Emojify - Create Your Own Emoji

A Project Work Synopsis

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Abstract

Today's world is Computer Science world and technology is omnipresent. Everything is getting shifted to Online mode or simply say Internet. Even day to day human communication had also transformed into digital communication through applications like WhatsApp, Facebook, Instagram, Twitter, YouTube and many more. Due to this modification the way of representing individual's thoughts and emotions had also been digitalized and transfigured as combination of visual and textual content in form of emojis and chat messages respectively. The computer science has been upgrading its field since long period of time. However, because of this enhancement, it is now achievable to get the idea about human sentiments from their facial posture and mutate them into Emojis/Avatars/Stickers accordingly. This project is going to fabricate Emojis/Avatars from user's facial formation. This software will allow us to understand the emotions of an individual in more coloured and cherished way in the form of emojis.

Keywords:

Convolutional Neural Network(CNN), Python, Visual Studio.

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1. INTRODUCTION

Emojis are nothing but tiny pictures of emotions or we can also refer them as stickers. Emojis are the present-day channel of chatting with one another online. Emojis/Avatars have completely changed the way people used to communicate and now emojis are ruling the online mode of conveying the news or messages. Emojis are becoming the new language, which is being used by people all over the world. Simply, it is the emerging language of universe. Emojis - to enrich the written form of communication.

The reason of emojis getting used world wide is the simplicity they have in themselves. As already mentioned they are just little pictures like cartoons but they convey all the information about someone's state of mind, someone's reaction, or someone's response that simple text message can't pass to other individual's message sitting on the other side of medium in communication. Straightforwardly, emojis are nonverbal method of expressing feelings of a person.

The creator of emoji, Shigetaka Kurita, wanted to enable communication of "thoughts or emotions without inspiring strong likes or dislikes in the way a picture might". An emoji is a graphic symbol, ideogram, which represents not only facial expressions, but also concepts and ideas, such as celebration, weather, vehicles and buildings, food and drink, animals and plants, or emotions, feelings, and activities.

Every so often, text messages are not proved to transmit the emotions sender wants to show to the receiver. In the rescue of text messages, emojis are there! Emojis can reflect ideas, state of mind, emotions or sentiments effectively and precisely. The logical formula that i use to state emojis is:

Emoji = nonverbal communication + current state of mind.

Since it is nonverbal so user doesn't have to write long-long paragraphs to express in which state he or she is! Hence, it is also not very tedious task to do so, just one click on the emoji that matches with the user's present state of feeling and there he/she goes! In support of my point, i would like to point out famous character's in history of Television shows.

- **Charlie Chaplin** had not spoken a single word in his entire TV show and yet he was able to make everyone laugh by expressing his emotions through his facial formation that everyone loved. He believed that his comedy would not translate to audiences via having talk. He did believed that emotions are best way to communicate.

- **Mr. Bean,** a cartoon character loved by children, youngsters and also by adults. It has been characterized to only make facial expressions and not speak a word throughout the cartoon show, still everyone including children, youngsters and adults are able to figure it out what he is conveying.

Above two points shows the power of facial expressions, the strength they carry to communicate the sentiments and feelings.

Emojis are available for use in almost all the digital platforms like WhatsApp, Facebook and a lot more. After looking at the increasing interest and affection of present generation people in communicating through ways that consists of emojis, the organizations have modified their way of surveying the people. The organizations and industries have started to take feedback's in form of emojis. Emojis are getting turned into global language and there are researches going on to build emoji-driven storytelling.

In a nutshell, it is committed that present generation love to communicate through emojis and avatars. So we have developed our project which is supposed to build our own customized emojis similar to human face formation. Our Project is including seven human expressions that consists of emotions such as happy, neutral , sad, surprise, angry, fearful, disgusted.

1.1 Problem Definition

Emoji helps individual's to express feelings and their identities more "authentically" by increasing the semantic quality of visual messages. Emojis are also now being used in feedback forms. The feelings represented by the text or its severity are changed by emojis. Indeed, by simulating facial gestures, emojis can be used in Informal Text Communication (ITC) to express feelings such as sarcasm, irony or non-textual humour.

Emoji let user's to choose from large lists. It is one way to display nonverbal signs. In this project we will be exploring "Emotional recognition" using facial expression through emoji. The created software program contains seven human expressions that include emotions that are happy, neutral , sad, surprise, angry, fearful, disgusted. The real expressions that are being expressed are the expressions transmitted by human beings, because of their capacity to better communicate emotional responses and the way they promote contact between individuals, the investigations of such speech are important.

In today's age, the use of communication through various platforms, such as cell phones and computers, is very popular. Any of the ways of contact which are very popular today are e-mails, instant messages and blog posts. All of these include emojis. All of the above facts and observations have made emojis the necessity to explore them more.

So we are indulged to develop a software that will be using algorithm that can automatically assign the most appropriate emoji to a given input image.

1.2 Hardware Specification

- PC
- Good internet connection
- Visual studio or any other compiler installed on system

1.3 Software Specification

- TensorFlow.
- Keras.
- Numpy.

1.4 Basic Specification

- FER 2013 datasets from Kaggle.
- Knowledge of python.
- Knowledge of jupyter notebook.
- Emojis/Avatars.

2. LITERATURE SURVEY

The existing literature on the psychological and linguistic aspects of emojis is limited, whereas a large amount of research exists in the fields of analysis of emoji usage. Succeeding is an in depth analysis of the existing related literature. Chairunnisa and Benedictus (2017), said that people hope, while not communicating face-to-face, that the other person still understands their feelings, ideas and impressions, something that emojis make possible, and make the communication effective and understandable. Kyle, Malone and Wall (2017) believe that emojis have become popular for clarifying online communication; they also believe the use of the same brings out certain psychological concepts such as emotional expression, emotional mimicry, emotional appraisal, pragmatics, and intention detection. Tian et. al. (2017) wrote that emojis act as a cue for sentiment analysis of tweets result in better accuracy compared to using linguistic text alone, where positive emojis are more common in use than negative ones. Dürscheid and Siever (2017) talk about the rising chances of emojis becoming a universal language, but say that the probability is low, as emojis cannot convey complex matters, and seldom have a reference function. They also speak about certain conditions that a sign must fulfil to be a Unicode emoji.

In 2016, Bliss-Carroll said that viewing emojis simply as a one dimensional lens is a complete underestimation of their ability to serve as a signifier of emotion, clarifier of intent and mediator of self-identity; they convey a host of interpersonal emotional expressions in a much more charming manner, and are ready to be hailed as a “new Emojis: The Language of the future? – A Literature Review 137 universal language” by many. Echoing the same sentiment, Gullberg (2016) wrote that the emojis were merely not used to convey emotions, but could also 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 inside jokes, and be an indication of the enthusiasm of the person. Lu et. al. (2016) believe that the compactness of emojis reduces the effort of input, the rich semantics they convey expresses ideas and emotions more vividly. Andral and

Larroque (2016) brought out the fact companies and marketers are aware of the target with whom they can use emojis, and that they are marketing tools that can be used to improve the brand image, to increase the interest of consumers towards a company and to make people more receptive to the brand. Peele (2016) observes that "Artists have transformed several famous children's stories into emoji posters, Bible has also been anonymously translated in emoji. In context of broken English and visual culture, social media users adopted emojis as means of expression. Worriers fear that, in the existing ripe conditions, we are witnessing the demise of written English.".

In 2015, Eisenstein and Pavalanathan wrote that the introduction of emojis was a potentially dramatic shift in online writing, potentially replacing user-defined linguistic Affordances with predefined graphical icons; with the ability to access a large number of colourful and expressive emoji pictographs, it became natural for users to stop employing non-standard orthographies for expressive communication in social media. Kelly and Watts (2015) agreed, and said that emoji could serve relationally useful roles in conversation, not necessarily associated with discrete expressions of emotion, and could also play an important role in controlling a conversational thread or in encouraging playful behaviour. In the same year, Novak et. al. (2015) showed that emojis were "tools" that reflect human sentiments, which was observed when sentiment classification models could be created, and applied to, several real-time scenarios, in the analysis of 1.6 million annotated tweets across 13 different languages. Stark and Crawford (2015) believed that the practical use of the emojis were intended to normalize, capitalize and focus on the collective strength of affect in human social relations online, where emojis acted as exuberant forms of social expressions. Zhu (2015) said that emojis were cartoon-style facial expressions used to express certain emotions in text-based communication, whilst, remaining rather similar to, but were different from, emoticons, which had changed the way people perceived the correct emotional, attitude and attention based intents in online interactions.

2.1 Existing System

There are existing systems and application for emojify that use image recognition techniques to assign the most appropriate emoji to an input image. Here are some examples:

Emojer: Emojer is a mobile application that allows users to take a photo or upload an existing photo and receive a suggested emoji based on the content of the image. The application uses deep learning algorithms to recognize the objects, people, and scenes in the image and match them with the most appropriate emoji.

Emoji Scavenger Hunt: Emoji Scavenger Hunt is a web-based game that challenges users to find real-world objects that match a given emoji within a certain amount of time. The game uses machine learning to recognize the objects in the user's camera feed and assign the appropriate emoji.

2.2 Proposed System

The proposed architecture for the system is a convolutional neural network that is pre-trained on a large dataset of images, such as FER-2013 dataset. The pre-trained CNN would serve as the feature extractor for the input image, and the extracted features would be passed through a fully connected layer to predict the most appropriate emoji.

The training data for the model would consist of a large dataset of images and their corresponding emojis. The model would be trained using unsupervised learning techniques. The performance of the model would be evaluated using metrics such as accuracy.

2.3 Literature Review Summary:

Year and Citation	Article/ Author	Tools/ Software	Technique	Source	Evaluation Parameter
2020	"EmojifyGAN: A Conditional Generative Adversarial Network for Emoji Generation from Images" by S. Roy	EmojifyGAN, a cGAN-based approach for generating emojis from input images.	The author shows that their model can generate high-quality emojis that match the input image's style and emotion.	Dataset	Accuracy, Speed, Diversity, Robustness.
2019	"Emojify: A Genrative Model for Emojis with Personalized Styles" by Y.Zhang	A generative model for creating emojis with personalized styles.	The author used a conditional generative adversarial network to generate emojis that match the input image's style and emotion.	Dataset	Accuracy, Diversity, Robustness, User satisfaction.
2019	"Emojify: A Genrative Model for Emojis with Personalized Styles" by Y.Zhang	A generative model for creating emojis with personalized styles.	The author used a conditional generative adversarial network to generate emojis that match the input image's style and emotion.	Dataset	Accuracy, Diversity, Robustness, User satisfaction.

2017	"EmojiNet: A Machine Learning Approach for Emoji Prediction" by B.Felbo	EmojiNet, a deep learning model that predicts relevant emojis for input text.	The author train their model on a large dataset of text and emojis and show that it outperforms the existing methods.	Dataset	Accuracy, Speed, Diversity.
2017	"Deep Emoji Classification" by Z.Yang	This paper proposes a deep learning bases approach from emoji classification.	The author uses a Convolutional neural network to extract features from the input image and then classify it into one of the several emoji categories.	Dataset	Accuracy, Speed, Robustness.

3. PROBLEM FORMULATION

The problem formulation for this project can be broken down into following steps:

Data Collection: Collect a large dataset of images that contain human faces displaying different emotions, such as happiness, sadness, anger, surprise, fear and disgust.

Pre-processing: Pre-process the input images to ensure that they are in a suitable format for analysis. This may include re-sizing, cropping and converting images to grayscale.

Emotion Detection: Develop and algorithm or use existing models to detect the primary emotion displayed in the input image. This may involve using computer vision techniques, such as feature extraction and machine learning, to analyze the facial expressions, body language and other visual cues.

Emoji Generation: Develop a system that can generate an appropriate emoji that reflects the detected emotion. This may involve using pre-trained models or training new models to match the detected emotion with corresponding emoji.

User Interface: Design a user interface that allows users to upload an image, analyze it for emotions, and display the corresponding emoji. This may involve developing a web application, mobile application, or desktop application that integrates the emotion detection and emoji generation algorithms.

Testing and Evaluation: Test the system using a diverse range of images and evaluate its performance based on metrics such as accuracy, speed, and user satisfaction.

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4. OBJECTIVES

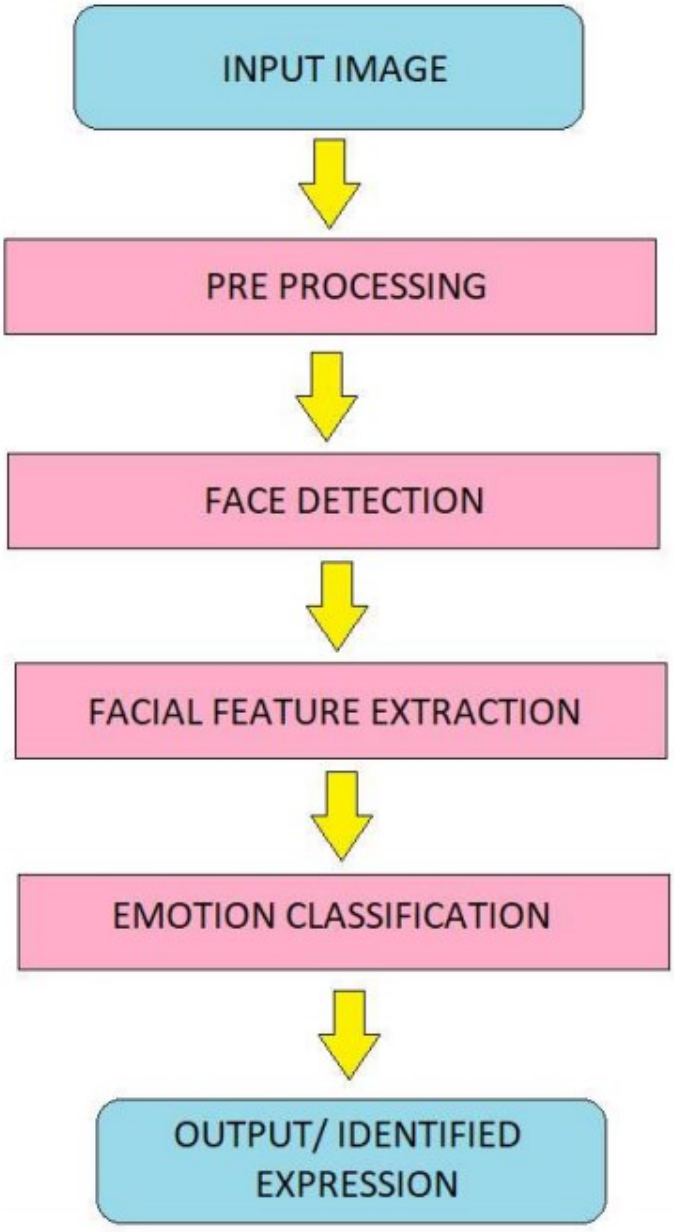
The objective of the Emojify Project is to develop a system that can analyze an input image and generate an appropriate emoji that reflects the emotions conveyed in the image. This project aims to enhance communication and expression by providing a fun and intuitive way for users to convey their emotions through digital means. By using computer vision techniques and machine learning algorithms, the Emojify project can help bridge the gap between human emotions and digital communication, allowing users to convey their emotions more accurately and effectively. Overall, the objective of this project is to create a user friendly and accurate system that can generate emojis that accurately reflect the emotions displayed in input, thereby enhancing digital communication.

The current work will therefore be focused to explore seven major facial expressions including:

- ✧ Angry
- ✧ Disgust
- ✧ Fearful
- ✧ Happy
- ✧ Neutral
- ✧ Sad
- ✧ Surprise

5. METHODOLOGY

The following methodology will be used to accomplish the desired task:



6. EXPERIMENTAL SETUP

1) Install python on the system.

2) Install Visual studio or any other Code Editor.

3) Install libraries like:

4) Keras.

5) Numpy.

6) Pandas.

7) OpenCV.

8) Create one folder for project.

Extract the dataset inside the newly created folder for project.

7. CONCLUSION

Emojis are a growing and evolving language that is going to compete with the traditional rules that defines the written mode of communication. But, it should also be keep in mind that as an image of nonverbal gestures is for spoken communication, so is an image of emoji for written communication. It complements the written mode by covering the vacancy in text communicated through a smile, or a smirk, or any other emotion. Thus, we come to understand that the use of emojis are here to stay for a long time. But, whether they change the tradition of written, formal language or render with it to bring a hybrid form of communication is yet to be seen.

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