Emojify-Make your own Emoji using Machine Learning

A Project Work Synopsis

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IN

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1 INTRODUCTION

1.1 Problem Definition:

As it is hard to understand the body language and facial expressions of a person so there is an application in making it easy to understand.

1.2 Project Overview:

Emoji's or avatars are ways to show facial expression or nonverbal cues. These expression have become more and more essential part of chatting/ texting, showing emotion and many more. With advancement in computer vision and machine learning, we can detect human facial emotions from images or videos. In this project, we will detect human facial expression to filter and map corresponding emoji's or avatars.

1.3 Hardware Requirements:

A pc / laptop on an i3 processor or above, having a webcam.

1.4 Software Requirements:

Our Emojify will be an Gui application. Various software/languages/frameworks will be used in detecting the facial expression using emojis.

Software/Tools used

i. PyCharm, Spyder, VS Code (any one)

ii.Keras (Deep Learning Library)

iii. Tensorflow

iv. Python

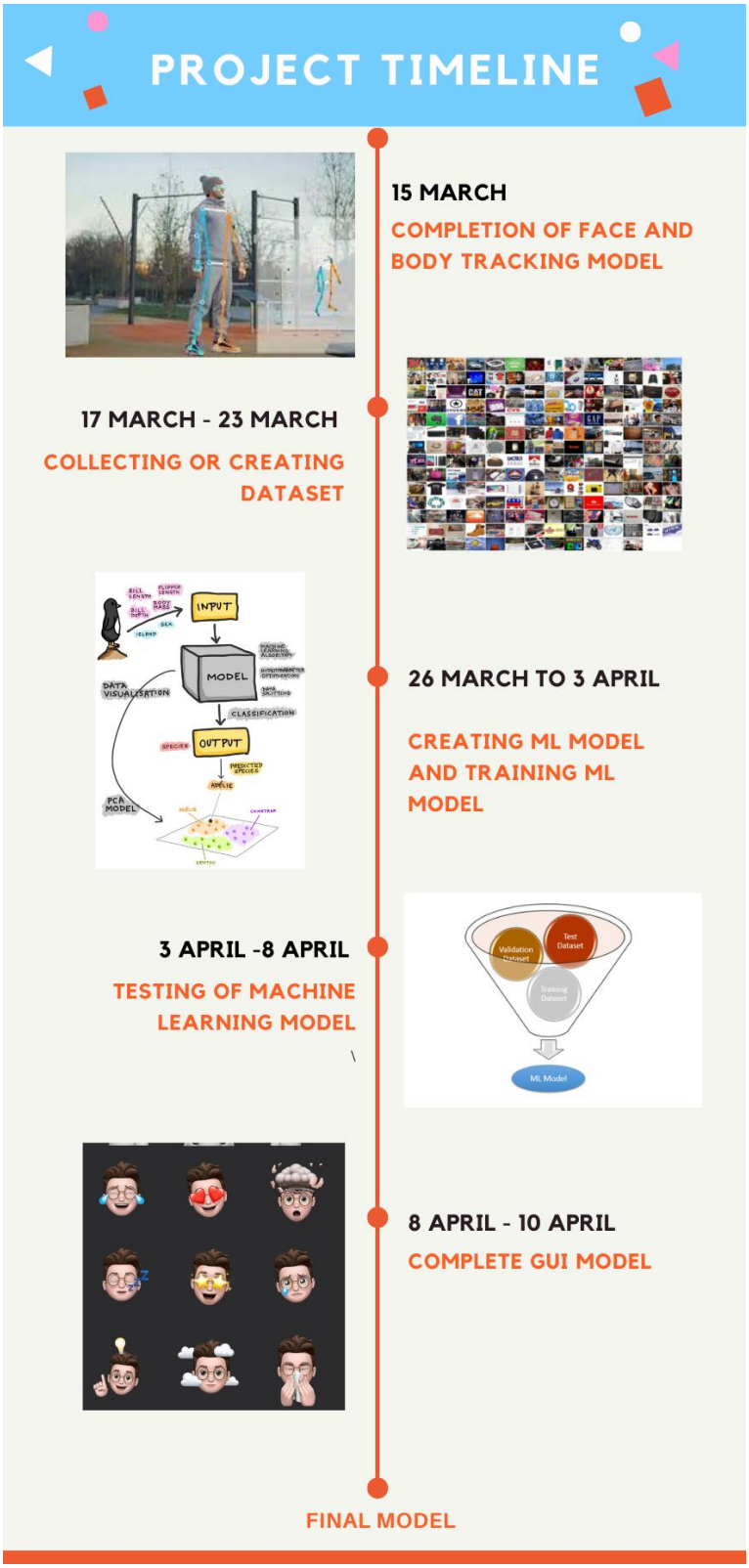
2 LITERATURE REVIEW

The main technology that will be used in our project is motion capture. Motion Capture is one of the concepts of Deep Learning and it is gaining popularity day by day. According to research done by scientists; The human body is a very complex system, consisting of more than 200 joints, and if we need to simulate the entire movement of the human body in the most vivid way, we will provide all the rotation angles. about the value and position of the human body. and other relevant information. Besides, we have emojis and avatars.

Emojis are a way to display nonverbal cues. These signs have become an integral part of online chat, product reviews, brand logos, and more. There has also been an increase in data science research focusing on emoji-based storytelling.

Thanks to advances in computer vision and deep learning, it is now possible to detect human emotions from images. In this deep learning project, we will classify human facial expressions to filter and map the corresponding emojis or avatars. By far, MediaPipe is one of the most famous cross-platform libraries widely used for motion capture. The communication channel consists of a pipeline with optimized face, pose and hand components, each running in real time, with minimal memory, metamorphosing between their inference backend . MediaPipe's main quality is that it's a cross-platform library, which means it's platform-independent and available in multiple languages.

3 PROBLEM FORMULATION



4 OBJECTIVES

The proposed work is aimed to carry out work leading to the development of an approach for Emojify. The proposed aim will be achieved by dividing the work into the following objectives:

1. Face/Body Tracking.
2. Acquiring the dataset to train the model.
3. Training model using Tensor-flow/any other deep learning library.
4. Testing the model using testing dataset.
5. Creating GUI interface
6. Final Model Deployement.

The main objective of our project is learning and exploring the wide field of Artificial Intelligence and Machine Learning/Deep Learning. During the making of our project, we will interact with many new technologies and many challenges and the main thing we have to do is to overcome all of this and make a ready-to-use product.

5 METHODOLOGY

The following methodology will be followed to achieve the objectives defined for the proposed project work:

1. A detailed study of Deep Learning and Motion Capture will be done.
2. Installation and hands-on experience on the existing library Mediapipe will be done. Relative pros and cons will be identified.
3. Various parameters will be identified to evaluate the proposed system.
4. Comparison of newly implemented approaches with exiting approaches will be done.

6 TENTATIVE CHAPTER PLAN FOR THE PROPOSED WORK

CHAPTER 1: INTRODUCTION

This chapter will cover the overview of our project – Emojify: Make your own Emoji using Machine Learning.

CHAPTER 2: LITERATURE REVIEW

This chapter includes the literature available related to motion capture and deep learning. The findings of the researchers will be highlighted which will become basis of current implementation.

CHAPTER 3: BACKGROUND OF PROPOSED METHOD

This chapter will provide an introduction to the concepts like making of ML model, using OpenCV, using Media-Pipe etc. which are necessary to understand the proposed system.

CHAPTER 4: METHODOLOGY

This chapter will cover the technical details –"How the Model will work and what are the tool used in the project of the proposed approach.

CHAPTER 5: EXPERIMENTAL SETUP

This chapter will provide information about training the ML model on the training dataset and evaluating the accuracy of the training model and validating model using testing dataset and comparison of accuracy between the training and testing of the proposed method.

CHAPTER 6: RESULTS AND DISCUSSION

The result of the proposed technique will be discussed in this chapter.

CHAPTER 7: CONCLUSION AND FUTURE SCOPE

The major finding of the work will be presented in this chapter. Also, directions for extending the current study will be discussed.

PUBLICATIONS (Optional)

7 REFERENCES

[1] Fang Han, Xuesong Bo, "Research and Literature on Developing Motion Capture System for Analyzing Athelets Action"

[2] Human Body Tracking Method Based on Deep Learning Object Detection - Yuan Zhifeng

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