

# EMOJIFY- CREATE YOUR EMOJIS WITH DEEP-LEARNING

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**Abstract**—An emoji is a picture that expresses an emotion, a thing, or a sign. emojis and the emotions they are designed to express are linked in our minds. This signifies that our brains process them as emotional communication rather than words. Emojis were developed as a means of representing emotions. Like punctuation, emojis can be used to replace body language and voice tone in text-based communication to convey emotion, such as sarcasm or humor. In recent years, emojis have become an inevitable trend in marketing, particularly in effective verbal communication, and data recovery for sentiment analysis and viewpoint mining. By increasing the semantic quality of visual messages, emoji allow people to express their identities and feelings more "authentically."

In comment forms, emojis are also used. Emojis' contribution to comment form is more than that of other commenting techniques. Emojis are used to change the degree of the text's emotions or how they are expressed through emojis. Emojis can be used to express emotions like sarcasm, irony, or non-textual humor in informal text communication (ITC) by emulating facial expressions. Emojis, which allow users to choose from lengthy lists, are one way to express nonverbal cues. emotional acclaim These studies' thesis looks at how facial traits are used by emojis in real-time. Additionally, provides criteria for assessing facial features and real-time perception of face expression popularity. The developed program features seven facial expressions for humans: happiness, surprise, neutrality, fear, disgust, anger, and sadness. The expressions that are being communicated by humans are those expressions that can be expressed. The studies of such speech are crucial because of their capacity to increase emotional reactions and the way they sell touch among individuals. The task's output recommends an emoji with the appropriate facial emotion.

**Keywords**—Deep Learning (DL), dataset, Convolutional Neural Network (CNN), Emoji, Informal Text Communication (ITC), Communications, Expressions, Emotions, Techniques, Humor, Brains, Sarcasm, comment, perception, feelings.

## I. INTRODUCTION

Emoji usage is widespread today. A completely new language was created by emojis that make it feasible to communicate ideas and emotions in ways that weren't previously utilized. This visual language is currently in vogue for usage in online communication, and it isn't just available on Twitter anymore; it is also available on Facebook, Instagram, and all other big websites. Today's generation prefers to interact with one another mostly through the use of electronic gadgets and emoticons.

Emojify is a piece of software that can be used. Now that emoticons and avatars are available, it offers options. The brain community has

become a more valuable tool in recent years, using many locations as illustrations of never-ending educational endeavors. This study is entirely based on a system that makes use of a convolutional neural network. We are assembling a group of convolutional neural networks to understand facial expressions. Then, we will map their feelings using the relevant avatars or emojis for each person. About 30,0 fac RGB images are included, representing a wide spectrum of emotions. Length limited to 48 by 48, and the primary labels suggest that it may be divided into seven types: 0=Neutral, 1=Disgusted, 2=Happy, 3=Anger, 4=Sad, 5=Fearful, and 6=Surprised.

## II. LITERATURE SURVEY

A substantial amount of research has been conducted on the psychological and linguistic aspects of emojis as well as how they are used. It has been successful to conduct a detailed examination of the current research in the relevant areas. Since they now had access to a large variety of colorful and expressive emoji pictogramme, users automatically stopped using non-standard orthographies for expressing communication on Social platforms. This transformation was made possible via emojis.

Emojis' ability to replace user-defined verbal affordances with predetermined graphical symbols could revolutionize online writing, according to a 2015 article by Eisenstein and Pavalanathan[7]. Emoji could perform relationally beneficial tasks in discourse that are not always connected with discrete manifestations of emotion, according to Kelly and Watts (2015)[8], who agreed with this assessment and indicated that emoji could play these roles. Additionally, Emojis could be quite useful for shaping conversations or encouraging amusing behavior. Emojis were shown to be "tools" that express human emotions in the same year by Novak et al. (2015)[6]. When sentiment categorization models were built utilizing analysis of 1.6 million annotated tweets written in 13 different languages and then applied to various real-time situations, this was discovered. This enabled the observation of the aforementioned phenomena.

According to Stark and Crawford (2015)[9], emojis were realistically utilized to standardize, capitalize on, and focus on the strength of the effect in human social relationships online, where emoticons served as vibrant methods of social expression. To standardize, capitalize on, and accentuate the potency of the effect in online human social interactions, in other words, the practical application of emojis. They felt that the use of emojis was intended to standardize, emphasize, and profit from this expressive power. According to Zhu (2015)[10], Emojis are stylized representations of facial expressions that are used in text-based communication to convey a variety of emotions. Even though the perception of the appropriate ways to portray emotion, attitude, and attention-based intents in online interactions has been fundamentally

altered by the use of emoticons.

Blois-Carroll[11] stated in 2016 that it is a grave misinterpretation of the ability of emojis to act as a multidimensional lens to regard them merely as a one-dimensional lens. A variety of emotions and sentiments can be expressed with emojis. They are poised to be hailed as a "new universal language" by many people because of their capacity to represent emotion, make intentions clear, and serve as a mediator of one's sense of own-identity. They transmit a variety of interpersonal and emotional expressions in a much more appealing method. Due to their ability to communicate, emojis have grown in popularity in recent years. Emojis can be used to express more than just emotions, according to Gullberg (2016)[12], who echoed this idea. Emojis can also be used to quickly and politely respond to messages from others that don't require a lengthy response, help maintains relationships, show someone's enthusiasm, and even convey inside jokes. Emojis are not only meant to express emotions, but Gullberg's writing reflected the idea that they are also Emojis' condensed nature makes it simpler to enter information, and the rich semantics they provide make it conceivable, claim Lu et al. (2016)[13]possible to express thoughts and feelings more vividly.

Emojis are marketing tools that may be utilized so that it enhances a brand's perception, increase consumer interest in a business, and increase brand responsiveness, claim Andral and Larroque[14]. Emojis can also be utilized to increase brand loyalty among customers (2016). Businesses and marketers are aware of the precise customer demographic with which they may use emojis successfully. According to Peele (2016)[15], "several popular children's novels have been turned into emoji posters by artists," and "someone has even translated the Bible into emoji." A combination of broken English and visual culture has led to the widespread use of emojis among social media users. Concerned people think we are in the final stages of written English's existence at the moment given the way things are going. People hope that the other person would comprehend their sentiments, ideas, and impressions even if they are unable to communicate face-to-face with one another, claim Chairunnisa and Benedictus (2017)[16]. People can communicate effectively and in a style that is simple to understand thanks to emojis. The use of the same, in their opinion, also highlights some psychological ideas, such as emotional expression, emotional imitation, emotional appraisal, pragmatics, and intention detection. These are only a handful of the concepts they assert are highlighted by its utilization.

Emojis' increasing popularity, according to Kyle, Malone, and Wall (2017)[17], can be related to their capacity to improve online communication. Additionally, they think that using these ideas will highlight psychological ideas like emotional expression, emotional imitation, emotional assessment, pragmatics, and purpose detection. This, in their opinion, is something that the use of the same brings out. These are only a few of the ideas they think can be discovered through the use of the same. Emojis' ability to make online communication more evident, as stated by Kyle, Malone, and Wall (2017)[17], is a significant role in the stratospheric rise in popularity of these small images. Emojis can't express complex ideas, and they hardly ever serve as a reference, therefore this is the reason for it. 0 Additionally, they describe the requirements a sign must satisfy to be classified as a Unicode emoji.

### III.METHODOLOGY

The technology for identifying emotional facial expressions that were proposed by CNN. put up a CNN architecture. Here, we are initializing the education and validation mills by first rescaling all of the photos required to educate our version before turning them into grayscale images, followed by uploading all of the libraries needed for our version.

- **IMPORT-**

```
train.py > ...
1 import numpy as np
2 import cv2
3
4 from keras.models import Sequential
5 from keras.layers import Dense, Dropout, Flatten
6 from keras.layers import Conv2D
7 from keras.optimizers import Adam
8 from keras.layers import MaxPooling2D
9 from keras.preprocessing.image import ImageDataGenerator
```

```
10 train_dir = 'data/train'
11 val_dir = 'data/test'
12 train_datagen = ImageDataGenerator(rescale=1./255)
13 val_datagen = ImageDataGenerator(rescale=1./255)
14
15 train_generator = train_datagen.flow_from_directory(
16     train_dir,
17     target_size=(48,48),
18     batch_size=64,
19     color_mode="grayscale",
20     class_mode='categorical')
21
```

- Initialize the generator's train and validate.

```
train.py > ...
28 emotion_model = Sequential()
29 emotion_model.add(Conv2D(32, kernel_size=(3, 3), activation='relu', input_shape=(48, 48, 1)))
30 emotion_model.add(Conv2D(64, kernel_size=(3, 3), activation='relu'))
31 emotion_model.add(MaxPooling2D(pool_size=(2, 2)))
32 emotion_model.add(Dropout(0.25))
33 emotion_model.add(Conv2D(128, kernel_size=(3, 3), activation='relu'))
34 emotion_model.add(MaxPooling2D(pool_size=(2, 2)))
35 emotion_model.add(Conv2D(128, kernel_size=(3, 3), activation='relu'))
36 emotion_model.add(MaxPooling2D(pool_size=(2, 2)))
37 emotion_model.add(Dropout(0.25))
38 emotion_model.add(Flatten())
39 emotion_model.add(Dense(1024, activation='relu'))
40 emotion_model.add(Dropout(0.5))
41 emotion_model.add(Dense(7, activation='softmax'))
42 emotion_model.compile(loss='categorical_crossentropy', optimizer=Adam(lr=0.0001, decay=0.01))
43
44 emotion_model_info = emotion_model.fit_generator(
45     train_generator,
46     steps_per_epoch=28709 // 64,
47     epochs=50,
48     validation_data=validation_generator,
49     validation_steps=7178 // 64)
50 emotion_model.save_weights('model.h5')
```

- Set up the convolution network design:

#### A. Term Used

The "Facial Emotion Recognition using Deep learning". Emojis or avatars can be used to represent nonverbal cues. These indications are now crucial to the online conversation, product reviews, brand sentiment, and many other activities. Additionally, it sparked a rise in emoji-driven storytelling-focused data science research. Recent advances in computer vision and deep learning have made it possible to identify human emotions from photographs. We will classify facial human expressions in this deep-learning research so that appropriate avatars or emoticons can be filtered and mapped.

#### B. Working

Facial emotion recognition - We employed a variety of libraries related to records technology, including Keras, TensorFlow, OpenCV, NumPy, etc. We've employed a sequential modeling technique to build the Keras model. As a standard platform, VS Code and command Prompt are utilized for routine improvement.

#### C. Dataset

The most significant factor in deep learning is the dataset. A dataset will be used to train and test the project. A dataset is a collection of pertinent data, as the name implies. The dataset FER2013 was used in this instance. Grayscale 48\*48 pixel pictures of faces make up the FER2013 dataset (Facial expression recognition). The pictures are evenly spaced and in the center. Two categories will be used to separate the data set. Test data and train data are examples. Furthermore, both categories are divided into seven parts: startled, joyful, neutral, disgusted, angry, and disgusted. Faces in grayscale at 48x48 pixels can be found in each of the seven folders.

##### 0. NEUTRAL



#### 1. DISGUSTED



#### 2. HAPPY



#### 3. ANGER



#### 4. SAD



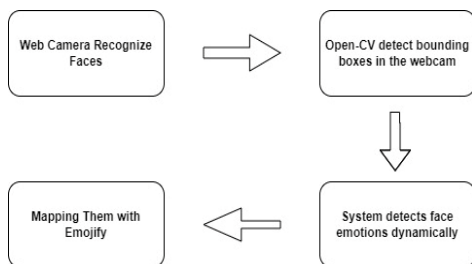
#### 5. FEARFUL



#### 6. SURPRISED



### D. Block Diagram-



### E. Algorithm-

#### Step 1: Input the dataset

The FER 2013 dataset's emotion classification test images are shown below. Based on the emotions conveyed by the facial expressions, such as happiness, neutrality, sadness, anger, surprise, disgust, and fear, these photos are divided into different categories.

Fig -2: Sample dataset of emotion "happy".

#### Step 2: Application of augmentation and data preprocessing

Strategies. To enhance the model's performance and generalizability,

the training dataset is expanded using image data. Using the Python function Image Data Generator, images are rescaled from [0,255] to [0,1]. Here are some advantages:

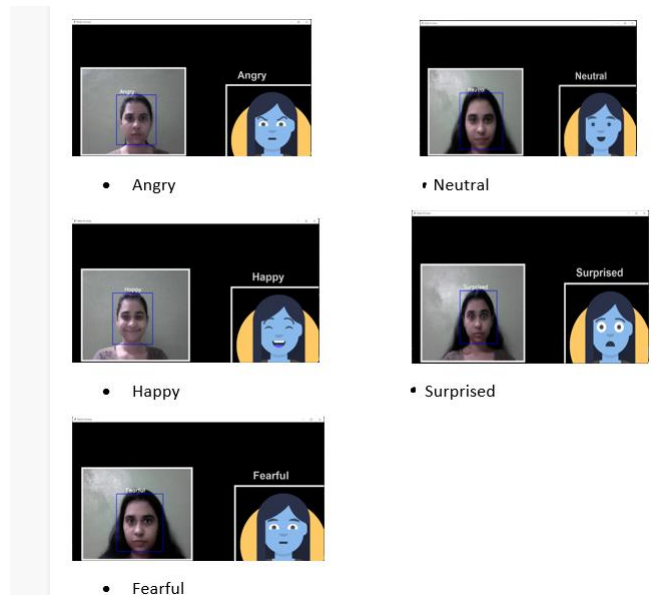
- It treats all photos the same way, regardless of whether they have high or low pixel ranges. The model, weights, and learning rate are all the same for all of the photos. The backpropagation update will be influenced by all of them since the high-range picture often produces a stronger loss while the low-range typically produces a weaker loss.
- When referencing the learning rate from another person's work, we can do so directly if both works do scaling preprocessing on an image data set. Otherwise, a lower pixel range image will require a bigger learning rate whereas a higher pixel range image results in higher loss and should utilize a smaller learning rate.

#### Step 3: Neuronal network design.

Building a convolutional neural network comes after the database has been pre-processed. The input, hidden, and output layers make up the convolution layer. Convolutional layers with filters should be added based on the neural network's topology.

### IV. RESULT

**Convolutional Neural Network (CNN)** helps to train the system using sample data sets systems, first of all, Receives Images as Input and give the desired result as shown in the below figure:



Convolutional neural networks compare input images with the data set, which involves initializing the weights, learning rate, gradient moment, and hidden neurons. Any weight changes made to the hidden units in the neural network would necessarily result in a zero matrix, which would affect the matrix's value.

Angry	disgusted	fear	happy	Neutral	sad	surprised	unweighted
algorithm	accuracy	accuracy	accuracy	accuracy	accuracy	accuracy	accuracy
Support Vector machine	88.12	78.8	75.09	91.22	89.13	95.01	87.16
Convolutional Neural network	92.04	94.13	88.03	93.45	96.56	95.44	94.08

The above table displays a comparison of the accuracy attained for each image. The system's total accuracy stands at 93.59. As a result, CNN provided the system to give better outputs.

## V.CONCLUSION

In conclusion, Emojis are a novel form of written expression that subverts the conventions previously attached to the written word. Just as emojis are a type of non-verbal communication for written communication, non-verbal gestures are a type of non-verbal communication for spoken communication. It completes the literary medium by conveying the message that would otherwise be sent through a smile, a smirk, or any other emotional expression. We thought why not send out our emojis because, in today's technology-driven world, people love to communicate using non-verbal indicators like emoticons. Deep learning and computer vision advancements have made it possible to discern human emotions from photographs. In this deep-learning task, we can classify human facial expressions and then transfer them to the appropriate avatars or emojis. We anticipate that emojis will be used in chat rooms. Because people can add their own unique, artistic emoticons, humans are essential for communication. The task will identify the user's current emotion and translate the associated emoji so that they can see an image of their face and use it when speaking.

## VI.FUTURESCOPE

This project allowed me to identify the emotions and connect them to the appropriate emoji. The model's inability to accurately identify emotions in people with similar expressions like neutral and happy, angry and disgusted. bald heads and beards were also not detected by the system, which was the sole drawback of this study. In the future, we can increase the accuracy rate by providing more datasets by which it can easily show the desired output.

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