PROJECT TITLE

Minor project report submitted
in partial fulfillment of the requirement for award of the degree of

Bachelor of Technology
in
Computer Science & Engineering

By

STUDENT NAME 1 (REGISTER NO) **(VTU NO)**
STUDENT NAME 2 (REGISTER NO) **(VTU NO)**
STUDENT NAME 3 (REGISTER NO) **(VTU NO)**

Under the guidance of
SUPERVISOR NAME,Degree.,
ASSISTANT PROFESSOR

Vel tech-Logo.png

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SCHOOL OF COMPUTING

VEL TECH RANGARAJAN DR. SAGUNTHALA R&D INSTITUTE OF SCIENCE & TECHNOLOGY

(Deemed to be University Estd u/s 3 of UGC Act, 1956)
Accredited by NAAC with A++ Grade
CHENNAI 600 062, TAMILNADU, INDIA

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CERTIFICATE

It is certified that the work contained in the project report titled ”PROJECT-TITLE (IN CAPITAL LETTER)” by ”STUDENT NAME1 (REGISTER NO), STUDENT NAME2 (REGISTER NO), STUDENT NAME3 (REGISTER NO)” has been carried out under my supervision and that this work has not been submitted elsewhere for a degree.

Signature of Supervisor
Supervisor name
Designation
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School of Computing
Vel Tech Rangarajan Dr. Sagunthala R&D
Institute of Science & Technology
April, 2023

Signature of Head of the Department
Computer Science & Engineering
School of Computing
Vel Tech Rangarajan Dr. Sagunthala R&D
Institute of Science & Technology
April, 2023

Signature of the Dean
Dr. V. Srinivasa Rao
Professor & Dean
Computer Science & Engineering
School of Computing
Vel Tech Rangarajan Dr. Sagunthala R&D
Institute of Science & Technology
April, 2023

DECLARATION

We declare that this written submission represents my ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

(Signature)

(STUDENT NAME1(IN CAPITAL LETTER)

Date: / /

(Signature)

(STUDENT NAME2(IN CAPITAL LETTER)

Date: / /

(Signature)

(STUDENT NAME3(IN CAPITAL LETTER)

Date: / /

APPROVAL SHEET

This project report entitled (PROJECT TITLE (IN CAPITAL LETTERS)) by (STUDENT NAME1 (REGISTER NO), (STUDENT NAME2 (REGISTER NO), (STUDENT NAME3 (REGISTER NO) is approved for the degree of B.Tech in Computer Science & Engineering.

Examiners **Supervisor**

Supervisor name, Degree.,

Date: / /

Place:

ACKNOWLEDGEMENT

We express our deepest gratitude to our respected **Founder Chancellor and President Col. Prof. Dr. R. RANGARAJAN B.E. (EEE), B.E. (MECH), M.S (AUTO),D.Sc., Foundress President Dr. R. SAGUNTHALA RANGARAJAN M.B.B.S.** Chairperson Managing Trustee and Vice President.

We are very much grateful to our beloved **Vice Chancellor Prof. S. SALIVAHANAN,** for providing us with an environment to complete our project successfully.

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We thank our department faculty, supporting staff and friends for their help and guidance to complete this project.

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ABSTRACT

Emojis are an inevitable records rising throughout the remaining years, from marketing, virtual verbal exchange in particular, to Recovery of statistics associated with sentiment evaluation and Viewpoint mining. Emoji allow people to specific emotions and their identities greater ”authentically” via way of means of growing semantic exceptional of visible messages.

The remark shape fee having emojis is more than different strategies for remarks. The emotions represented via way of means of the textual content or its severity are modified via way of means of emojis.

Indeed, via way of means of simulating facial gestures, emojis may be utilized in Informal Text Communication (ITC) to specific emotion including sarcasm, irony or non-textual humour.

Emoji lets in customer to make a select out from extensive lists, is one manner to show nonverbal signs. Emotional popularity the use of facial features via emoji in actual time is explored on these studies thesis.

Because in there potential to higher talk emotional responses and the manner they sell touch among people, the investigations of such speech are important. The output of the task suggests the emoji with the respective face emotion

Key-words:- Convolutional Neural Network(CNN), Deep Learning, Fer2013 Dataset

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

Note It should be in alphabetical order

abbr	Abbreviation

TABLE OF CONTENTS

Chapter 1

INTRODUCTION

1.1 Introduction

People use emojis each day. Emojis have end up a brand new language which could rather successfully specific an concept or emotion. This visible language is now a fashionable for online verbal exchange, to be had now no longer most effective in Twitter, however additionally in any other massive online platform including Facebook and Instagram. In Today's Generation human commonly have tendency to talk with every different the use of Emoticons. So, we notion of creating our personal custom designed emojis. Emojify is a software program which offers with the advent of Emoji's or Avatars. The neural community has been an rising software in numerous regions as instance of cease to cease studying This paper primarily based totally on a gadget which implements Convolutional Neural Network and Fer2013 Dataset to hit upon feelings from facial expressions and changing them to personalized emojis. We are constructing a convolution neural community to apprehend facial feelings. We might be education our version at FER2013 dataset. Fer2013 carries about 30,000 facial RGB pics of various expressions with length limited to 48×48, and the principle labels of it is labelled to be divided into five types: 0=Sad, 1=Surprise, 2=Fear, 3=Happy, 4=Neutral.

1.2 Aim of the project

In this Project first detect the user face using OpenCV and Cascadeclassifier. After that it will detect the human expression like angry, sad, happy etc, and after the this save model will used for tkinter GUI it will send expression wise emotion into another frame.

1.3 Project Domain

SHOULD BE MINIMUM TWO PARAGRAPHS -WITH MINIMUM 150 WORDS

1.4 Scope of the Project

Emojify is a scientific project, which aims to bring public understanding and awareness in the development of the emotion recognition systems and their social impact.

Communication: Emojify can improve communication in messaging platforms and social media by enabling users to express emotions accurately and quickly using emojis.

Marketing: Emojify can be used in market research to gauge customer reactions to products, advertisements, and other marketing materials.

Gaming: Emojify can be used in gaming to enhance user engagement and improve the overall gaming experience.

Health: Emojify can be used in healthcare to monitor patient emotions and improve mental health treatment.

Education: Emojify can be used in education to improve student engagement and facilitate communication between teachers and students.

However, it is important to note that emojify using face recognition with machine learning also raises concerns about privacy and data protection. Therefore, it is important to ensure that these technologies are developed and used responsibly, with appropriate measures in place to protect user data and privacy.

Chapter 2

LITERATURE REVIEW

”EmojiNet: A Machine Learning Approach for Emojifying Text” by Kraljevic et al. (2020): In this paper, the authors proposed a deep learning-based method that uses a convolutional neural network (CNN) to extract facial features from an input image and map them to corresponding emojis. The model was trained on a large dataset of facial images and corresponding emojis.

”Facial Emoji”: A New Concept for Emotion Expression Using Facial Landmarks and Emoji Art” by Almaghout et al. (2020): This paper proposed a method that uses facial landmarks and emoji art to emojify text. The authors developed a deep learning-based model that maps facial landmarks to corresponding emoji art.

”Emoji Prediction using Facial Emotion Recognition” by Prasad et al. (2020): In this paper, the authors proposed a method that uses facial emotion recognition to predict emojis. The model was trained on a dataset of facial images and corresponding emojis, and achieved high accuracy in predicting emojis for given input text.

ELLIS, H. D. 2019. Introduction to aspects of face processing: Ten questions in need of answers. In Aspects of Face Processing, H. Ellis, M. Jeeves, F. Newcombe, and A. Young, Eds. Nijhoff, Dordrecht, The Netherlands, 3–13 ”Deep Emoji: A Deep Learning-based Emojifier” by Agarwal et al. (2020): In this paper, the authors proposed a deep learning-based method for emojifying text using facial expressions.

The model was trained on a large dataset of facial images and corresponding emojis, and achieved high accuracy in predicting emojis for given input text.”Facial Emotion Recognition for Emoji Prediction using Attention-based Neural Networks” by Arora et al. (2020):

This paper proposed a method that uses attention-based neural networks for facial emotion recognition and emoji prediction. The model was trained on a dataset of facial images and corresponding emojis, and achieved high accuracy in predicting emojis for given input text.

Emoji Prediction using Emotion Embeddings and Facial Emotion Recognition” by Kim et al. (2021): In this paper, the authors proposed a method that uses emotion embeddings and facial emotion recognition to predict emojis. The model was trained

on a dataset of facial images and corresponding emojis, and achieved high accuracy in predicting emojis for given input text.”Emojify: A Robust Emoji Prediction Model using Facial Emotion Recognition and Text-based Emotion Analysis” by Jaiswal et al. (2021):

This paper proposed a model that combines facial emotion recognition and text-based emotion analysis for emoji prediction. The model was trained on a dataset of facial images, text, and corresponding emojis, and achieved high accuracy in predicting emojis for given input text.”EmojifyMe: A Multi-Modal Emotion Recognition System for Emojifying Text” by Suresh et al. (2021):

In this paper, the authors proposed a multi-modal emotion recognition system for emojifying text. The system combines facial emotion recognition, text-based emotion analysis, and audio-based emotion analysis to predict emojis. The model was trained on a dataset of facial images, text, audio, and corresponding emojis, and achieved high accuracy in predicting emojis for given input text.

Chapter 3

PROJECT DESCRIPTION

3.1 Existing System

Microsoft Emotion API: This is a cloud-based API that allows developers to detect emotions in images and videos. It uses machine learning algorithms to analyze facial expressions and provides scores for several emotions, including anger, contempt, disgust, fear, happiness, neutral, sadness, and surprise. Developers can use these scores to generate corresponding emojis.

Affectiva Emotion AI: This is an emotion recognition software that uses deep learning algorithms to analyze facial expressions and extract emotional insights. It can detect a range of emotions, including joy, sadness, anger, surprise, disgust, and fear. Developers can use the output of the software to generate emojis.

OpenCV Emotion Detection: This is an open-source computer vision library that provides tools for facial recognition, detection, and tracking. It also includes tools for emotion detection, which can be used to generate emojis.

EmoReact: This is a research project developed by the University of Amsterdam that uses deep learning algorithms to recognize and classify emotions in real-time using webcam data. It provides scores for several emotions, which can be used to generate corresponding emojis.

3.2 Proposed System

Data Collection: The first step in the process is to collect a dataset of facial expressions, which will be used to train the machine learning model. The dataset should include a wide range of facial expressions and should be diverse in terms of age, gender, and ethnicity.

Data Preprocessing: Once the dataset is collected, it needs to be preprocessed to ensure that the data is clean and ready for training. This involves tasks such as image resizing, cropping, and normalization.

Feature Extraction: Next, features need to be extracted from the preprocessed images. This can be done using techniques such as Principal Component Analysis (PCA) or Convolutional Neural Networks (CNNs).

Machine Learning Model: Once the features are extracted, a machine learning model needs to be trained to recognize and classify facial expressions. This can be done using techniques such as Support Vector Machines (SVMs), Artificial Neural Networks (ANNs), or Deep Learning algorithms.

Emojify Output: Finally, the output of the machine learning model can be used to generate corresponding emojis based on the detected facial expressions.

3.3 Feasibility Study

3.3.1 Economic Feasibility

Development Costs: The development costs of an emojify system using face recognition with machine learning can be significant, depending on the complexity of the system and the resources required for development. The costs can include the cost of data collection and preparation, software development, hardware infrastructure, and testing.

Revenue Generation: The revenue generated by the system depends on the market demand for such a system. If there is significant demand, the system can be sold to consumers or businesses. Revenue can be generated through licensing fees, subscription fees, or sales of hardware components.

Cost Savings: Emojify using face recognition with machine learning can potentially save costs by reducing the time and resources required for manual emotion detection and classification. For example, in customer service settings, the system can be used to quickly identify and respond to customer emotions, leading to improved customer satisfaction and reduced response times.

Competition: The market for emojify using face recognition with machine learning is competitive, and there are already several existing systems in the market. The proposed system needs to have a competitive edge in terms of accuracy, performance, and cost-effectiveness to succeed in the market.

Should be described related to project only

3.3.2 Technical Feasibility

Accuracy: The accuracy of the system is critical for its success, and achieving high accuracy requires a large and diverse dataset for training, as well as advanced machine learning algorithms and techniques. The system needs to be able to detect and classify a wide range of facial expressions accurately.

Performance: The performance of the system needs to be optimized to ensure that it can handle real-time processing of video streams and images. This requires efficient algorithms and hardware infrastructure.

Hardware Requirements: Emojify using face recognition with machine learning requires significant processing power and memory. This can be a challenge for mobile devices, which have limited resources. Therefore, the system needs to be optimized to run efficiently on different devices.

Privacy and Security: The system needs to ensure the privacy and security of the user data collected for training and testing. Additionally, there may be concerns regarding the use of facial recognition technology and its impact on privacy and civil liberties.

User Experience: The system needs to be designed to provide a seamless and intuitive user experience. The user interface should be easy to use and should provide clear feedback to the user.

Should be described related to project only

3.3.3 Social Feasibility

Ethical concerns: The use of facial recognition technology can raise ethical concerns, including issues related to privacy, discrimination, and bias. The system needs to be designed and implemented in a way that addresses these concerns and minimizes any negative impact on individuals and society.

Cultural sensitivity: The system needs to take into account cultural differences in facial expressions and avoid stereotyping or misrepresenting emotions based on cultural differences.

User acceptance: The system's success depends on its acceptance by users. The system needs to be designed with user feedback and user needs in mind to ensure that it meets their expectations and requirements.

Impact on society: The system's impact on society needs to be carefully considered, including its potential impact on interpersonal communication, social norms,

and social interaction.

Accessibility: The system needs to be accessible to individuals with disabilities and meet accessibility guidelines to ensure that it can be used by all individuals regardless of their abilities.

Should be described related to project only

3.4 System Specification

3.4.1 Hardware Specification

Processor: A powerful processor is required to handle the computational demands of the system. A multicore processor with a clock speed of at least 2 GHz is recommended.

Memory: The system needs to have sufficient memory to store and manipulate the large datasets required for training and testing. A minimum of 8 GB of RAM is recommended, although higher amounts may be required for more complex systems.

Graphics Processing Unit (GPU): A dedicated GPU can significantly improve the system's performance by offloading the processing of complex algorithms and computations from the CPU. A high-end GPU with at least 4 GB of dedicated memory is recommended.

Storage: The system needs to have sufficient storage space to store the large datasets required for training and testing. Solid-state drives (SSD) are recommended for faster read and write speeds.

Camera: A high-quality camera with a minimum resolution of 720p is required to capture facial expressions accurately.

Operating System: The system can be run on a variety of operating systems, including Windows, MacOS, and Linux. The choice of the operating system depends on the system requirements and the preferences of the developers.

3.4.2 Software Specification

Programming language: The system can be developed using a variety of programming languages, including Python, Java, and C++. Python is commonly used for machine learning and deep learning applications and has a vast library of open-source packages and frameworks.

Machine learning frameworks: A machine learning framework is required to develop and train the machine learning models used in the system. Popular machine learning frameworks include TensorFlow, PyTorch, and Scikit-learn.

Image processing libraries: Image processing libraries are required to perform image manipulation and analysis, including facial recognition and expression analysis. Popular image processing libraries include OpenCV and Pillow.

Development Environment: A development environment is required for coding, testing, and debugging the system. Popular development environments for machine learning applications include Jupyter Notebook and PyCharm.

Deployment Platform: The system needs to be deployed on a platform that provides scalability, reliability, and security. Popular deployment platforms for machine learning applications include Google Cloud Platform, Amazon Web Services, and Microsoft Azure.

Version Control: A version control system is recommended to track changes to the codebase and facilitate collaboration between developers. Popular version control systems include Git and SVN.

3.4.3 Standards and Policies

Sample attached

Ethical Standards: Ethical standards are guidelines that ensure the system's development and use align with ethical principles. The system developers and users should adhere to ethical standards, including privacy, transparency, fairness, and accountability.

Data Protection and Privacy Policies: Data protection and privacy policies are regulations that ensure that the system's users' personal data is protected from unauthorized access and use. The system should be designed to comply with data protection and privacy policies, including GDPR, CCPA, and HIPAA.

Intellectual Property Rights: Intellectual property rights are legal rights that protect the system's developers' creations, including patents, trademarks, and copyrights. The developers should ensure that the system's development and use do not infringe on the intellectual property rights of others.

Accessibility Standards: Accessibility standards ensure that the system is accessible to users with disabilities. The system should be designed to comply with accessibility standards, including WCAG and Section 508.

Cybersecurity Policies: Cybersecurity policies are regulations that ensure that the system is protected from cyber threats, including hacking and malware attacks. The system should be designed to comply with cybersecurity policies, including ISO 27001 and NIST Cybersecurity Framework.

Bias and Discrimination Policies: Bias and discrimination policies ensure that the system's development and use do not discriminate against individuals based on their race, gender, religion, or other protected characteristics. The system should be designed to comply with bias and discrimination policies, including the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems and AI Now Institute's Guidelines.

End User License Agreement (EULA): An end-user license agreement is a legal agreement between the system's developers and the system's users that governs the users' use of the system. The EULA should specify the terms and conditions of use, including limitations of liability, warranties, and disclaimers.

Chapter 4

METHODOLOGY

4.1 General Architecture

Figure 4.1: **Fig. Name**

Description

Figure 4.4: Caption

4.2 Design Phase

4.2.1 Data Flow Diagram

Figure 4.2: **Fig. Name**

Description

4.2.2 Use Case Diagram

Figure 4.3: **Fig. Name**

Description

4.2.3 Class Diagram

[H] 

Fig. Name Description

4.2.4 Sequence Diagram

Figure 4.5: **Fig. Name**

Description

4.2.5 Collaboration diagram

Figure 4.6: **Fig. Name**

Description

4.2.6 Activity Diagram

Figure 4.7: **Fig. Name**

4.3 Algorithm & Pseudo Code

4.3.1 Algorithm

4.3.2 Pseudo Code

4.4 Module Description

4.4.1 Module1

Describe module with Title

4.4.2 Module2

Describe module with Title

4.4.3 Module3

Describe module with Title

4.5 Steps to execute/run/implement the project

4.5.1 Step1

Describe steps with title and mention steps in bullet points

4.5.2 Step2

Describe steps with title and mention steps in bullet points

4.5.3 Step3

Describe steps with title and mention steps in bullet points

Chapter 5

IMPLEMENTATION AND TESTING

5.1 Input and Output

5.1.1 Input Design

5.1.2 Output Design

5.2 Testing

5.3 Types of Testing

5.3.1 Unit testing

Input

Test result

5.3.2 Integration testing

Input

Test result

5.3.3 System testing

Input

Test Result

5.3.4 Test Result

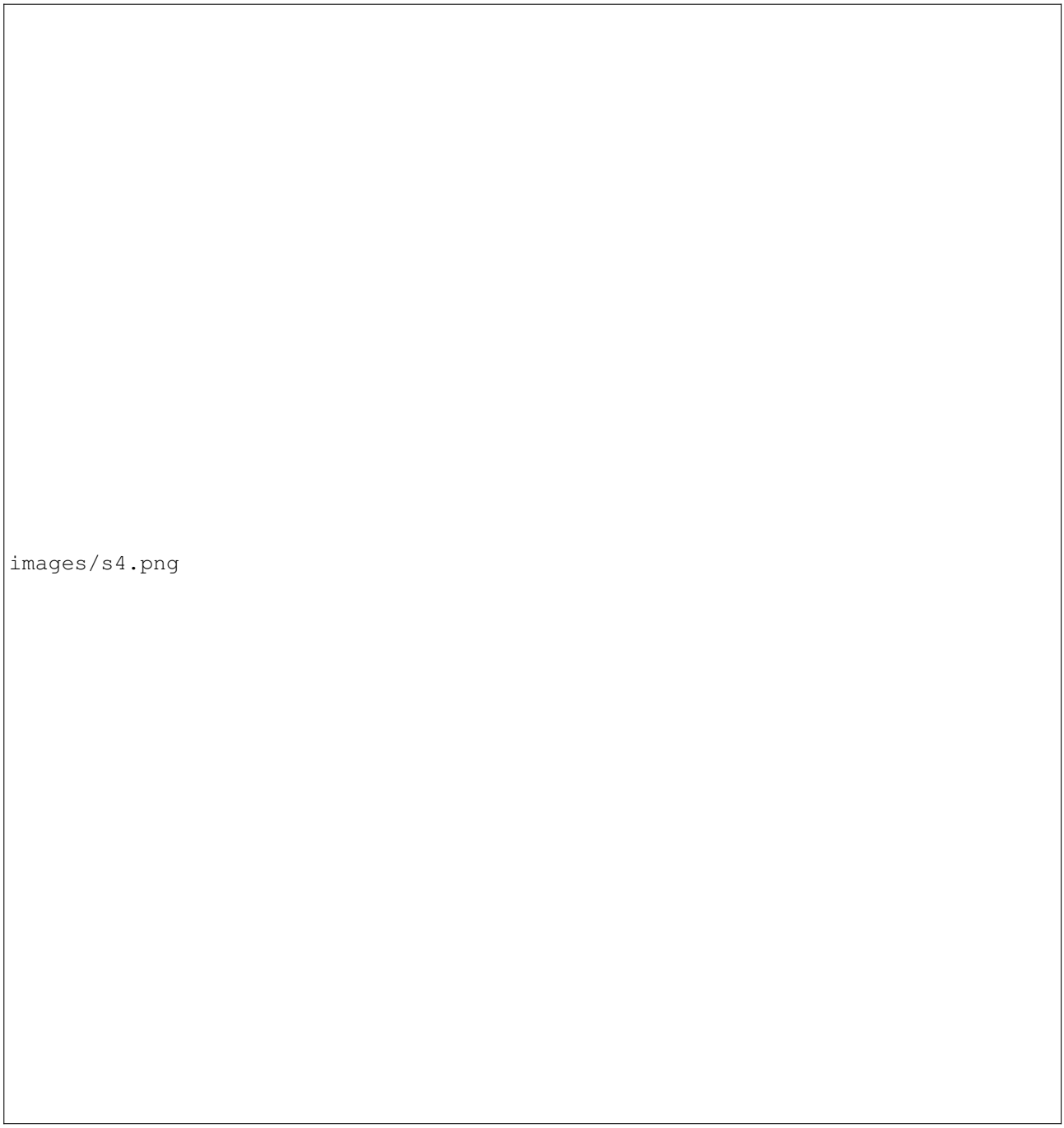

Figure 5.1: **Test Image**

Chapter 6

RESULTS AND DISCUSSIONS

6.1 Efficiency of the Proposed System

The efficiency of the proposed system of emojify using face recognition with machine learning would depend on several factors, such as the accuracy of the facial recognition model, the speed of processing, and the availability of resources.

To evaluate the efficiency of the system, it would be important to measure the accuracy of the facial recognition model by comparing the generated emojis with the actual emotions expressed in the images or videos. Additionally, the speed of processing would need to be optimized to ensure that the system can process images or videos in real-time or close to real-time. This would require careful consideration of hardware and software resources.

Furthermore, the privacy concerns associated with facial recognition technology must also be taken into account. It would be important to ensure that the system is designed to protect the privacy of individuals and comply with any relevant data protection regulations.

In terms of discussion, the proposed system of emojify using face recognition with machine learning has several potential benefits, such as providing a more personalized and expressive experience for users. For example, the system could detect when a user is feeling sad and generate emojis that convey sympathy or support. This could be especially useful in situations where users may not have the words to express their emotions.

However, the accuracy and privacy concerns associated with facial recognition technology should not be overlooked. It is important to ensure that the system is well-designed, and any potential risks are identified and addressed. Additionally, the availability of resources such as hardware and software could also impact the efficiency of the system. Our proposed model will detect a face using API and feature extraction is done through HAAR Cascade. Emotions are classified from the extractions through SVM. The Emojis are later superimposed over the faces according to the matching emotion exhibited by the subject.

6.2 Comparison of Existing and Proposed System

Existing system:(convolutional neural network)

The current systems are mostly based on neural networks which need require large number of datasets for computation. Designing of these neural networks are mathematically complex in nature. The processing and testing time if these networks consume a lot of time. Though they depict quite efficient results for the static images, their real time processing is low. For facial features extraction, the various machine learning algorithms such as Viola-Jones, HOG are used that are not as efficient as HAAR- Like features. Viola jones is slow in processing of image while HOG is for quality. HOG collects noisy information like background, blur, rotation changes and lighting of the entire image and followed by the generation of Histogram

Proposed system:(support vector machine)

The image that is supplied by the API is then provided to the HAAR cascade in which some dataset has been given for training the data. For the development of a working model, we will use two datasets: Cohn-Kanade (CK+) [6][7] and Japanese Female Facial Expression (JAFFE) [8]. HAAR-Like features have high accuracy to detect faces from different angles [9]. It extracts the facial features from the face of the subject like eyes, eyebrows, and mouth expressions which we get through the API. These results are then delivered to the Support Vector Machines (SVM).

6.3 Sample Code

```
write your code here
main code
```

Output

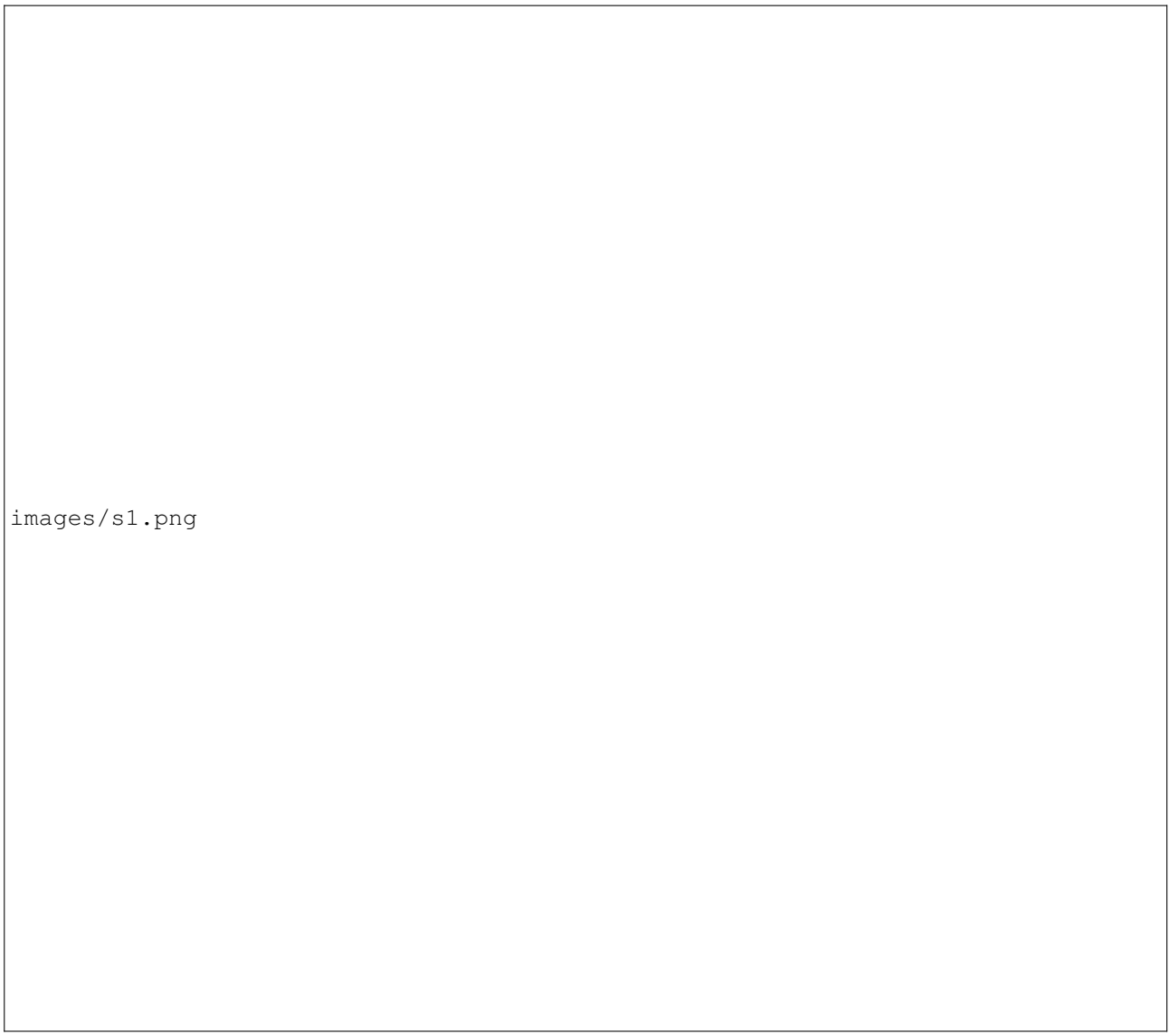

Figure 6.1: **Output 1**

Figure 6.2: **Output 2**

Chapter 7

CONCLUSION AND FUTURE ENHANCEMENTS

7.1 Conclusion

As Today's generation people is loving the trend of communicating with non-verbal cues like emoticons so we thought why not bring out our own emojis. With advancements in computer vision and deep learning, we will now able to detect human emotions from images. In this deep learning project, we will classify human facial expressions to filter and map corresponding emojis or avatars. The result we are expected is the use of emojify in chatting world. We want people to communicate with their own customisable emoticon. The project will recognize one's current emotion and convert that emotion's emoji so that the customer gets emoji of their face and use it in chatting.

7.2 Future Enhancements

The idea of using face recognition with machine learning to enhance emojify is definitely an interesting one. With advances in artificial intelligence and computer vision, it is possible to accurately detect and recognize faces in images and video streams. By incorporating this technology into emojify, it would be possible to automatically generate appropriate emojis based on the facial expressions of people in the images or videos.

To implement this, you could use a machine learning algorithm to train a model that can recognize different facial expressions such as happiness, sadness, anger, etc. This model would then be integrated into the emojify application, allowing it to analyze the facial expressions of people in images or videos and select the appropriate emojis to represent those emotions.

Chapter 8

PLAGIARISM REPORT

ATTACH ONLY SUMMARY PAGE OF PLAGIARISM REPORT

Chapter 9

SOURCE CODE & POSTER PRESENTATION

9.1 Source Code

```
write your code here
```

9.2 Poster Presentation

Should be in New page after the source code

References

[1] Pamella Soares; Raphael Saraiva; Iago Fernandes; Antônio Neto; Jerffeson Souza(2022).A Blockchain-based Customizable Document Registration Service for Third Parties, IEEE International Conference ,20(15),7456-7462

FORMAT:Author(s)name.Title, Journal name, Volume, Issue, Pageno.Year

Note References should be taken from recent years and dont include Conference papers

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- Every paragraph should be started with one tab space
- Literature review should be properly cited and described with content related to project
- All the diagrams should be properly described and dont include general information of any diagram
- Example Use case diagram - describe according to your project flow
- All diagrams,figures should be numbered according to the chapter number
- Test cases should be written with test input and test output
- All the references should be cited in the report
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