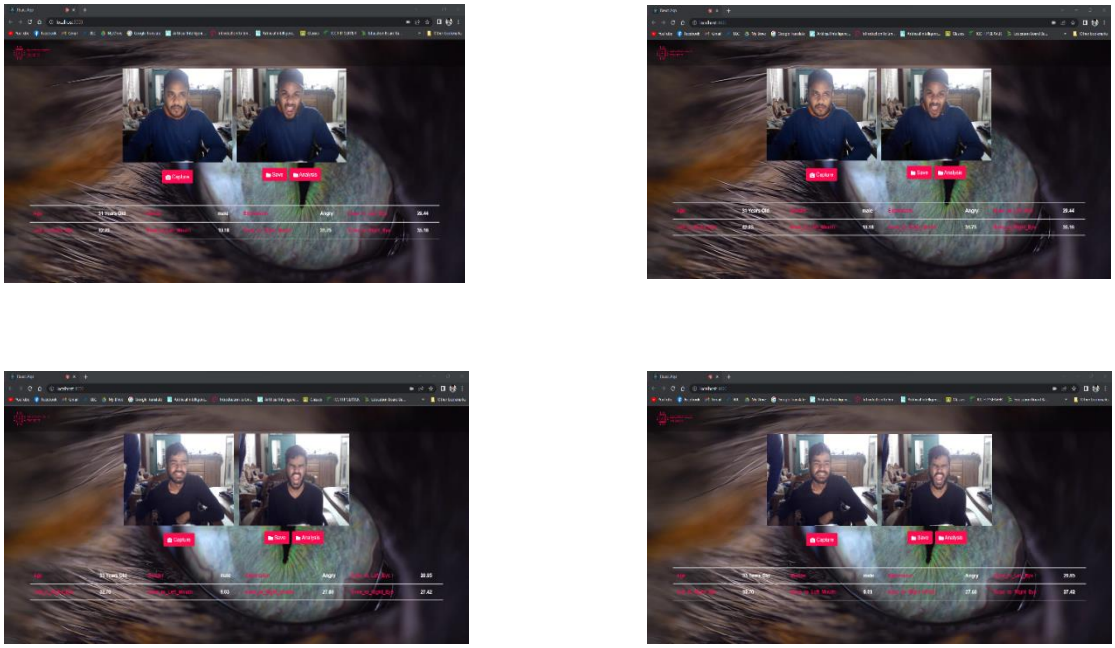

Figure 5.3 shows the input and output of an angry facial mood expression.

I Applied this project to 50 people, all of whom had smiles on their faces. surprise, 74% sad faces, 82% angry faces, 90% age, 54%, and gender, 100%, Happy face 92%, disgusted Face,76% Neutral Face, 96% I have taken the help of Google's data set to express human facial expression in machine learning; its work is very accurate, and usually if I had gone to create the data set myself, it would have taken a lot of time. For this, I have completed the detection with the help of Google.

Table 1: Experimental result

NO	Expression type	Experiment NO.	Outcome		Percentage
			Yes	no	
1.	Happy Face	50	46	4	92%
2.	Surprised Face	50	37	13	74%
3.	Sad Face	50	41	9	82%
4.	Angry Face	50	45	5	90%
5.	Age	50	27	23	54%
6.	Gender	50	50	0	100%
7	disgusted Face	50	38	12	76%
8	Neutral Face	50	48	2	96%

5.3 Descriptive Analysis

The user must first provide an image as input. Use histogram equalization to improve lost contrast by remapping an image's brightness value. Then use PCA and MPCA to find the face's edge, cropping regions for the eyes and lips. the machine learning kit receives the image after that (ML kit). Google just created a machine learning kit using trained data. It has strong features and contains fresh data. Because of this,

machine learning is currently very popular. Text recognition, face detection, landmark recognition, bar code scanning, and image leveling are all possible with machine learning. It can usually detect ()

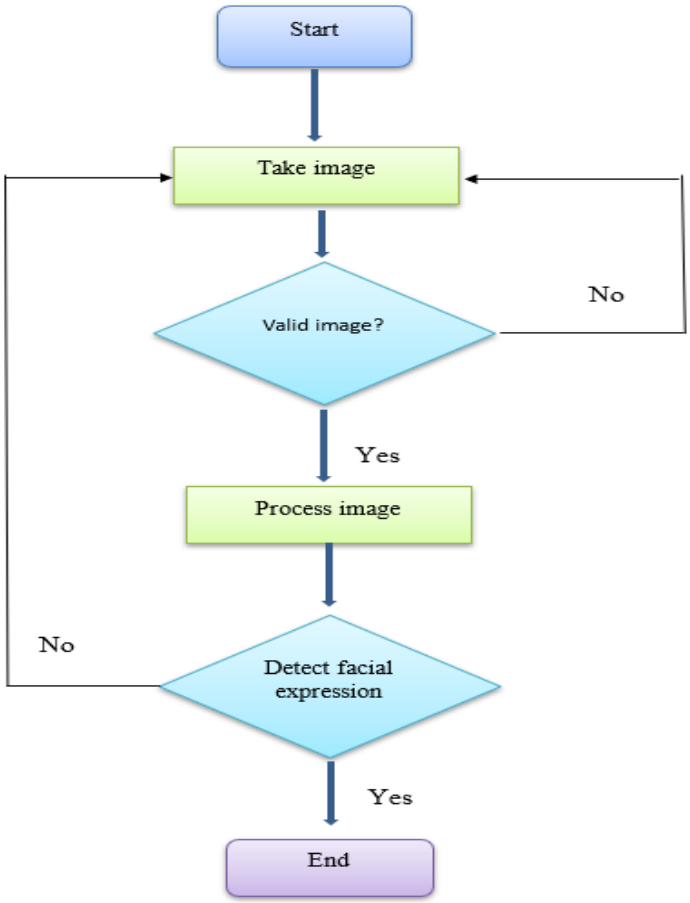

Figure 5.4 Flow chart of facial mood expression

5.4 Summary

Tensorflow as open source library for collecting API, github as a library to facial recognition software making, To make web software I used html, CSS, bootstrap, javascript. For IDE, I modified code on pycharm

CHAPTER 6

Conclusions and Future work

6.1 Conclusions

Our project has been effectively completed. We have made some significant progress In the project, being able to detect a person's age, gender and facial expressions. We have been able to reveal these issues through this project. Our technology can usually determine this Age and gender of the person, even if they are an elderly person. In this project, we do Show how a man uses his mouth to convey his thoughts. We are in our project we have explained these things in a very simple way. We usually work with facial landmarks, which can accurately identify human faces and It can measure the human face and give accurate results through its in-depth analysis. With its help Can detect age and gender. People are not constantly facing the camera, so The pose problem is a major obstacle to the widespread use of facial recognition systems. Other unavoidable problems arise in the range of practical applications. In summary, Differences between the same individuals in different postures are greater than they are Among other persons in the same manner. As a result, when the investigation takes place And gallery photographs are different, challenging for computers to deal with Detection Face detection is still difficult due to pose fluctuations. when it When it comes to innovative positions, frontal training images perform better than non-frontal ones training pictures. We note that researchers These fields have also explored emotion theory and combined them in their research. A new field of research Machine learning has revealed a significance. A conceptual solution for emotion detection and analysis system is presented. It will form a major component in the future.

6.2 Future Work

Every human face shape in this world is different. we have to design our emotion recognition program keeping that in mind. Each human face can be identified separately through artificial intelligence. The emotion recognition system has to operate by taking measurements from the human eyes and nose. Some people's faces are found to be very similar; this can also be detected through emotion detection. When we are moving normally, our faces are normal, and if we are suffering, then it shows in painful form. In this way, we complete the reconnaissance work. Effective

communication is the only way that human-machine interaction can play its significant role. Emotion recognition is one of the essential non-verbal methods by which this communication takes place. Both verbal and non-verbal methods serve communication. Different systems, including speech, facial expression, body gesture, etc., can be used to record emotions. Some psychologists claim that around 55% of all communication is carried out through facial expressions. Without using words, facial expressions can tell a lot.

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