REVIEW ON EMOJIFY-CREATE YOUR OWN EMOJICS WITH DEEP LEARNING

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ABSTRACT

Emojis are a type of emoticon that are often used in text messages sent across social media platforms. A contemporary manner of communication is characterized by the inclusion of both textual and graphical information inside the same message. Emoticons and avatars are both examples of non-verbal communication tools. These indicators have rapidly become an important component of a wide variety of activities, including online talking, product reviews, brand emotions, and many others. It also resulted in an increase in the amount of data science research devoted to narratives driven by emojis. It is now feasible, as a result of improvements in computer vision and deep learning, to identify human emotions based only on visual cues. In this project including deep learning, we will categorize human face expressions in order to filter and map matching emojis or avatars. This project is not designed to provide a solution to a problem that exists in the actual world; rather, its purpose is to make the talking world appear more colorful. Emojify is a piece of software that facilitates the process of creating emojis as well as avatars.

Keywords: Deep Learning, Convolutional Neural Networks (CNN), Emoticons.

I. INTRODUCTION

Emojis are used often by people nowadays. The use of emojis has given rise to a new language that may express a thought or feeling in a way that was before impossible. This visual language is now fashionable for use in online conversation, and it’s no longer only available on Twitter; it’s now available on Facebook and every other major online site, and Instagram. People in today’s generation have a propensity to communicate with one another mostly via the usage of electronic devices emojis. Therefore, we came up with the idea of designing our own customized emojis from scratch. Emojify is a piece of software that may be used. It presents opportunities now that emojis and avatars are available. An increasing advantage tool in recent years has been the neural community different places as illustrative examples of never-ending educational pursuits. This study is predicated completely on a system which uses a Convolutional Neural Network. In order to comprehend, we are putting together a community of convolutional neural networks, expressions on the face. After that, we will map the individuals' sentiments using the appropriate emojis or avatars to go along with them. About 30, 0 face RGB pictures depicting a wide range of emotions are included. Length restricted to 48 by 48, and the primary labels indicate that it may be separated into seven types: 0 = Sad, 1 = Surprised, 2 = Fear, 3 = Happy, 4 = Neutral, 5 = disgust, 6 = angry.

II. LITERATURE SURVEY

The quantity of study that has been conducted in the areas of analyzing how emojis are used is vast in comparison to the amount of literature that has been published on the psychological and linguistic elements of emojis. An in-depth review of the available research in the relevant fields has proven successful. Because users could now access a vast variety of colourful and expressive emoji pictographs, it was only natural for them to quit using non-standard orthographies for expressive communication on social media. Emojis made this transition possible. Eisenstein and Pavalanathan wrote in 2015 that the advent of emojis was a potentially game-changing development for online writing, with the ability to supplant user-defined verbal affordances with predetermined pictorial symbols. According to Kelly and Watts (2015), who concurred with this evaluation and stated that emoji could play these roles, emoji could serve relationally useful roles in conversation that are not necessarily associated with discrete expressions of emotion Emojis could also play an important role in controlling the conversational thread or encouraging playful behavior. Emojis were shown to be "tools" that
reflect human sentiments by Novak et al. (2015) in the same year. This was discovered when analysis of 1.6 million annotated tweets written in 13 different languages was used to develop sentiment categorization models that could then be used to numerous different real-time settings. This allowed for the observation of the previously mentioned phenomenon. According to Stark and Crawford (2015), the purpose of the practical use of emojis was to normalize, capitalize on, and focus on the collective strength of affect in human social relationships online where emotions functioned as exuberant forms of social expression. In other words, the practical use of emojis was intended to normalize, capitalize on, and focus on the collective strength of affect in human social relations online. They believed that this use of emojis was intended to normalize, capitalize, and focus on this affective strength. It was stated by According to Zhu (2015), emojis are stylized representations of face expressions that are utilized in text-based communication to convey a variety of feelings. Emojis continued to bear astron resemblance to emoticons, despite the fact that the latter had fundamentally altered the manner in which people understood the appropriate expressions of emotion, attitude, and attention-based intentions in online interactions. In 2016, Bliss- Carroll remarked that considering emojis solely as a one-dimensional lens is a gross misunderstanding of their power to function as a multidimensional lens. Emojis may be used to convey a wide range of emotions and expressions. They transmit a range of interpersonal emotional expressions in a lot more appealing manner, and are poised to be hailed as a “new universal language” by many people because of their ability to signify emotions, clarify intentions, and act as a mediator of one’s own sense of self-identity. Emojis have become increasingly popular in recent years due to their ability to communicate Gullberg (2016), who echoed the same sentiment wrote that emojis were not simply used to convey emotions, but that they could also be efficiently and politely react to another person’s message, which may not need a long reply, act as tools in maintaining relationships, be used as an indication of the enthusiasm of the person, and be used as a means of communicating an inside joke. Gullberg’s writing echoed the sentiment that emojis were not simply used to convey emotions, but also that they were According to Lu et al. (2016), the condensed nature of emojis makes it easier to enter information, and the rich semantics that they offer makes it possible to express thoughts and feelings in a more vivid manner. According to Andral and Larroque, emojis are marketing tools that can be used to improve the image of a brand, to boost the attention of customers towards a firm, and to make people more responsive to the brand. Emojis can also be used to make people feel more connected to the brand (2016). Businesses and marketers are aware of the specific demographic of customers with whom they may successfully employ emojis. Peele (2016) asserts that “artists have transformed certain popular children’s books into emoji posters,” and that “an unknown individual has even translated the Bible into emoji.” Emojis have become a common form of communication among users of social media due to a combination of broken English and visual culture. Those who are concerned believe that, given the current state of affairs, we are currently living through the latter stages of written English’s existence. According to Chairunisa and Benedictus (2017), people hope that even when they are unable to communicate face-to-face with one another, the other person will still understand their feelings, ideas, and impressions. Emojis make it possible for people to communicate effectively and in a way that is easily understood. They also feel that the usage of the same brings out certain psychological concepts like emotional expression, emotional imitation, emotional assessment, pragmatics, and intention detection. These are only few of the ideas they claim are brought out by the use of the same. According to Kyle, Malone, and Wall (2017), the rise in popularity of emojis can be attributed to their ability to make online communication more clear. They also believe that the employment of the same brings out certain psychological concepts, such as emotional expression, emotional imitation, emotional appraisal, pragmatics, and purpose detection. This is something that they feel is brought out by the using of the same. These are only some of the concepts that they believe can be uncovered via the use of the same. According to Kyle, Malone, and Wall (2017), the capacity of emojis to make online communication more obvious is a major contributing factor to the emerging surge in popularity of these little icons. This is due to the fact that emojis are incapable of conveying complicated thoughts and only very seldom play a reference function. 0 They also outline the standards that a sign must meet in order for it to be deemed a Unicode emoji. These requirements are discussed in further detail. 0

III. THE DEVELOPMENT OF EMOJIS
Smileys came before emoticons, which in turn opened the way for the creation of emoji and stickers in more recent times. Smileys were the precursors to these more current forms of expression. It is largely agreed upon that one of the earliest expression symbols was the smiley face, which first appeared in the 1960s. You may find a yellow face with two dots for eyes and a wide smile printed on buttons, brooches, and t-shirts. Smiley is also known as the happy face. The emoticon Smiley is frequently referred to as the "happy face." By the beginning of the 1980s, this symbol had already attained notoriety on a global scale and had firmly established itself as an enduring component of popular culture in western countries (Stark and Crawford, 2015).

Emoticons were first used in 1872, and they are created by utilizing standard punctuation marks extracted from a computer keyboard to form a portrayal of a face expressing a particular emotion. The year 1872 was the year they were first used (Zhou et al., 2017). They are considered to be a paralinguistic feature (Lee and Wagner, 2012) and are often positioned towards the end of a sentence (Sakai, 2013). People who talked with one another using instant messaging (IM) commonly resorted to the use of emoticons before emoji were available to them. Emoticons, which are similar to the non-verbal cues that are used in face-to-face communication, can help clarify intentions in ambiguous contexts (Thompson et al., 2016), express emotions and improve the efficiency of communication. (Dunlap et al., 2016). Additionally, emoticons incorporate aspects of nonverbal communication within their design. They can bring satisfaction (Chen and Siu, 2017), stimulate engagement (Aldunate and Gonzálezibágez, 2016), and contribute to community identification. Additionally, they can enable individuals who receive them to accurately perceive the mood, attitude, and degree of attentiveness of the sender (Lo, 2018). In actuality, gender differences and cultural differences contribute to different preferences for the application of emoticons. It has also been suggested that emoticons could be applied to real life, for example in fields such as emotional monitoring, psychological testing, and designing signs.

IV. OVERVIEW FOR DEEP LEARNING FOR EMOJIS

In the modern world, we commonly utilize a wide array of emojis and avatars to express the range of ideas and feelings we experience. People rely on them as their nonverbal cues to communicate meaning. They become an important part of the procedures of feeling recognition, online discussing, brand emotion, product evaluation, and a great lot of other activities as well. The expansion of research in data science geared at emoji-driven storytelling is something that happens all the time.

Recent advancements in computer vision and deep learning may be to blame for the meteoric rise in popularity of analysing facial emotions in images. This trend has grown quite popular in recent times. As part of our investigation into deep learning, we will classify the many expressions that can be seen on human faces in order to select the most relevant emojis or avatars.

V. EMOTIONAL EXPRESSION ANALYSIS OF THE FACE USING CNN

A convolutional neural network, sometimes known as a CNN, is a type of deep learning neural network that was designed specifically for the purpose of processing structured arrays of data, such as images. CNN has an excellent job at recognising design patterns that are present in the picture that are being inputted, such as lines, gradients, circles, and even eyes and faces. These may all be found in the image that is being processed. This is one area in which CNN excel. When it comes to computer vision, convolutional neural networks have shown to be particularly durable due to the aforementioned characteristic. CNN may be conducted directly on a picture that is not done well, and it does not require any preparation in order to operate effectively. A feed-forward neural network is a type of convolutional neural network, which is distinguished by the fact that it almost never has more than 20 nodes. One particular kind of layer in a convolutional neural network is known as the convolutional layer, and it is the source of the power that the network possesses. CNN is comprised of a multitude of convolutional layers that are stacked above one another, each of which is capable of identifying increasingly complex structures. It is feasible to distinguish handwritten numbers with three or four convolutional layers, and it is possible to discern human features with 25 layers.
VI. A MORE PRECISE CATEGORIZATION OF DIFFERENT FACIAL EXPRESSION

In the field of social psychology, an expression is a type of facial expression that may be easily observed and differentiated from other types of facial expressions [13]. Expressions on the face provide information about feelings, communicate our intents and objectives, and play a crucial part in human contact. The capacity to perceive and comprehend different facial expressions naturally makes it easier to communicate what one is trying to say. The classification of human facial expressions is achieved by the use of a method that is composed of three independent steps, which are as follows: face detection, feature extraction, and facial expression classification. The researcher that carried out this investigation used a method that was capable of macro-level classification of facial expressions. This inquiry made use of a system that comprised of seven basic human expressions, and it was utilised in that investigation. Six basic human expressions can be observed as follows.

1. **HAPPY:**

Happy an indication of a person's delight or enjoyment of something may often be deduced from their use of the grin facial expression. The most distinguishable feature of a delighted expression is a smile, which is produced by the upward movement of the cheek muscles and the sides or edges of the lips.

![Fig. 1](image1) A quality that can be seen in cheerful expressions

2. **ANGRY:**

Angry Facial Expressions come about when what is predicted and what really occurs line up. It is possible to make out the expression on both sides of the inner eyebrows, which are converging and dipping downward. Simultaneously, the lips are growing tighter, and the method in which the eyes are looking gets more concentrated.

![Fig. 2](image2) Shows an angry look in its typical form

3. **SAD:**

Sadness when one is disappointed or has the impression of being lacking in some way, a sad expression may develop on their face. Based on the characteristics of a sad facial expression, which include an eye that has lost its focus, lips that have been dragged downwards, and upper eyelids that have drooped.

![Fig. 3](image3) Illustrates a typical expression of sadness
4. **FEAR:**
The emotion known as fear is one that a person feels when they are unable to deal with the circumstances of the situation they are in or when they are in an unsafe setting. When someone is deemed to be terrified, it means that they are unable to deal with any situation or environment that is frightening to them. A person’s eyebrows will come closer together, their eyelids will close more firmly, and they will open their lips in a horizontal position when they are terrified. These facial expressions are known as the “fear response.”

![Fear Image](image-url)

**Fig. 4:** An example of a typical facial expression of dread

5. **DISGUST:**
Disgust is a person whose facial expression conveys a sense of dissatisfaction as a result of witnessing something unusual or listening to information that is not interesting enough to be worth hearing. The formation of wrinkles in the region of the nasal bridge and an upward movement of the upper lip might be interpreted as an expression of distaste on a person’s face.

![Disgust Image](image-url)

**Fig. 5:** Manifestation of repugnance

6. **SURPRISE:**
Surprise when someone is unaware in advance of an occurrence or a message that is abrupt, unexpected, or crucial, they are more likely to express surprise. An expression of shock may be shown on a person’s face when their eyebrows are elevated, their eyes are wide open, and their mouth opens reflexively.

![Surprise Image](image-url)

**Fig. 6:** Typical manifestation of the emotion of surprise

**VII. TOOLS**

In this we use several tools and libraries:

- In addition to this, we made use of a broad number of libraries that are associated with data science. Some examples of these libraries are keras, TensorFlow, OpenCV, and NumPy. In order to accomplish the objective of developing the Keras model, we turned to a technique that is known as sequential modelling.
- As a general-purpose development environment, Visual Studio Code is the platform of choice.

**VIII. CONCLUSION**

Emojis are a new kind of written communication that are challenging the norms that have traditionally been associated with the written word. To be clear, non-verbal gestures are a form of non-verbal communication for
spoken communication, just as emojis are a form of non-verbal communication for written communication. It supplements the textual medium by filling in the message that would otherwise be transmitted by a grin, a smirk, or any other expression of emotion. Because the people of today's generation are so enthusiastic about the growing trend of using non-verbal indicators to communicate, such as emoticons, we decided to develop our very own set of emojis. We may soon be able to discern human emotions based only on visual clues as a result of recent breakthroughs in computer vision and deep learning. These fields have seen significant progress as of late. We will classify human facial expressions as part of this study, which will also involve the use of deep learning, so that we may search for and map appropriate emojis or avatars. The adoption of emojis in the online talking world is the outcome that we anticipate will occur. We want individuals to be able to converse using their own customised emotion that they've customised.

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IX. REFERENCES


[4] Milad Mohammad Taghi Zadeh from the Department of Electrical Engineering at Khatam University in Tehran, Iran, "Fast Facial emotion popularity Using Convolutional Neural Networks and Gabor Filters" 2019


The title of this article is "Emojis: Insights, Affordances, and Possibilities for Psychological Science." Trends in Cognitive Sciences, Volume 21, Issue 2: Pages 66-68

"Emotions and Emojis on Facebook" is the title of a recent article. Natural Language Processing for Social Media: Proceedings of the Fifth International Workshop 10.18653/v1/W17-1102:11-16

"Beyond the Alphabet - Communication of Emojis," written by C. Dürscheid and C. M. Siever and published in 2017. Kurzfassung eines(auf Deutsch) zur Publikation eingereichten Manuskripts

The traditionalist approach to emoji in the areas of labour, mood, and communication. Social Media+ Society 1, 1-11. doi: 10.1177/2056305115604853

The paper "Goodbye text, welcome emoji: mobile communication on Wechat in China," which was presented at the 2017 CHI Conference on Human Factors in Computing Systems, may be found in the proceedings of that conference. doi: 10.1145/3025453.30258

The impact of social presence on the facial and vocal display of emotion, as well as the interrelationships between different aspects of emotional experience. J. Nonverbal Behav. 26, 3-25. doi: 10.1023/A:1014479919684


An investigation into the user behaviour of emoticon use among young Chinese people Behav. Inf. Technol. 36, 637–649.

A comprehensive analysis of the role that emoticons play in computer-mediated communication. Front. Psychol. 7:2061. doi: 10.3389/fpsyg.2016.02061

The roles of nonverbal communication that emoticons serve in computer-mediated communication. Cyberpsychol. Behav. 11, 595–597. doi: 10.1089/cpb.27.0132