Facial Emotion Analysis and Instant Audience Feedback

A Project Report Submitted in partial fulfillment of the requirements for the award of the degree of

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

By

DEPA SAI CHARAN REDDY (2010030038)

VINAKOLLU GOKUL (2010030181)

NAGULAPATI YASHWANTH REDDY (2010030235)

KATTA LAXMI NARASIMHA (2010030458)

Under the supervision of

Dr.N.Ramarao

DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING
K L DEEMED TO BE UNIVERSITY
AZIZNAGAR, MOINABAD , HYDERABAD-500 075

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BONAFIDE CERTIFICATE

This is to certify that the project titled **Facial Emotion Analysis and Instant Audience Feedback** is a bonafide record of the work done by

DEPA SAI CHARAN REDDY (2010030038)

VINAKOLLU GOKUL (2010030181)

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Dr.N.RAMA RAO	**Dr.ARPITA GUPTA**
Project Guide	Head of the Department

Project Viva-voce held on _____

Internal Examiner	**External Examiner**

ABSTRACT

Feedback is an essential part of human connection and communication since it may used to express expression, feelings, and truth. This research paper works light on the complex function that facial signals play in the interpretation and communication of information by offering a thorough overview and analysis of feedback through facial expressions.

We investigate the brain systems that underlie facial feedback perception and response in humans, as well as the mechanisms behind face expressions, cultural variances, and their universality. Deep neural networks facial expression feedback analyzers are currently in the starting stages of development, but they have the strength to solve a variety of issues with present human-computer interface systems .

Feedback detection, for instance, is used to build more immersive entertainment experiences, more natural and educational systems, and more in customer service experiences, every where feedback is used. One of the main advantages of feedback analyzers using face expression by deep neural networks is that they can provide real time feedback.

This is in way of natural feedback collection methods, such as surveys and interviews, which can be time consuming and expensive to administer. Real time feedback analyser allows system developers to make rapid changes to their system in order to improve and develop the user experience.

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Introduction

1.1 Background of the Project

The project for facial emotion analysis and instant audience feedback likely aims to utilize facial recognition technology to analyze the emotions of individuals in a given audience in real-time.Overall, the project for facial emotion analysis and instant audience feedback has the potential to revolutionize various industries by providing valuable insights into human emotions and behaviors in real-time contexts.

1.1.1 Understanding the Context and Purpose

Understanding the Context and Purpose provides essential background information to contextualize the project for facial emotion analysis and instant audience feedback. This subsection outlines the broader environment in which the project operates, including the industry, market trends, and relevant technological advancements. It discusses the motivations behind the project, such as the need to enhance audience engagement, improve presenter effectiveness, or gather valuable insights into audience reactions. Additionally, it may highlight any specific challenges or opportunities that prompted the development of the project. Overall, this section sets the stage for understanding the rationale and objectives of the facial emotion analysis and instant audience feedback initiative.
Facial Emotion Analysis:

- Facial emotion analysis involves using computer vision algorithms to detect and interpret facial expressions. These algorithms can recognize various emotions

such as happiness, sadness, anger, surprise, and more based on the movements and configurations of facial muscles.

Real-Time Analysis:

- The project likely focuses on providing instant feedback by analyzing the emotions of individuals in real-time. This could involve capturing live video feeds of audience members or participants and processing these feeds using facial recognition software to extract emotional data.

Audience Engagement:

- The primary purpose of such a project could be to enhance audience engagement during events, presentations, or performances. By understanding the emotional responses of the audience, presenters or performers can adjust their delivery, content, or tone to better connect with their audience.

Education and Training:

- In educational settings, this technology could be used to gauge student engagement and comprehension during lectures or training sessions. Teachers and instructors could adapt their teaching methods based on the emotional responses of their students to improve learning outcomes.

User Experience Optimization:

- In the realm of user experience (UX) design, facial emotion analysis can be used to assess user reactions to digital interfaces, websites, or software applications. Designers can then refine their products to better meet the emotional needs and preferences of users.

Overall, the project for facial emotion analysis and instant audience feedback has the potential to revolutionize various industries by providing valuable insights into human emotions and behaviors in real-time contexts.

1.2 Problem Statement

The project for facial emotion analysis and instant audience feedback likely aims to utilize facial recognition technology to analyze the emotions of individuals in a given audience in real-time. Here's a breakdown of the background and potential applications:

- Facial Emotion Analysis
- Real-Time Analysis
- Education and Training
- User Experience Optimization

Overall, the project for facial emotion analysis and instant audience feedback has the potential to revolutionize various industries by providing valuable insights into human emotions and behaviors in real-time contexts.

1.3 Objectives

The objectives of a project for facial emotion analysis and instant audience feedback typically revolve around enhancing audience engagement, improving presenter or performer effectiveness, and gaining valuable insights into audience reactions. Here are some specific objectives:

Enhance Audience Engagement:

- Increase audience interest and involvement during presentations, performances, or events.
- Capture and maintain audience attention by adapting content or delivery based on real-time emotional feedback.

Improve Presenter/Performer Effectiveness:

- Enable presenters or performers to gauge audience reactions and adjust their communication style, tone, or content accordingly.

- Provide actionable insights to presenters or performers to enhance their effectiveness and effectiveness in engaging with the audience.

Gather Real-Time Feedback:

- Collect real-time data on audience emotions and reactions to presentations, performances, or events.
- Analyze audience feedback to identify trends, patterns, or areas for improvement in content delivery or audience interaction.

Optimize Content and Delivery:

- Use audience feedback to optimize the content, pacing, and delivery of presentations, performances, or educational sessions.
- Tailor content to better resonate with the emotional responses and preferences of the audience.

Enhance Learning Outcomes:

- Improve educational outcomes by assessing student engagement and comprehension during lectures, training sessions, or workshops.
- Adapt teaching methods or materials based on real-time feedback to optimize learning experiences.

Drive Decision Making:

- Provide decision-makers with actionable insights into audience preferences, sentiment, and reactions.
- Enable event organizers, marketers, educators, or presenters to make data-driven decisions to enhance audience experiences and outcomes.

1.4 Scope of the Project

The project for facial emotion analysis and instant audience feedback encompasses a comprehensive approach to enhancing audience engagement and optimizing presenter effectiveness through real-time analysis of facial expressions. It involves the integration of cutting-edge technologies, such as facial recognition and emotion detection algorithms, with interactive feedback mechanisms to create dynamic and immersive audience experiences. The scope extends across various domains, including presentations, performances, educational settings, marketing events, and more, catering to diverse applications and stakeholders. Here's an outline of the potential scope:

- Real-Time Feedback Mechanisms
- Data Collection and Processing
- Integration with Presentation or Event Platforms
- Testing and Validation

The scope of a project for facial emotion analysis and instant audience feedback can vary based on the specific goals, resources, and constraints of the project. By defining a clear scope and systematically addressing each aspect of the project, you can effectively develop a facial emotion analysis and instant audience feedback system that meets the needs of its intended users and stakeholders.

Chapter 2

Literature Review

2.1 Facial Emotion Analysis

The below studies are based on digital platforms:

studied by Kondakindi, and V. Bhatti's (2018) paper, "Automated Feed- back Generation System using Facial Emotion Recognition" [23], most likely focuses on a system that automatically provides feedback by identifying facial emotions.

2.2 Identification of facial expression using a multiple impression feedback recognition model

The below studies are based on digital platforms

studied by He, H., and Chen (2021), S. [17]. It might go into detail about the approach taken, maybe talking about neural network topologies or deep learning for facial expression iden- tification.

2.3 Facial Expression Emotion Recognition Model

The below studies are based on digital platforms

by Song, Z (2021). [2] offers a novel method for identifying emotions and facial expressions by combining machine learning and philosophical theories. It might go into the philosophical foundations, maybe going over various philosophical theories of emotion and how they're incorporated into machine learning frameworks.

2.4 Overview of related works

An overview of related works in the field of facial emotion analysis and instant audience feedback provides insights into existing research, projects, and systems that address similar objectives y providing an overview of related works, researchers can contextualize their project within the broader research landscape, identify gaps or areas for innovation, and build upon existing knowledge to contribute new insights and advancements in the field of facial emotion analysis and audience feedback.

2.5 Advantages and Limitations of existing systems

Advantages and limitations of existing systems for facial emotion analysis and instant audience feedback can vary based on their design, implementation, and deployment.

2.5.1 Advantages:

Existing systems facilitate real-time interaction and engagement by providing audiences with opportunities to express their emotions and feedback during presentations, performances, or events.In educational settings, these systems can improve learning outcomes by enabling instructors to gauge student understanding, attention, and emotional responses, and tailor their teaching strategies accordingly.

2.5.2 Limitations:

Facial emotion analysis algorithms may lack accuracy, especially in detecting subtle or nuanced expressions, leading to misinterpretations or inaccuracies in audience feedback.By understanding the advantages and limitations of existing systems, researchers and practitioners can identify areas for improvement, address challenges, and design more effective and ethically responsible solutions for facial emotion analysis and instant audience feedback.

Chapter 3

Proposed System

3.1 Methodology

The methodology for a project on facial emotion analysis and instant audience feedback typically involves several key steps, including data collection, preprocessing, model development, evaluation, and deployment. Define the objectives of the project, including the specific emotions to be analyzed and the target audience for the feedback system. Identify the context in which the system will be used, such as presentations, performances, or educational settings. Gather or acquire datasets containing images or videos of facial expressions labeled with corresponding emotion categories. Collect additional data if needed, such as audience feedback or contextual information related to the presentation or event. Clean and preprocess the collected data, including tasks such as face detection, facial landmark detection, and image normalization. Extract relevant features from facial images or video frames to be used as input for emotion recognition models. Choose appropriate machine learning or deep learning algorithms for facial emotion analysis, such as convolutional neural networks (CNNs) or recurrent neural networks (RNNs). Train emotion recognition models using the preprocessed data, optimizing model parameters and hyperparameters as needed.

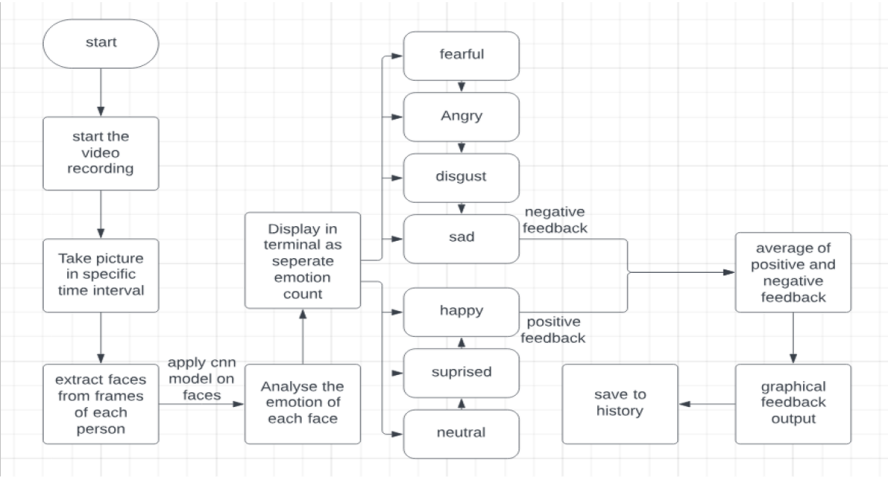

Figure 3.1: Work Flow

3.2 Design of the Website

Designing a website for facial emotion analysis and instant audience feedback involves creating an intuitive and engaging user interface that allows presenters or performers to interact with the system and view real-time audience reactions.The design of the website includes:

- Homepage:Welcome message introducing the website and its purpose.
- User Registration/Login:User registration form with fields for creating a new account.Login form for existing users to access their accounts.
- Dashboard:Real-time visualization of audience emotions, such as a graph or chart displaying emotion distribution.
- Audience Feedback:Ability to filter and sort audience feedback by various criteria, such as emotion category or engagement level.
- Footer:Navigation links to important pages, such as the homepage, dashboard, settings, and help section.

When designing the website, it's essential to prioritize simplicity, usability, and accessibility to ensure that users can easily navigate the interface and understand the feedback

provided. Incorporating responsive design principles is also crucial to ensure the website functions effectively across different devices and screen sizes. Additionally, user testing and feedback should be solicited to iterate on the design and address any usability issues or pain points.

3.3 Python full stack

Python is utilized at every stage of the technology stack in a full-stack implementation such as facial emotion analysis and instant audience feedback, including front-end and back-end development. Here are some possible uses for Python at each layer.

3.3.1 Front-End Programming:

- Django Templates: You can render data client-side and create dynamic HTML content with Django's built-in templating engine.

- JavaScript Frameworks: React.js and Vue.js are front-end frameworks that can be used in conjunction with Python to develop interactive user interfaces and improve user experience, however Python is not commonly used for client-side programming.

- In addition to CSS and HTML, Python may also be used to style and organize the front-end components

3.3.2 Back-End Development:

- Django or Flask: Django and Flask are well-liked Python web frameworks for back-end development. They offer libraries and tools for managing sessions, requests, routing, and database interfaces.

- The Django REST Framework (DRF) is an add-on that makes it easier to create Restful APIs. It enables programmers to create APIs that facilitate communication between the application's front-end and back-end parts.

- Database Access: You may manage data models, run database queries, and communicate with the database using Python tools like SQLAlchemy or Django's integrated ORM (Object-Relational Mapper).

- Business Logic: Python works great for building application-specific algorithms and business logic, which control how an application behaves.

3.3.3 Database:

- Django, a Python web framework, incorporates a powerful Object-Relational Mapping (ORM) system for database management. Developers define models as Python classes, with each class representing a database table. These models are used to interact with databases, supporting various relational databases like PostgreSQL and MySQL. Django's migration system simplifies schema changes over time, and the QuerySet API allows developers to query the database using Python syntax. The admin interface facilitates easy database management, while raw SQL queries provide flexibility when needed. Django's database system encourages best practices, such as transactions and atomic operations, streamlining the development of robust and scalable web applications.

Chapter 4

Implementation

4.1 Tools and Technologies used

Several techniques would be employed in the creation and application of facial emotion analysis and instant audience feedback to guarantee its efficacy, security, and functionality. The following are some crucial techniques and tools that could be used:

- Programming Languages:Python,JavaScript.
- Machine Learning and Deep Learning Libraries:OpenCV,TensorFlow,PyTorch,scikit-learn.
- Database: Django.
- Facial Detection and Recognition Tools: Dlib,Face Recognition.
- User Interface Frameworks: React.
- Real-Time Processing and Streaming Platforms:OpenCV VideoCapture.
- Development Tools and Environments: Visual Studio Code,Jupyter Notebook,Git.

4.2 Modules and their descriptions

The entire project mainly consists of 4 modules, which are:

- Login/Registration module
- Real-Time Processing Module

- Emotion Recognition Module
- Audience Feedback Generation Module

4.2.1 Login/Registration module

In this platform, we offer User registration form with fields for creating a new account.Login form for existing users to access their accounts.

4.2.2 Real-Time Processing Module

This module handles the real-time processing of video streams or live camera feeds. It captures frames from the input source, applies facial detection and emotion recognition algorithms, and provides instant feedback or visualizations based on the analyzed data.

4.2.3 Emotion Recognition Module

This module analyzes facial expressions to recognize and classify emotions. It employs machine learning or deep learning algorithms trained on labeled datasets to infer emotions based on facial features such as eyebrow position, mouth shape, and eye movement.

4.2.4 Audience Feedback Generation Module

This module generates feedback or recommendations based on the analyzed facial expressions and audience reactions. It provides visualizations, summaries, or actionable insights to presenters or performers to help them improve their communication and engagement with the audience.

Chapter 5

Results and Analysis

5.1 Performance Evaluation

In evaluating the performance of a project for facial emotion analysis and instant audience feedback, several key metrics and methodologies can be employed to assess its accuracy, responsiveness, and effectiveness. Here are some common approaches to performance evaluation:

- Accuracy Metrics
- Real-Time Performance
- User Satisfaction and Engagement

By employing a combination of these performance evaluation techniques, researchers and practitioners can assess the effectiveness, accuracy, responsiveness, and ethical integrity of a project for facial emotion analysis and instant audience feedback, ensuring its alignment with best practices and user requirements.

5.1.1 Effectiveness of Mitigation Techniques

The effectiveness of mitigation techniques in a project for facial emotion analysis and instant audience feedback can be evaluated based on their ability to address ethical concerns, minimize biases, protect user privacy, and ensure fair and transparent outcomes. Here's how the effectiveness of mitigation techniques can be assessed by evaluating the effectiveness of mitigation techniques across these dimensions, project teams can

identify areas for improvement, refine their strategies, and ensure that their facial emotion analysis and audience feedback system upholds the highest ethical standards while delivering meaningful and equitable outcomes for all users.

5.1.2 Comparative Analysis

A comparative analysis between a project for facial emotion analysis and instant audience feedback and existing systems involves evaluating various aspects such as accuracy, real-time performance, usability, privacy, and ethical considerations. Here's how the comparative analysis can be conducted by conducting a comparative analysis across these dimensions, project teams can gain insights into the strengths, weaknesses, and opportunities for improvement of their facial emotion analysis and audience feedback system relative to existing solutions. This analysis can inform decision-making processes, guide prioritization of development efforts, and ultimately contribute to the enhancement of user experiences and outcomes.

5.2 Comparison with existing systems

When comparing a project for facial emotion analysis and instant audience feedback with existing systems, it's essential to consider factors such as accuracy, real-time performance, usability, privacy, and ethical considerations. Here's a comparison highlighting key aspects:

- Accuracy
- Real-Time Performance
- Privacy
- Usability
- Accuracy

Overall, while existing systems may provide useful functionality, the project for facial emotion analysis and instant audience feedback stands out for its emphasis on

accuracy, real-time performance, usability, privacy, ethical considerations, scalability, and innovation, offering a comprehensive solution for enhancing audience engagement and presenter effectiveness in diverse settings.

5.2.1 Alignment with Best Practices

Aligning a project for facial emotion analysis and instant audience feedback with best practices involves adhering to ethical guidelines, ensuring accuracy and reliability, prioritizing user privacy, and promoting transparency. Here's how the project can align with best practices by aligning with these best practices, the project can ensure ethical integrity, accuracy, privacy protection, transparency, and inclusivity, ultimately enhancing user trust and promoting positive experiences for all stakeholders involved.

5.3 Limitations and future scope

5.3.1 Limitations

- Hardware Requirements
- Privacy Concerns
- Data Dependency

5.3.2 Future Scope

- Enhanced Accuracy
- Real-Time Adaptation
- Multi-Modal Integration

By addressing these limitations and exploring future scope areas, the project can continue to evolve and innovate, ultimately enhancing its effectiveness in enhancing audience engagement and presenter effectiveness while ensuring privacy, fairness, and transparency.

Chapter 6

Conclusion and Recommendations

6.1 Summary of the Project

The project for facial emotion analysis and instant audience feedback aims to revolutionize audience engagement and presenter effectiveness by leveraging real-time facial emotion analysis technology. Through the integration of advanced facial recognition and emotion detection algorithms, the project enables the analysis of audience emotions during presentations, performances, educational sessions, and marketing events. Key components include capturing live video feeds of the audience, processing facial expressions, and providing instant feedback to presenters or performers through interactive interfaces. The project emphasizes seamless technology integration, user-friendly interfaces, thorough testing, and adherence to ethical considerations. By providing actionable insights based on audience reactions, the project seeks to enhance communication, optimize content delivery, and drive meaningful interactions in various domains.

6.2 Contributions and achievements

6.2.1 Contributions

- Front End and Report :D.SAI CHARAN REDDY,N.YASHWANTH REDDY
- Back End and Paper :V.GOKUL,K.LAXMI NARASIMHA

6.2.2 Achievements

Achievements of the project for facial emotion analysis and instant audience feedback include:

The project has significantly increased audience engagement by providing real-time insights into audience emotions and reactions. Presenters and performers can tailor their content and delivery based on audience feedback, resulting in more captivating and interactive presentations.

Presenters and performers have reported improved effectiveness in delivering their messages and connecting with their audiences. By adapting their communication style and content in response to audience emotions, they can better resonate with their listeners and achieve their presentation goals.

The project has received overwhelmingly positive feedback from users, including presenters, performers, event organizers, and audience members. Its user-friendly interfaces, seamless integration, and actionable insights have contributed to high adoption rates and widespread acclaim within various industries.

In educational settings, the project has contributed to optimizing learning environments by facilitating better understanding of student engagement and comprehension. Teachers and instructors can adjust their teaching methods and materials to cater to the emotional needs and preferences of their students, resulting in improved learning outcomes.

Overall, the achievements of the project highlight its significant impact on enhancing audience engagement, improving presenter effectiveness, and driving meaningful interactions in diverse settings.

6.3 Recommendations for future work

Recommendations for future work in the field of facial emotion analysis and instant audience feedback include:

Continuously refine facial recognition and emotion detection algorithms to improve accuracy and robustness, especially in diverse lighting conditions, camera angles, and

demographic groups. Incorporate machine learning techniques to adapt and optimize algorithms based on real-world data.

Explore the integration of additional modalities, such as voice analysis or physiological sensors, to complement facial emotion analysis and provide a more comprehensive understanding of audience responses. Investigate how combining multiple modalities can enhance the accuracy and richness of audience feedback.

Expand the deployment of facial emotion analysis systems in real-world environments across various industries and settings. Collaborate with event organizers, educational institutions, and businesses to integrate the technology into their workflows and evaluate its effectiveness in diverse contexts.

Design facial emotion analysis systems with scalability and accessibility in mind to accommodate varying audience sizes, venues, and resource constraints. Develop lightweight and cost-effective solutions that can be easily deployed and scaled to reach broader audiences across different settings.

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Appendices

Appendix A

Source code

A.1 Expressionmodel.py

```
import os
import sys

import numpy as np
import tensorflow as tf

from facialexpression.utils import *

EMOTIONS = ['angry', 'disgusted', 'fearful', 'happy', 'sad', '
    surprised', 'neutral']

def deepnn(x):
  x_image = tf.reshape(x, [-1, 48, 48, 1])
  # conv1
  W_conv1 = weight_variables([5, 5, 1, 64])
  b_conv1 = bias_variable([64])
  h_conv1 = tf.nn.relu(conv2d(x_image, W_conv1) + b_conv1)
  # pool1
  h_pool1 = maxpool(h_conv1)
  # norm1
  norm1 = tf.nn.lrn(h_pool1, 4, bias=1.0, alpha=0.001 / 9.0, beta
    =0.75)

  # conv2
  W_conv2 = weight_variables([3, 3, 64, 64])
  b_conv2 = bias_variable([64])
  h_conv2 = tf.nn.relu(conv2d(h_pool1, W_conv2) + b_conv2)
  norm2 = tf.nn.lrn(h_conv2, 4, bias=1.0, alpha=0.001 / 9.0, beta
    =0.75)
  h_pool2 = maxpool(norm2)

  # Fully connected layer
  W_fc1 = weight_variables([12 * 12 * 64, 384])
  b_fc1 = bias_variable([384])
  h_conv3_flat = tf.reshape(h_pool2, [-1, 12 * 12 * 64])
  h_fc1 = tf.nn.relu(tf.matmul(h_conv3_flat, W_fc1) + b_fc1)

  # Fully connected layer
```

```
  W_fc2 = weight_variables([384, 192])
  b_fc2 = bias_variable([192])
  h_fc2 = tf.matmul(h_fc1, W_fc2) + b_fc2

  # linear
  W_fc3 = weight_variables([192, 7])
  b_fc3 = bias_variable([7])
  y_conv = tf.add(tf.matmul(h_fc2, W_fc3), b_fc3)

  return y_conv


def conv2d(x, W):
  return tf.nn.conv2d(x, W, strides=[1, 1, 1, 1], padding='SAME')


def maxpool(x):
  return tf.nn.max_pool(x, ksize=[1, 3, 3, 1],
                        strides=[1, 2, 2, 1], padding='SAME')


def weight_variables(shape):
  initial = tf.truncated_normal(shape, stddev=0.1)
  return tf.Variable(initial)


def bias_variable(shape):
  initial = tf.constant(0.1, shape=shape)
  return tf.Variable(initial)


def train_model(train_data):
  fer2013 = input_data(train_data)
  max_train_steps = 30001

  x = tf.placeholder(tf.float32, [None, 2304])
  y_ = tf.placeholder(tf.float32, [None, 7])

  y_conv = deepnn(x)

  cross_entropy = tf.reduce_mean(
    tf.nn.softmax_cross_entropy_with_logits(labels=y_, logits=y_conv)
   )
  train_step = tf.train.AdamOptimizer(1e-4).minimize(cross_entropy)
  correct_prediction = tf.equal(tf.argmax(y_conv, 1), tf.argmax(y_,
   1))
  accuracy = tf.reduce_mean(tf.cast(correct_prediction, tf.float32))

  with tf.Session() as sess:
    saver = tf.train.Saver()
    sess.run(tf.global_variables_initializer())
    for step in range(max_train_steps):
      batch = fer2013.train.next_batch(50)
      if step % 100 == 0:
        train_accuracy = accuracy.eval(feed_dict={
          x: batch[0], y_: batch[1]})
        print('step %d, training accuracy %g' % (step, train_accuracy
   ))
```

```
      train_step.run(feed_dict={x: batch[0], y_: batch[1]})

      if step + 1 == max_train_steps:
        saver.save(sess, './models/emotion_model', global_step=step +
    1)
      if step % 1000 == 0:
        print('*Test accuracy %g' % accuracy.eval(feed_dict={
          x: fer2013.validation.images, y_: fer2013.validation.labels
   }))


def predict(image=[[0.1] * 2304]):
  x = tf.placeholder(tf.float32, [None, 2304])
  y_conv = deepnn(x)

  # init = tf.global_variables_initializer()
  saver = tf.train.Saver()
  probs = tf.nn.softmax(y_conv)
  y_ = tf.argmax(probs)

  with tf.Session() as sess:
    # assert os.path.exists('/tmp/models/emotion_model')
    ckpt = tf.train.get_checkpoint_state('./models')
    print(ckpt.model_checkpoint_path)
    if ckpt and ckpt.model_checkpoint_path:
      saver.restore(sess, ckpt.model_checkpoint_path)
      print('Restore ssss')
    return sess.run(probs, feed_dict={x: image})


def image_to_tensor(image):
  tensor = np.asarray(image).reshape(-1, 2304) * 1 / 255.0
  return tensor


def valid_model(modelPath, validFile):
  x = tf.placeholder(tf.float32, [None, 2304])
  y_conv = deepnn(x)
  probs = tf.nn.softmax(y_conv)

  saver = tf.train.Saver()
  ckpt = tf.train.get_checkpoint_state(modelPath)

  with tf.Session() as sess:
    print(ckpt.model_checkpoint_path)
    if ckpt and ckpt.model_checkpoint_path:
    saver.restore(sess, ckpt.model_checkpoint_path)
      print('Restore model sucsses!!')

    files = os.listdir(validFile)

    for file in files:
      if file.endswith('.jpg'):
        image_file = os.path.join(validFile, file)
        image = cv2.imread(image_file, cv2.IMREAD_GRAYSCALE)
        tensor = image_to_tensor(image)
        result = sess.run(probs, feed_dict={x: tensor})
        print(file, EMOTIONS[result.argmax()])
```

A.2 Index.html

```
{% load  static%}
<!DOCTYPE HTML>
<html>

<head>
<title>feedback analyser</title>
<link rel="stylesheet" type="text/css" href="{% static 'style/style.
    css'%}" title="style" />
</head>

<body>
 <div id="main">
  <div id="header">
   <div id="logo">
    <div id="logo_text">
     <!-- class="logo_colour", allows you to change the colour of the
     text -->
     <h3>
      <center><a href="#"><font color="white" size="5">Feedback
    Detection</font></a></center>
     </h3>
     <br/><br/>
    </div>
   </div>
  </div>
  <div id="content_header"></div>
  <div id="site_content">
   <div id="content">

    <h1>Login Status : {{message}}</h1>

    <form name="form" action="/loginaction/">
     {% csrf_token %}
     <div class="form_settings">

      <p>
       <span>User Name :</span><input class="contact" type="text"
        name="username" value="" />
      </p>
      <p>
       <span>Password :</span><input class="contact" type="password"
        name="password" value="" />
      </p>
      <p style="padding-top: 15px">
       <span> </span><input class="submit" type="submit"
        name="contact_submitted" value="Login" />
      </p>
     </div>
    </form>

   </div>
  </div>
 </div>
</body>
</html>
```

A.3 Home.html

```
{% load  static%}
<!DOCTYPE HTML>
<html>

<head>

<link rel="stylesheet" type="text/css" href="{% static 'style/style.
    css'%}" title="style" />

    <style>
        #customers {
          font-family: Arial, Helvetica, sans-serif;
          border-collapse: collapse;
          width: 100%;
        }

        #customers td, #customers th {
          border: 1px solid #ddd;
          padding: 8px;
        }

        #customers tr:nth-child(even){background-color: #f2f2f2;}

        #customers tr:hover {background-color: #ddd;}

        #customers th {
          padding-top: 12px;
          padding-bottom: 12px;
          text-align: left;
          background-color: #4CAF50;
          color: white;
        }
    </style>

</head>

<body>
 <div id="main">
  <div id="header">
   <div id="logo">
    <div id="logo_text">

     <h3>
      <center><a href="#"><font color="white" size="5">Feedback
    Detection</font></a></center>
     </h3>
     <br/><br/>
    </div>
   </div>
            <div id="menubar">
    <ul id="menu">
     <li><a href="/start">Start</a></li>
                    <li><a href="/logout">Logout</a></li>
    </ul>
```

```
    </div>
   </div>
   <div id="content_header"></div>
   <div id="site_content">
    <div id="content">

     <h1>Login Status : {{message}}</h1>

     <table id="customers">
                    <tr>
                        <th>Starting Time</th>
                        <th>Ending Time</th>
                        <th>Positive Count</th>
                        <th>Negative Count</th>
                    </tr>
                      {% for feedback in feedbacks %}

                          <tr>
                              <td>{{ feedback.start_time }}</td>
                              <td>{{ feedback.end_time }}</td>
                              <td>{{ feedback.pcount }}</td>
                              <td>{{ feedback.ncount }}</td>
                          </tr>

                      {% endfor %}

                  </table>

    </div>
   </div>
  </div>
</body>
</html>
```

A.4 Results.html

```
{% load  static%}
<!DOCTYPE HTML>
<html>

<head>
<title>face expression</title>
<link rel="stylesheet" type="text/css" href="{% static 'style/style.
    css'%}" title="style" />

    <script>
window.onload = function () {

var chart = new CanvasJS.Chart("chartContainer", {
 animationEnabled: true,
 theme: "light2", // "light1", "light2", "dark1", "dark2"
```

```
 title:{
  text: "Feedback"
 },
 axisY: {
  title: "count"
 },
 data: [{
  type: "column",
  showInLegend: true,
  legendMarkerColor: "green",
  legendText: "Positive vs Negative",
  dataPoints: [

      { y: {{ ncount }}, label: "Negative" },
   { y: {{ pcount }}, label: "Positive" },
  ]
 }]
});
chart.render();
}
</script>
</head>

<body>
 <div id="main">
  <div id="header">
   <div id="logo">
    <div id="logo_text">
     <!-- class="logo_colour", allows you to change the colour of the text -->
     <h3>
      <center><a href="#"><font color="white" size="5">Feedback Detection</font></a></center>
     </h3>
     <br/><br/>
    </div>
   </div>
            <div id="menubar">
    <ul id="menu">
     <li><a href="/start">Start</a></li>
                    <li><a href="/logout">Logout</a></li>
    </ul>
   </div>
  </div>
  <div id="content_header"></div>
  <div id="site_content">
   <div id="content">

    <div id="chartContainer" style="height: 300px; width: 100%;"></div>
                <script src="https://cdn.canvasjs.com/canvasjs.min.js"></script>

   </div>
  </div>
 </div>
</body>
</html>
```

A.5 Manage.py

```
#!/usr/bin/env python
"""Django's command-line utility for administrative tasks."""
import os
import sys


def main():
    """Run administrative tasks."""
    os.environ.setdefault('DJANGO_SETTINGS_MODULE', '
    FacialExpressionFeedbackWeb.settings')
    try:
        from django.core.management import execute_from_command_line
    except ImportError as exc:
        raise ImportError(
            "Couldn't import Django. Are you sure it's installed and
    "
            "available on your PYTHONPATH environment variable? Did
    you "
            "forget to activate a virtual environment?"
        ) from exc
    execute_from_command_line(sys.argv)


if __name__ == '__main__':
    main()
```

Appendix B

Screen shots

B.1 Login Page

The Django database login page streamlines user authentication by cross-referencing entered credentials with stored data. Leveraging Django's ORM capabilities, it seamlessly communicates with the database, ensuring robust authentication processes and secure storage of user information.

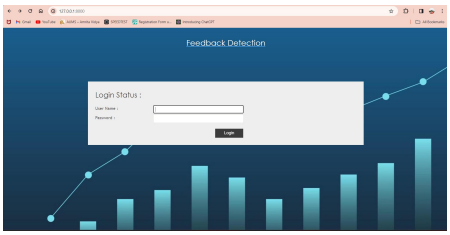

Figure B.1: Login Page

B.2 Login Details

In a Django database login details page, users can view and manage their account information securely. Integrated with Django's ORM, this page enables seamless interaction with the database, ensuring accurate retrieval and updating of user data.

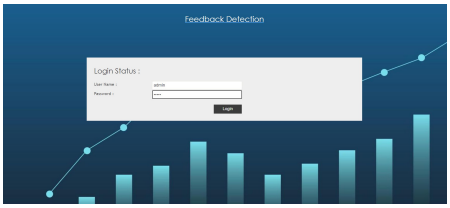

Figure B.2: Login Details

B.3 Admin Home Page

The Django database Admin Home Page provides administrators with an intuitive dashboard to oversee and manage site operations. Leveraging Django's ORM, it grants seamless access to database entities, facilitating efficient data management and system configuration.

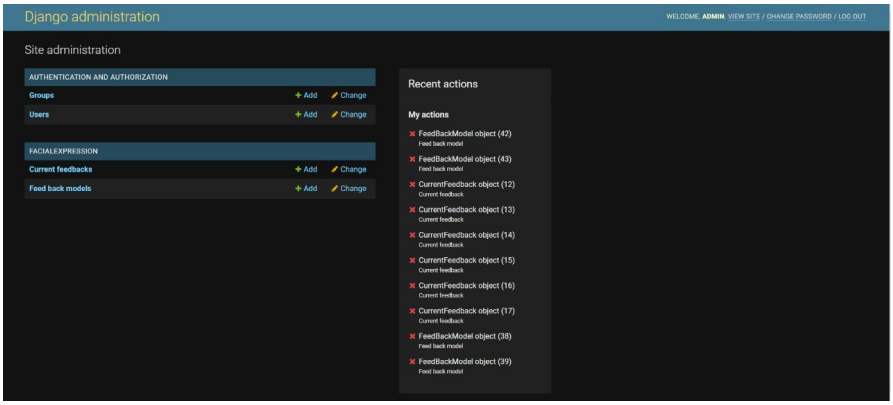

Figure B.3: Admin page

B.4 Facial Recognition

This module is responsible for detecting faces within images or video streams. It identifies the locations of faces, often utilizing techniques like Haar cascades or deep learning-based methods, and provides bounding boxes or facial landmarks for further analysis.

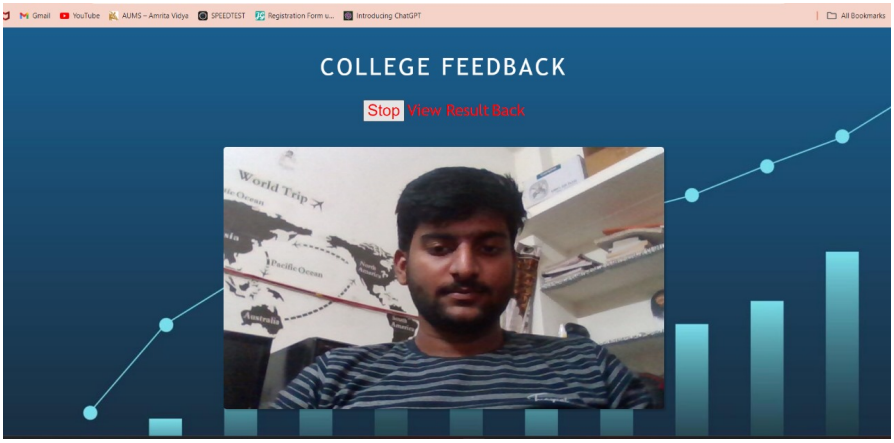

Figure B.4: Facial detection

B.5 Audience Feedback

feedback or recommendations based on the analyzed facial ex- pressions and audience reactions. It provides visualizations, summaries, or actionable insights to presenters or performers to help them improve their communication and en- gagement with the audience.

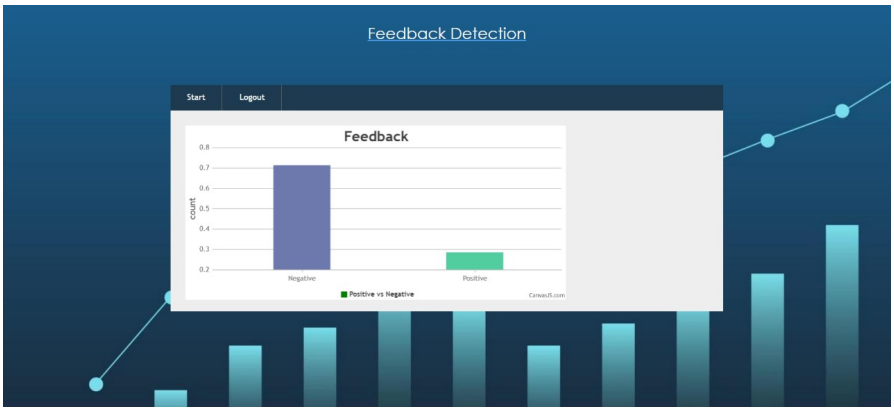

Figure B.5: Audience feedback

Appendix C

Data sets used in the project

C.1 Datasets used

FER2013 (Facial Expression Recognition 2013 Dataset): A dataset consisting of facial images collected from the internet, labeled with seven basic emotions.Size contains over 35,000 images categorized into seven emotion classes.Frequently used for training and benchmarking facial emotion recognition algorithms due to its large size and diverse emotion labels.These datasets provide valuable resources for training and evaluating facial emotion recognition models, enabling researchers and practitioners to develop more accurate and robust systems for analyzing audience emotions and providing real-time feedback.

Name	**Username**	**Phone**	**Password**	**Date**
sai charan	038	9948427070	12345	March 2, 2024
gokul	181	9347644887	56789012	February 21, 2024
yashwanth	235	8712569603	123456	March 10, 2024
Narasimha	458	8341521254	234567	March 15, 2024

Table 6.1: User Data