Emotional Recognition Using Facial Expression by Emoji in Real Time

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April 01, 2017

ABSTRACT

Present research focuses on the role of emoji's in facilitating emotional recognition with the help of pictorial depictions of facial expressions. Today is the era of fast and dynamic internet and communication technologies. Hence, the communication is convenient as compared to the past. Use of communications through different channels, such as mobile phones and computers, are very common in today's era. E-mails, text messaging, blog entries, and comments are some of the forms of communication which are very common today. To enhance the experience of communication, emojis were developed by the Japanese mobile companies such as Vodafone. Emoji's are the pictorial depiction of the facial expression of human beings. They are very helpful in the facilitation of human emotional experiences.

This research thesis investigates emotional recognition using facial expression by emoji in real time. Moreover, it also develops the parameters of measuring the facial expression and understanding the facial emotion recognition in real time. The application developed includes six human expressions, which include neutral, fear, anger, happy, sad, and surprise emotions. These expressions are the actual expressions which are being conveyed in human beings. The investigations of such expression are important because of their ability to better express human emotions and the way they facilitate communications among the people. Recommendations on further research will be provided for researchers.

ACKNOWLEDGEMENT

I would like to show my special thanks and gratitude to my most respected thesis advisor and an assistant professor, Dr. Jens Hannemann of the Division of Computer Science at Kentucky State University. Dr. Hannemann gave me the opportunity to conduct the research on the following topic. This research work provided me lot of opportunities to learn new knowledge, and it also helped me to improve my writing skills. In the course of my research work, a lot of work has been done and I came to know about so many new things in my life. This is important, and I am very thankful to him. Secondly, it is an honor for me too to thank my parents and friends. Their emotional and psychological support also helped to learn and to complete the project.

They helped me a lot in finalizing this research project within the limited time frame that was given to me. Therefore, I believe that the combined effort of my parents, my assistant professor, and my own dedication are the reasons behind my success in my present research work, and that is why I am confident about my efforts. I am also hoping that their support will remain with me in the future. This is important for the success in my future career. I am again thankful to them in all aspects.

PROPOSAL

Communication is an important part of everyday life. Verbal or non-verbal communication allows one to engage in conversations. Today is the era of communication technologies. The internet and other communication devices have made it possible to engage in the fast, dynamic, and affective communication. The emojis are being used for the visual depictions of human emotions. This paper presents the visual expressions of humans using emojis. Therefore, the efforts have always been made to enhance the experience of communication in human beings. The present study has three major objectives to be accomplished. These three major objectives are to investigate emotional recognition using facial expression by emojis in real time. Moreover, another objective is to develop the parameters of measuring the facial expression by emoji texting, as well as to understand the facial emotion recognition in real time.

Therefore, the present study in that realm focuses on the use of the emojis as an important technique that can be used in the field. Hence, the present research will be designed to assess human emotions and their visual depiction in the form of six emotions. These emotions include neutral, fear, anger, happy, sad, and surprise emotions. These are important human expressions and, thus, are quite important. The channels show the convolution of 3D delineation models. These models are prone to the use of layers, which records clamor in process. Moreover, these applications will be developed in the study to assess its impacts on the emojis.

This research study presents how the facial looks and discovery for the facial communication is delivered. Therefore, it can be said that the facial expression is important for the review of the investigation of the facial activity coding framework for the sake of the communication that is being watched. Moreover, the facial expressions are critical as they help

incorporate and communicate feelings to discover the activity units. Therefore, this study develops an application that impacts communication channels, which are designed for human conduct, as well as to identity someone.

Therefore, the use of the emoji provides the feelings that have a profound impact that has to be delivered, and with the expression and the facial recognition, which is being conducted, our general identity is restored through the emoji. These are important things that must be considered and investigated in current research fields. The emojis will be developed, and the human expressions will be tested through the use of such emojis.

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Current research study focuses on emotional recognition. The emotions frequently ease and determine interactions among the human beings. The context of emotions specifically brings out the complex and bizarre social communication (Duncan, Shine, & English, n.d., p.1). Social communication is identified as the judgment of the other person's mood that based on the emoji. The recognition of emotions can be identified through various signals by the "body language, voice intonation" as well as via "more complex methods, such [as] electroencephalography (EEG) (Duncan et al., n.d., p. 1)." Nonetheless, the most simpler, and feasible approach is to analyze the facial expression. By observing the facial expression, the person's mood and behavior are easily judged. Duncan et al. (n.d.) explained that "there are seven types of human emotion [that could easily be recognizable with a variety of meanings] across different cultures" (p. 1). This study involves investigating the emotional recognition by the real-time

accumulations. The emotions are identified as happiness, fear, disgust, anger, sadness, surprise and contempt (Gent, 2016).

1.2 OBJECTIVES

There are certain objectives of the thesis necessary to understand the core aspects for the identification of research outcomes which are listed below:

- To investigate emotional recognition using facial expression by emoji in real time
- To develop the parameters of measuring the facial expression by emoji texting
- To understand the facial emotion recognition in real time

The stated objectives of this thesis highlighted the reasons behinds the facial recognition emotions in the real time. The main goal of this project is to implement the recognition of the facial emotion for real time. The implementation of an application process is to identify the facial emotion recognition reasons with highlighted emoji indicator for the identification of six expressions. Such expressions are neutral, fear, anger, happy, sad, and surprise. Furthermore, facial expressions are investigated to realize the real impact of the emoji. The expressions are the actual predictor of human behavior. If expressions are good, then it means the person is in a good mood or has a joyful personality. If the person's expressions show anger or sorrow that means the person is not feeling well or his or her personality does not have joyful traits. The expressions are related with the person's behavior and personality. Understanding expressions are important because they give a lot of information regarding behavior and moods of people through expressions; one can know what is going inside the person's mind and how it can be handled (Gama, 2009).

1.3 BACKGROUND

The techniques of the visual technology for the conversions of the expressions into the art of facial graphical style conversion are making a great contribution and advancement in the digital graphics designing. The initial tools used from the people associated with this field were using the histograms as the mode of representing the pyramids of the facial gradients (Duncan et al., n.d., p. 1). In 2015, Emotions in the Wild (EmotiW 2015) contest, for descriptions, such as the emotions, utilized static types of images that deeply experienced the effect of the convolutional neural networks (CNNs) (Duncan et al., n.d., p. 2). Their accuracy was about 62%, but recent progress by Levi & Hassner has shown substantial growth using a CNN in facial emotion recognition (Duncan et al., n.d., p. 2).

The process of the recognitions for different types of the human emotions reveal two relevant challenges, or the problems. First, the availability of limited data used analytically for the training, or the procedures for orientation for the CNN. Second, the variation affected by an illumination, which usually appears in the local emotional patterns using the techniques for binary invariants would part of the set of data. The use of the 3D technology in manipulating the existing models of the emotions graphics are usually linked with the expression of the face. The web face from the challenge through the technology as emoji we could have the level of accuracy by five percent while the improvements from the previous results would yield to only 10-16% (Duncan et al., n.d., p. 2).

The use of the graphical emotional neural tool like the VGG-S would be necessary as the initiating factor of executing the novel facial representation model. Using the sources of database that reveals the advanced version of the CNN is implementing a theory of game as the moving average would be taken. The emotions must be identified or detected in manner that would

demonstrate the stream of images or videos while transforming into the input level for graphical streams. The descriptors feature for the LTB would use the database illumination guidelines for detecting the presence of invariants portions of the images (Russell, 1994, p. 109).

The filters, which are common, practice in this discussion of the convolution 3D illustration of the layers that would record the noise of the sounds from the background while emotions are transformed. The visualization process of the emotions that converts the database of the recognition of the expression the person is making with theory facial gestures are clearly optimization element (Sashikar, Murali, & Henderson, 2015, p. 2).

The set of the data, such as the web face uses the features of this graphical portray of emotions in facial translating images as if one of CASIA is dependent on the availability of the resources (Duncan et al., n.d., p. 2). The usual approach in this expression transmission through graphical designing projects or the improvements considerations would link up with the static facial expressions in the wild (SFEW) dataset or the tool of statistical techniques for detecting the expression for the facial wild for revealing the natural effects upon the emotions of the images of people (Duncan et al., n.d., p. 2).

The image, which has the static advancements in the input emotions detection, are illustrating in the applications of the visual posture for the body language. The face moods that highlight the EEG are complex stature for the methods for detecting the wide ranges of the pyramids of computer database applications. The networks such as the CNN is also integrated with this small-scale training framework or the models that could relate the facial impressions or the emotions for optimization of the facial defection of emotions in the layer based technology, such as VGS (Oberman, Winkielman, & Ramachandran, 2007, p. 176).

1.4 SUMMARY

The facial expression is specifically based on the emoticon identification system. It is identified as an open source extension to the tracker.js (A modern approach for Computer Vision on the web) framework that converts into expression of human facial to match best emoticon (Sashikar et al., 2015, p. 1). The emoticons are the major parts towards the digital communication system. Emoticons, are also called, emoji's that "are used to express the emotions of a person through text in a way that is not possible with just words" (Sashikar et al., 2015, p. 1). As mentioned by Sashikar et al. (2015), "the importance of emoji has become so huge that they [also have been specifically] annotated with the WordNets" (p. 1). The vision of computer has grown at large scale that use as commercial product for the benefits of high speed image (Sashikar et al., 2015, p. 1).

The key task at hand ensures the face expression and face detection for the recognition of emotion (Russell, 1994, p. 103). The formed task behind the face detection and emotional recognized gained from the eigen faces, fisher faces, and viola jones are the detections framework that prologs the hausdorff distance (Sashikar et al., 2015, p. 1). The study exploration of the facial action coding system that observed the facial muscles, that plays an important role in the compiled and expressing emotions to find out the action units. Such action units are raising from the outer eyebrow and inner eyebrow, which is important for the quantification of human expressions (Sashikar et al., 2015, p. 1).

1.5 UTILIZATION OF TECHNOLOGY AND TOOLS

Two different datasets will be used to give the research intimation of the emotional recognition by the emoji utilization. The first approach is called a Cohn-Kanade dataset (CK+) whereas the second approach is known as, the Japanese female facial expression (JAFFE)

database. The dataset of the CK+ is small, but provides the best executed facial expressions within the experiment of controlled environment. The database of JAFEE provides an indication of the additional images. Such additional image gives more in facial expressions towards the laboratory conditions. This unique development of the databases, specifically consist of the five images. It reveals how the process will be accomplished in the current research process (Sashikar et al., 2015, p. 3).

The primary seven emotions include disgust, anger, sad, surprise, neutral, fear and happy emotions. The execution of VGG_S network reveals the major approach for the identification of the image classification. These tools and techniques will help to identify the emotional recognition for the real-time emoji utilization. The technologies of today are advanced enough that they can recognizes each and every expression in a detail manner. The recognition is important in many ways because it determines not only human behavior, but also those aspects which no one knows about the personality of a certain person. The advancement in technology has allowed us to understand the human expressions in less amount of time and in the most accurate way possible. The emotions have deep connection with the expression and expressions express the behavior or overall personality (Gama, 2009).

1.6 CONCLUSION

The crux of the overall introduction provides the general understanding of the emotional recognition to obtain the facial expression using emoji. The most applications of emoji recognition investigate the images of static by the facial expression images. Here, the investigation of application of the CNN for the identification of the emotion recognition. The computational requirements as well as the complexity of the CNN, for the optimization of the

efficient frame-by-frame classification have been executed in the emotional recognition for the facial expression (Sashikar et al., 2015, p. 5).

It has been observed from the study of emoji real time use that detects the human emotions in different scenes, lighting conditions as well as angles in real-time. The application of novel results, that reveals the consolidations of the emoji with superimposed with the subject of faces (Oberman et al., 2007, p. 10).

CHAPTER 2: LITERATURE REVIEW

The role of emotion is evident in our daily lives. Human beings use different kinds of emotions to show compassion and establish relationships with others (Seiter, 2016). These emotions express the emotional conditions in our daily lives. The comprehensive list of emotions range from anger to happiness, wondering, suspicion, skepticism, sorrow and grief. However, they are frequently witnessed in our daily lives. Therefore, it is quite easy to understand the inner feelings of a person with the use of the facial expressions that are quite visible. Thus, the facial expressions and emotional recognitions are interrelated with each other (Beswick, 2014). Using facial expressions with ideograms and smileys, is the emoji. The Japanese word, “emoji” consist of two parts: “the *e* means “picture” and *moji* means “letter”” (Zhou, Hentschel, & Kumar, 2017, p. 2). Emoticons were used before emoji as “symbolic representations for facial expressions based on punctuation marks that could be covered using a standard keyboard (e.g. :))” (Zhou et al., 2017, p. 2). Both emojis and emoticons are frequently used in the text messaging, emails, and other electronic forms of communication.

Emojis are a part of the life which was first introduced by Japanese mobile phone companies, such as Vodafone and NTT DocoMo. An early nineties was the period when Japanese companies enabled the use of the emoji in their communication via electronic devices.

They were the pioneers in the use of the emoji. Through these companies, the trend enhanced and the other companies also came forward, and used these emojis to make the communication better (Guinness, 2015; Lee, 2012). Emojis became popular worldwide and are widely being used in the world at an international level (Danesi, 2016). The emoji was adopted by Apple Inc.; the corporation recognized the use of the smileys and other electronic pictorial symbols to show what the sender is feeling. Besides the text meaning, the pictorial smileys and other expressional symbols were important because they provide the opportunity to show the inner feelings of the sender. After the adaptation of iPhones, the other phones such as Samsung also used these methods. Now, it is used worldwide.

The uses of the smileys are important in day-to-day lives to show facial expression. The use of smileys and other pictorial images in every platform is common. These platforms include Android and Windows. The meaning of the word emoji in original form is pictograph (Gamble & Gamble, 2013). Emoji is now available in colorful forms. For the time being, it has progressed and now multiple forms and types are available through the internet and communication devices. In the beginning, the emoji was only available in the form of black and white shapes and it was also in a basic format. However, at the current time, they have been developed effectively and they are available in variety of shapes. Using emojis has increased the effectiveness of the use of the symbols. The use of symbols is also seen in other communication formats. Besides with electronic devices, the symbols are widely used on the internet. Today is the era of internet as well as communication and information technologies (Goss, Anthony, Stretch, & Nagel, 2016). Thus, the use of this communication innovation is evident. No one can deny its importance and the organizations engaged in the communication are well aware of the importance of all the techniques that are suitable for enchasing the effectiveness of the communication. Therefore, the

use of the emoji is quite common and has developed over time. The first international conference on the emoticon was conducted in 2016. This is an important progress that has been noted or seen on the topic (Goss et al., 2016). It is expected that, for the time being, a lot of other initiatives must be taken to make sure that the emojis are incorporated with emoticons to enhance their effectiveness. Thus, that was the brief history about the emoji and its use in communication via electronic devices. In addition, emojis are used in publications and social media as well (Highfield & Leaver, 2016).

The importance of the emojis is twofold. Emojis show feelings because they express emotions which makes them important. We often times witness in our day to day lives the message conveyance. Emojis suggest that an emotional communication is as significant as using words. By using smileys, readers can understand the sender's sentiments. The use of the smileys and other symbols are imperative in our everyday lives to demonstrate effective communication. That is why more often the smiley signs are used in a time of happiness, an important advancement in communication. For example, in the face-to-face communication, if people do not use gestures or expressions in their conversations, his or her conversation becomes less meaningful. So, it can be said that these are the important considerations in the realm of the development of the symbols and their ultimate use in the communication patterns. Besides this, the emoji are considered as non-verbal tools. The emoji are the most powerful tools to facilitate the communication and allows people to express their linguistic capabilities (Lingard et al., 2005). An investigation by was also done on the use of the emoji in real time communication to make sure whether the emojis are effectively communicating. For this purpose, the scientists experimented and analyzed that when people use the sign of anger in their day to day communication, the receiver perceives that the person to whom they are in talking is angry and

they apologize in that context. They also use the sign of the apology. Thus, this implies that the use of the emoji in relation to strengthen the language is important. The people understand their linguistic cues, and they use emoji in that context. Hence, the emojis are the powerful tools to demonstrate the freedom of expression and the nonverbal cues in our daily textual language.

The symbols and the pictures that are used in the emoji have different colors, and these colors provide the best support for the representation of the emotions and the facial expressions. The usage of the appropriate colors and the style is an important indication of the effectiveness of the emoji (Seiter, 2016). The body and skin colors are used in those symbols and the pictures are related to the human body. The use of the skin color is significant and promising because it must match with the reflection of facial expressions. Both the Windows and the Android platforms are used by millions of the people in the world. To ensure an effective communication, these platforms allows users to use symbols. The Windows 8.1 and onward are using smileys and the symbols. Any platform in the world supports different fonts. Even MS Word provides different kinds of the facial expressions. As mentioned earlier, the Japanese organizations have additionally delivered the images and the smileys that are especially identified with the way of life of the Japan, and they are not subject to the impression of the feelings of the entire world. Therefore, they are operable in any platform.

Furthermore, the use of the emoji has great cultural influence in terms of the facial expressions that are expressed by the emojis (Iemoji, 2015; Emojipedia, 2016). The Oxford dictionary also considered the year 2015 as the most influential in terms of the development of the emoji and its impact on the culture. The emoji of the year was the smiley with tears of joy. This emoji best illustrated and expressed the emotions of the humans when they express their love and joy for life. The uses of the emoji is worldwide and the representation of the emotions

by the people is evident in every culture and the environment. The emoji is also the reflection of the specific culture of the country. Emojis provide the appearance of the facial expressions and emotions that are specific to each culture. For instance, the Japanese companies have also produced the symbols that are particularly related to the culture of the Japanese and they are not subject to the reflection of the emotions of the whole world. Therefore, the role of the diversity of the culture is essential and the emojis have a profound impact on the life of the people.

Source: http://www.techtimes.com/articles/107492/20151117/youll-shed-tears-of-joy-with-oxfords-chosen-2015-word-of-the-year-its-an-emoji.htm

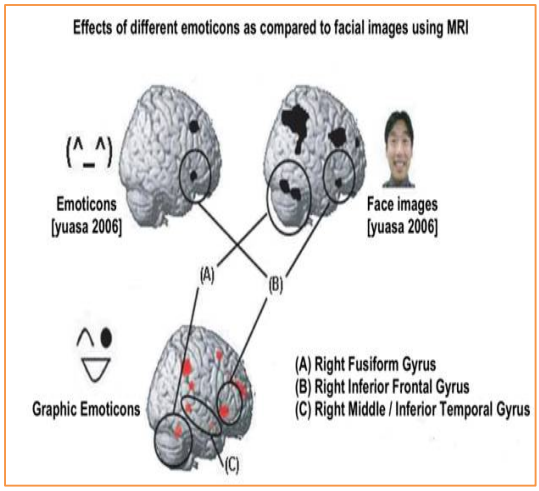
The diversity of the emoji symbols is needed to have focus. It is necessary that the emotions exist in diverse manner. They are not only limited to joy, sorrow, grief, happiness or any other a common form of symbols. Therefore, in today's era different kinds of emojis are being used in the communication and they are effective enough to provide an effective stance to convey the message. Besides the importance of the emoji, it is also important to use the emoji at the right time. The use of the emoji and its effectiveness is also subject to the emotions and the right pictorial depiction. Therefore, the timing of the use of the emoji is important as well as the place. Apart from that, it is highly observed that the emoji is an important source of the reflection of the emotions of the people. On the contrary, the popularity of the emoji use is evident in

movies. Especially, the movie on the emoji is under development by the Sony Corporation. The film is scheduled to be released on August 4, 2017 that portrays a unique world of emojis inside the smartphone. Unlike the movie, emojis are used to express the feeling of the human, (or emotions) that human beings cannot physically convey through the text. According to Maxwell (2010), "words account for only 10% of a message; a shocking 90% of communication is nonverbal, and is delivered through the body and tone of speaking" (p. 5). In other words, emojis provide nonverbal cues and they are lessened dependence on the written words. Emojis have taken control over nonverbal communication and are changing our language and shifting vocabulary in terms of how we communicate to others (Seiter, 2016). For instance, emojis change our facial expressions as we try to match the emotion of emojis (Seiter, 2016).

Source:http://www.iemoji.com/view/emoji/26/smileys-people/face-with-tears-of-joy

In addition, the psychology of the emotions shows that humans are inherently made up of the emotions. The feelings of the humans are necessary to reflect the true emotions and the reflections of the sentiments. People also say that the use of these smileys and pictures are the true reflection of the emotions and the sentiments they feel in their daily lives. The humans cannot live and communicate without the use of emoji. Thus, it is quite important to use such emoji to reflect the true sentiments as the communication is based on facial expressions and nonverbal cues. Humans have variations in their moods. The mood of the people is subject to change over time. It is not always the same, and individuals use smileys to convey their feelings

and emotions over time. The expressions of different moods are witnessed on one's face and inner self (Maxwell, 2010, p. 6). It is believed that the use of the emoji is good to express the feelings that are quite difficult to state in text expressions. If the general population notices that a person is happy, then he or she will send smiley tags in his or her texts or conversations. This implies that the person is in a good mood or he or she has enjoyed something so much. Therefore, the use of emojis is beneficial for reflecting people's true feelings and to deliver communication.



Source: http://psychologyforu.com/the-psychology-behind-why-we-love-emojis-and-5-ways-it-would-help-you/

In a diagram given above, the MRI results indicate that the functions of the brain and people's emotions are closely linked. The messages triggered by the brain are the cause for the facial expression and the sentiments. Moreover, the psychology of the brain also depicts human feelings. It can be said that the actual states of mind of the people are also subject to change after some time. Therefore, the change in human emotions is also subject to the change in the reflection of the pictorial depiction. This fluctuation in emotions prove that one cannot express a similar condition of state of mind at all times. Emotions must change to reflect the internal

feelings of the people. Therefore, the emoji comes in handy in that way and provides an excellent representation of the condition. Our brains are responding to the new discovery of emojis as if it is a real human face (Seiter, 2016).

As a matter of fact, the emojis are used 1.7 billion times on twitter. This implies that the use of the emoji is so common on the social media websites and these are thus common in our daily lives as well. The use of emojis raises a question as to why so many people around the world use emojis and what is the reason behind using them (Miller et al., 2016). The answer is that they are beautiful and they are liked by the people around the world. Language is always evolving and a large number of people rely upon the use of the emoji to show their expressions, emotions, feelings, and appreciation in real-time. Due to this, people on social media are always prone to the use of emojis in their daily lives. The reliance on the emoji is prominent because they are the true reflectors of the use of the pictorials in real life to provide the right level of accuracy of the detection of the language. Therefore, the need of the pictorial facial expression is evident in our daily lives.

Social interaction is part of human nature. Humans are nothing if there is no social interaction among the individuals. It can be said that the communication and the language are linked with each other. If that bond becomes weak, it is problematic for people to interact with each other. The role of the communication and the talking through emojis is crucial as the use of the emoji is so powerful and popular in our daily lives. They are the true reason that one can make use of such emoji to show his or her emotional concern and bonds with other people in the society. The emoji have power to increase the level of good communication that always requires social intimacy in our daily lives. People build this by increasing the quantity of our social and daily communication. This is done through the disclosure of the personal information which are

used in our daily communication patterns. This was once thought quite impossible in the context of the social intimacy. However, this is now widespread throughout social circles, and with the use of computer mediated communication in our daily lives. With the help of advanced technology, it takes just a couple of seconds to share important facts with someone in the societies and the individuals. Therefore, communication through social circles is appropriate. Accordingly, we must also share our feelings and emotions with that person. Therefore, communication is an integral part of how we build and maintain relationships with people and communities. At this time, the emoji allow us to communicate freely and smoothly. In addition, face-to-face communication is easier to understand, because one can read emotion on people's faces. One can know what he or she mean, better. In that situation, it is important to use emoji. This is also called the adequate level of the emotional contagion that is present and it is all included in the part of how we are prone to build that social connectedness in our societies and the people. The Emoji comes in handy and resolve the issue in that context. They provide powerful freedom of speech and the way we speak with each other.

Today is the era of great communication revolution. The communication patterns are evolving as people utilize verbal and nonverbal communication strategies in their everyday lives. The evolution of communication requires that there should be some sort of communication symbols that are presented in day to day correspondence to engage in conversations that is worthy of an understanding and the recognition. That is why, the use of the emoji in non-verbal communication is steadily increasing in popularity and the large number of people are using such emoji in their communication. In past, the communication among the people was not as easy. Today, the use of the internet and other means of the communication are so easy and approachable. Therefore, it is quite important to make sure that the verbal communication has

been lessened and the use of the emoji is playing an important role in the conveying of the messages.

CHAPTER 3: TECHNICALITIES ON DEVELOPING EMOJIS

All technicalities were incorporated to develop the emojis. The incorporation of all kinds of coding languages and the binary operations are important. Without the inclusion of these operations, it is quite possible that the emojis are not developed effectively. All programming languages were studied to develop the emojis, and this is an aspect worth noting (Benenson, 2016). The basic programming languages which are essential to develop the emoji are given below. These are the most important languages that are widely used in the development of the software and emojis.

- HTML
- JAVA
- PHP
- C++

The command line procedures are also important for the sake of the development of the emoji-enabled software in the electronic devices. The command lines must be free of any errors and this must be considered in an attempt to develop the bug free software for the emoji. The command line procedures in the software must be incorporated with the programming language which has been used, and which can be used to develop the software and its programming languages. Therefore, these were the basic considerations for the developers (Croft, 2016).

Furthermore, the format of the pictures was also selected for the development of the emoji. The pictures' format, shape, and coloring play a significant role in developing the emoji

pictures. Therefore, the correct formatting and the use of the colors and the lining is thus quite important. The use of the correct picture format is important, and the following formats can be used:

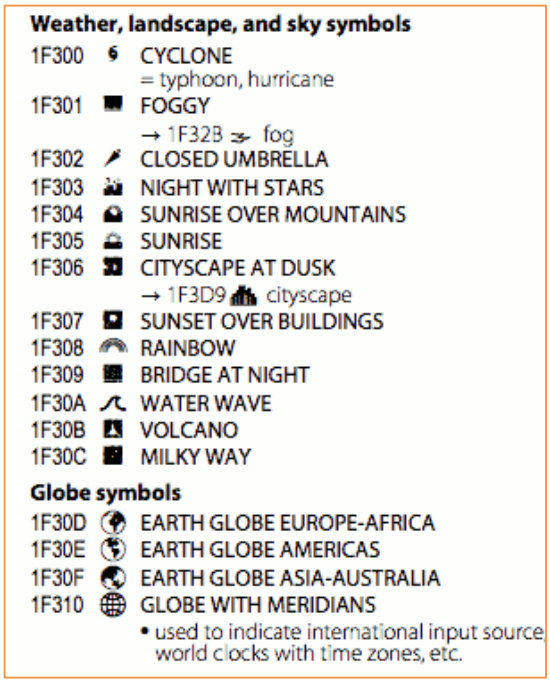
- SVG
- PING
- GIF
- OTHER

These are commonly important formats of the pictures which are frequently used in the development of the software. The pictures must be developed and incorporated in the right format in the system to develop the accurate and right emojis. Thus, it is important to notice that the organization of the photos in the emojis is necessary to build, and is likewise chosen for the advancement of the emoji technology in the world.

Moreover, it is also necessary to note that the photos are the basic configuration, and the shape as well as the shading of the pictures must be assumed. It is assumed that the pictures display a specific emotion to create the emoji pictures. In this way, the designing is easy and vital for improvements in the developments. The right arrangements and the utilization of the pictures are important in the development of the emojis.

5.1 DEVELOPMENT PROCESS: EMOJI ENCODING

For the sake of the development of the emoji, NTT DoCoMo's i-mode will be used explicitly. This for the sake of drawing each emoji, which is being drawn on a 12×12 pixel grid, which is essential for the sake of the pictures that are needed to draw initial design. When transmitted, the emoji symbols are specific, and they have to be specified as a level of the two two-byte. This is the sequence that must be followed:

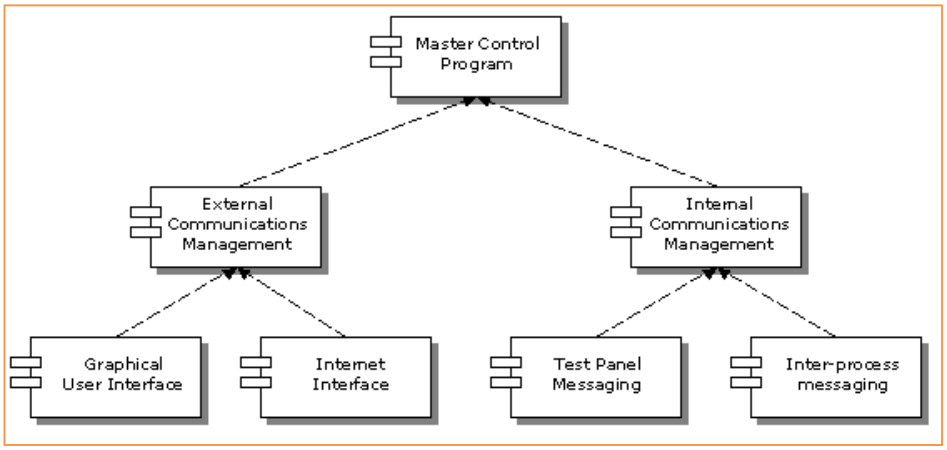


Moreover, if the sequence is liked by the imperative, then the use of this kind of the private-use range is equal to the level of the E63E through the use of the E757. This is basically done in the Unicode character space which is exclusively available in the process. The number of the F89F through the use of the F9FC for the sake of all kinds of shift jis. So, this level of the encoding is quite necessary. The basic specification in the encoding process is the use of the 1706 symbols. These symbols are according to the level of the consumptions that is along the coding lines, which are up to the 76 more added in phones. Therefore, this is necessary and supported in C-HTML 4.0 of the software. The levels of the emoji pictograms is necessary and this is done by the Japanese mobile phone. These brands are quite important and they are specified with the use of the IMG tag. This tagging is necessary for the Softbank Mobile emoji. Therefore, they will be considered and they are wrapped between the levels of the SI/SO escape sequences in the software (Lucas, 2016).

Moreover, the support colors as well as the level of the animation required are also required. The level of the use of the DoCoMo's emoji are the most compact in nature. They are ready to transmit the basic version of this edition, which is required in most of the cases. They are also flexible and based on open standards, which are used in the market. Some emoji character is sets, which have been incorporated into the level of the Unicode. This is the standard of the system that is used for the level of the indexing characters that is quite feasible for the emojis. This is needed to be allowed for the sake of the use of the outside in the software developing process.

CHAPTER 4: ANALYSIS AND REQUIREMENTS

In the technical chapter, the description of the requirements elicitation has been done, along with the analysis. Moreover, the development process was also investigated, and the specified requirements were met. In addition, the level of the analysis was provided in the form of the models (Danesi & Bouissac, 2016). Furthermore, the discussion is provided, but major emphasis is given to the role of the models which needed to be investigated. It is important to note that some suggested models are also important and the elements of the models are used such as cases and the activity diagrams. Besides that, other techniques could also be important such as sequence diagrams as well as domain models. The level of the analysis models expresses the system architecture, a core requirement. It was necessary to build the top level behavioral requirements of the project (Guinness, 2012). Therefore, it needed to provide a superficial model with different levels that are used in the case diagrams.



Above is the activity diagram which has been used to analyze how the emoji will be used and its characteristics. The activity diagram explicitly shows the different activities which are interrelated with the development and the use of the emoji in the application (Highfield, 2016). This application is required for the following levels of the activities in the application. Firstly, the login of the machine is necessary, and after that, the username and the key will be required. Secondly, different emoji shapes will be given from the several options. Lastly, one emoji is selected from five different categories. Therefore, these activities are crucial for the sake of the right selection of the visuals and the use of the emojis to run the software. Therefore, the accurate activity diagram is an important factor, which needs to be considered (Miller, Thebault-Spieker, & Chang, 2016).

CHAPTER 5: DESIGNING

For designing the emoji, the general description of the architectural design and detailed design model will be used (Zhou, Hentshel, & Kumar, 2016). However, the detailed design model will be utilized on a separate level. The UML project (refer to the diagram given below) uses the level of both contents and far-reaching plan action models, which are presented well in a hierarchy. The most recent and the precise procedures will be utilized as a part of the request to

upgrade the level of comprehension and changes related to a specific situation (emojipedia.org, 2016).

The above model is provided for the UML project. This project uses both text and comprehensive design activity models, which are ideally expressed in the case of the UML. This type of model is commonly used in the agile modeling as well. The levels of the investigation models express the framework design which is the center prerequisite. This is important to the top level behavioral necessities of the project. The uses of UML model in the project is highly recommended. Otherwise, it will be considered as the low level due to its efficiency. Certainly, the over using as well as the ad hoc or older schemes of the modeling notations are needed to be avoided. The latest and the accurate processes are used to enhance the level of understanding and the improvement. Therefore, the suggested level of the UML design model elements is vital.

Next, the uses of the class diagrams, interaction diagrams, high level of the structured classes, components, and subsystems will be employed, and deployment models will also be considered. Furthermore, the production level of the model diagrams is necessary for the sake of the modern CASE tool. The model diagrams are basically the right level of the non-drawing tools. The action graph expressly demonstrates the distinctive exercises which are interrelated with the advancement and the utilization of the emoji in the application. They are provided in a complete level of the comprehensive design model which is the core requirement of the project (emojipedia.org, 2016). In addition, the sufficient design information is needed to be implemented. It is not enough to use just one or multiple top level model diagrams. An appropriate level must be utilized to examine the emoji. Furthermore, the adequate plan data must be actualized with one or different top level model graphs, which are the trademark for the utilization of the charts. One must provide an extreme level of details to describe a basic level of

design, and its static view in the diagram as applicable. The basic level of design consists of the dynamic view and the core of the static view of the emoji. Thus, the UML project will allow one to run the product and correct determination levels of the visuals.

The UML project includes both the elements of the projects such as the classes, as well as the level of the accuracy within the inheritance and aggregation. The elements of the project basically refer to the structured classes, the interfaces, and the components which are used in the subsystems as well as the deployment (iemoji.com, 2015). The level of the dynamic view includes more accurate and dynamic details; therefore, the activity diagrams are important. The state model should be used appropriately as it is visible in most projects, also known as the level of remembrance. Overall, the design model is important because it is the main aspect of the project work. Also, it is the promising level of the model as it is used to develop the emoji. This is fundamental for the advancement of the whole level of project completion.

CHAPTER 6: IMPLEMENTATION

The implementation section is important and needs to be developed correctly. Moreover, software developers should consider the overall strategy for implementing tasks, that is, to build the levels incrementally along with the level of the risk mitigation measures. This is imperative and should have been investigated to make segments. The HTML program dialect is utilized as a part of the price. In this project, a specific programming language (i.e., HTML) has been used. This language plays a significant role in the developing tools, at the level of the testing tools, and at the level of the implementation platforms.

The HTML programming language must be incorporated and needs implementation in the project to acquire the desired level of the results (blog.bufferapp.com, 2016). Therefore, the user who uses HTML as the main programming language does not need to provide source code in the thesis, unless that code is central to the thesis. For instance, if the user created a new design patterns and need to describe the logic of those design patterns using the code, the user can do so without providing the source code.

However, describing a design logic using detailed design models demonstrates a higher level of expertise than using code to do the same. The improvement devices along with the level of the testing apparatuses, and the satisfactory level of the execution stage are very critical for the emoji project. In this way, the level of the planning model of the project is based on the UML and the HTML programming languages. These languages are vital and utilized as a part of the fundamental part of the project work. Therefore, the integration must be considered to make sure that all parts of the projects are interrelated in a well-organized manner, and the core requirements have been implemented.

CHAPTER 7: TESTING AND VALIDATION

Testing and validation of the emoji application is necessary to make sure that an application is runs well and provides the desired level of performance, which has been expecting in the case of the emoji. An affective establishment of the emoji application is necessary to provide the right facial expression in the form of the pictorial depiction in electronic devices. Therefore, the testing and the validation of the emoji software are necessary to develop an affective emoji application (Ali, 2013). Testing and validation processes are based upon different phases, which are interrelated, and both provides an accurate establishment of the set criteria.

The testing and the validation procedure are based on four different stages that includes needs and expectations of the customers, specifications, process and the product. These are basically the four major stages of the validation and the testing of the emoji application. There is a need to first evaluate the needs and the expectations of the application (Ali, 2013). The basic need of the emoji is its capability of accurate depiction of the facial expressions in the electronic devices. Some of the criteria are discussed in the following paragraphs.

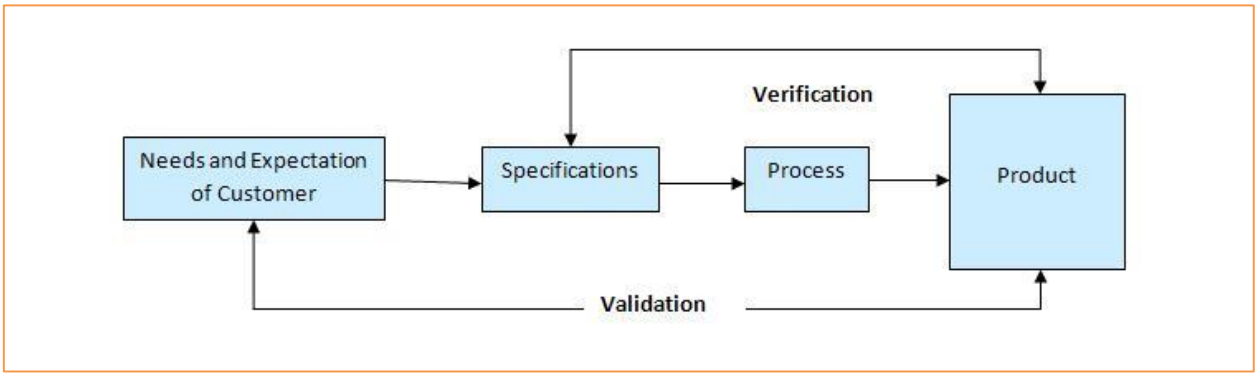


Figure 1: *Emoji Application Testing and Validation*

Validation and development process of the software are done at the end of the cycle. It takes place after the accurate level and the verification level completion. This is an important aspect of the validation process of an application. Users must assure that the application answers the question such as whether an application is able to build the right product or the services (Bernier & Hafsi, 2007). Moreover, also consider whether the user is in position to access the right level of the data, provided in terms of the data requiring satisfying the requirement of the software application. If the required information is not collected, it could impact the level of the effectiveness.

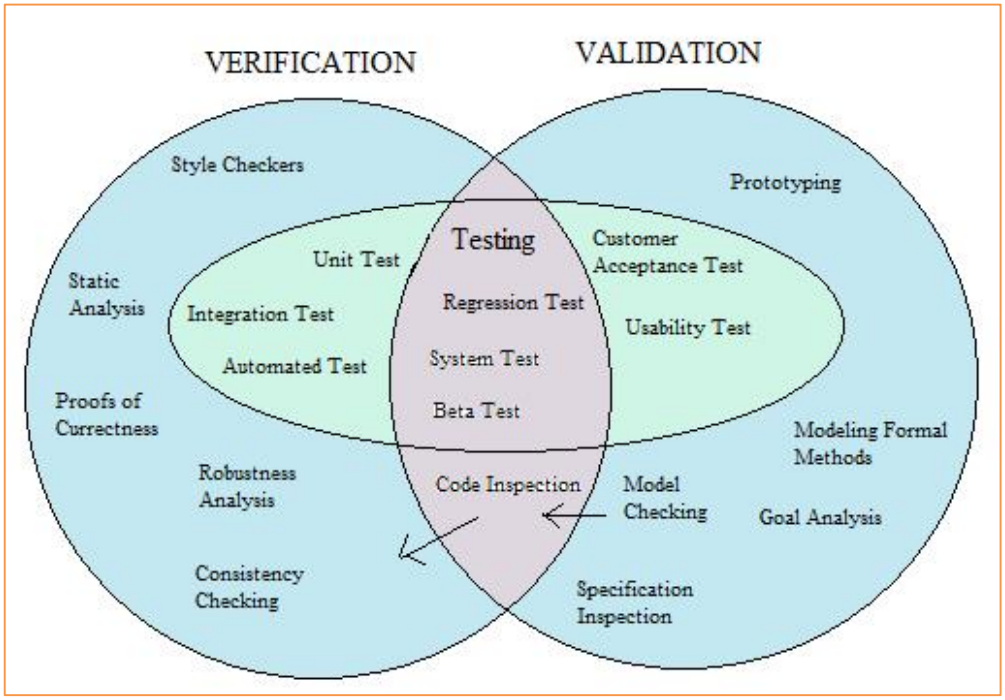
Therefore, a high-level user activity is important and should be performed after a work product has been produced in a level of the established criteria. This helps ensure whether the pictorial depiction of the emoji is always integrating correctly into the environment of the

establishment of the software. Therefore, the level of the determination of correctness is always needed and is of the final software product, which is required and developed by a developmental team. The developmental team considers the user needs and requirements. Therefore, these things are important and well required (Bernier & Hafsi, 2007). After the establishment and the declaration of such requirements, the identification of the emoji specifications is necessary. These specifications provide the right level of the details for the emoji. This could include the color, size, shape, orientation, and such kind of other things required for the implementation of the application. Thus, testing and the approval of the emoji programming is fundamental to create the full feeling of emoji application that the application produces. These are fundamentally the four noteworthy stages in the approval and the testing of the emoji application as discussed above (Bing, 2007). The identification of the specifications of the emoji is also necessary. The user should be able answer the general questions, such as whether the user is in position to provide the correct items or the administrations in the emoji application that depicts the right level of the specifications (Boakye-Boateng, 2016). The coloring of the pictorial depiction of the emoji, its size as well as its fundamental application are important to consider. The emoji application must produce different kinds and levels of pictures that have different colors as well as shapes and formulations.

Moreover, the application must produce different kinds of the facial expressions such as fear, happiness, sorrow, and alike. These details are discussed in the previous sections of the project. Therefore, the level of accuracy is constantly required and is the most important thing. Therefore, one must understand the level of the appreciation is admissible (Bässler, 2013). The level of accuracy for the application is the last programming item that creates and requires an improvement in the product, concerning the client needs and prerequisites of the application.

These specifications of the software improve the durability and the adaptability of the software (Carter, 2012). Consequently, an abnormal state action is imperative and must be performed after a work item. These are some of the determinations which are vital with a specific end goal to give the correct level of the subtle elements of the emoji.

After the determination of the specification, the process of the software application provides the direction for processes that are related to the actual development of the emoji, which uses the HTML coding language and the use of the command line (Porter, 2008 & Sadikoglu & Olcay, 2014).



testing and the validation of the emoji can also be best understood by the capability maturity model (CMM). This model has also been applied to test the validation and testing of the software. This model facilitates the validation of the process. The process and the level of application is related to the evaluation of the software during and on the level of the process. The role of the application of such conditions are important and for or at the end of the development

process is needed to determine whether it satisfies the specified requirements of the software or not (emojipedia.org, 2016).

A product, for instance, the emoji application can pass process while verification is undergoing. This kind of the verification is important to provide the right level of the consideration which is on the level of the paper and is also required for running or functionality of the application (brcommunity.com, 2015). Some level of applications and points are worth considering as they are verified on the paper. The application of the model provides the right idea, the level of the application, and the approval of the emoji application. It is then developed by running application or product that could fail while validation in the process. A failure could happen, when a product or the level of the services or application is built as per the specification, and it only provides the right level of the results. However, these specifications are not up to the mark and the level of the improvement is required, and hence failing to address the user requirements maturity model affectively tells that the application is done affectively and the application development procedures have been applied adequately. Therefore, this is an important aspect which has been developed and identified. Once the verification, validation, and the testing is done, the application is ready to use and the actual level of the product is established (Bässler, 2013). When the validation process is completed, it also provides the levels of the testers during the testing procedure of the application. The levels of the validating of the product is important as it can be found in the actual process and the results.

The result of the application is needed to form the expected result which must be matched. This helps determine that the application has been developed affectively. Moreover, if the procedures in the application development are not correct, then is reported as a bug or might imply that an incident is raised. It is also important to have focus on the level of the adequacies

that are involved. Not all incidents are bugs, however, but all bugs are incidents (Bose, 2006). Incidents can also be of the specific type ‘question’ and these are the real considerations. If the functionality is not clear to the tester, then it must be resolved to make the application clear for the users (Boakye-Boateng, 2016). One must know that the validation of the software always helps in the development and the unfolding of the exact functionality of the features, which are available in software and its applications.

Moreover, it can help the testers to understand the product required and is much better way to develop the software. Therefore, it is an important feature of the software that must be compliant with the right level of the specifications and the features. It always helps in making the product and the services as more user friendly (Bing, 2007). Therefore, this was the basic consideration in the testing, development, and verification processes of the software as it provides the results and the rewards. One must keep in mind the right level of specifications and the features, which are the core requirement of the software (Bernier & Hafsi, 2007). Otherwise, the software may not work in a right manner and might provide the less accurate level of the software considerations.

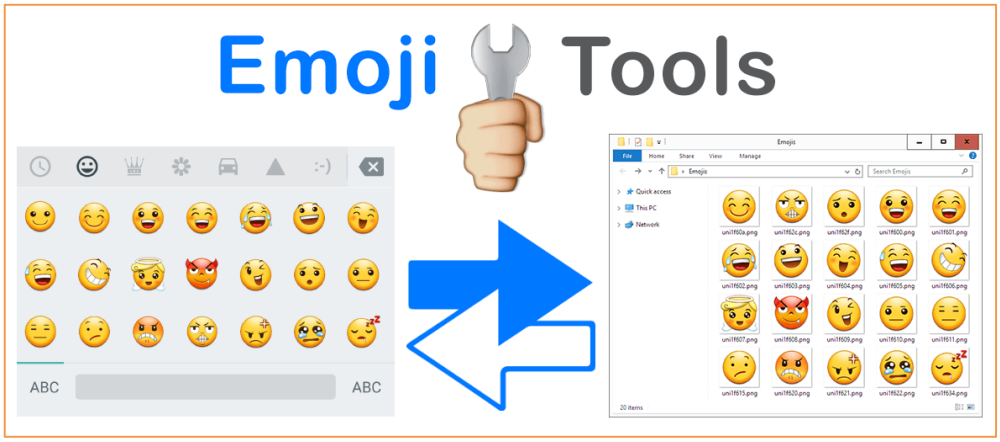
USES OF TOOLS AND TECHNOLOGY

For the sake of the development of the emoji software application, various tools and techniques are used. These tools and the techniques are important for the affective development and application of the tools. These tools and techniques are in line with the specific features and specifications. The installation of the emoji world bot is an important technique that is used in the application. This application enables the emoji to translate the application in different kinds of the languages.

These tools and the techniques provide various kinds of the functions and the specification, which make the emoji application affective. For instance, these tools and techniques are functions such as addition and deletion, change of the colors of the pictures, change of the font and the sizes, change of the application, change of the language, and the emotions pictorial depiction (blog.bufferapp.com, 2016). This section of the project will discuss the same level of tools and the techniques which are needed to be present in the application.

The languages can be switched. Moreover, the right and accurate level of the language was embedded for this technique. Besides, the language selection tool, other techniques which were capable of altering the colors and the dimensions and the specifications of the pictures played an important role in changing the specifications and the alignment of the pictures (Abram, 2016). The changing of the colors is important and they are embedded in the basic tools of the emoji.

The feature of the standardized global iconography was also put in the action to make sure that the right approach has been developed. Moreover, fundamental procedures are also adopted and provided the right direction and approach. The standard color and the lay out of the emoji is being used worldwide (Treadway & Smith, 2012). Other tool which has been used is the font options, this option enables the user to change the font and the size of the emoji (Tricker, 2015). The changing of the font and the lay out is important for the delivery of the right level of the option and other tools include functions to add or delete the emoji. This is an important technique that provides the developer an option about erasing and adding the emoji (Weiten, 2017). The development and the application of such tools are important because for the effective display of the depiction of the facial expressions.



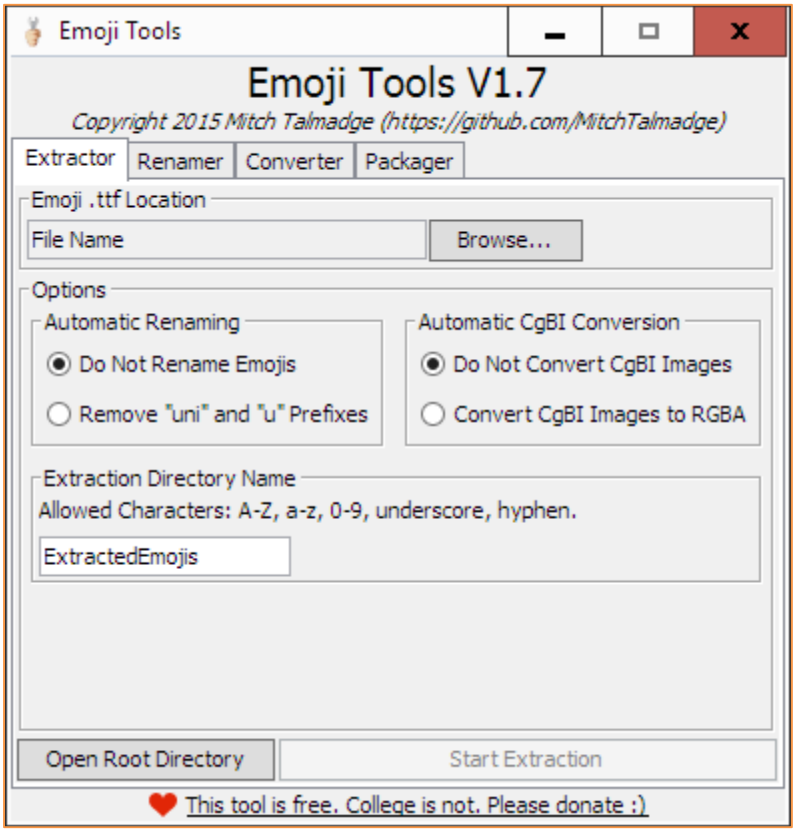
These tools and strategies are vital for the compelling improvement and utilization of the devices, which are worth considering in the development of the emoji technology. Different techniques are used for the establishment of the software. The tools and the requirements of the software include the addition and deletion, drop and drop out, changing of the color, and the font and the level of the sizes (Yanofsky, 2008). All these kinds of the tools are necessary, which must be presented in the emoji.

Java language was used as a programming language as it is an excellent tool for the development of the emoji, which was affectively shown in the development of the application. One must note that the application of the java was used for the object oriented application and the development of the software. That is why, it is considered as the right and the affective development of the application.

Other tool which was used in the development of the emoji was the use of the HTML language. This language is also good as it provides the right and accurate analysis of an application. The HTML language along with the Java is an important consideration for the development of the emoji. The right level of the procedures and the applications were also added in a well-organized and oriented manner. Therefore, one must keep in mind the accurate level of the functioning of the tools, which are adoptable and are needed for the establishment of the

emoji world bot, an essential strategy utilized as a part of the application. The changing of the uses is essential and they are inserted in the fundamental instruments of the contemplations of the emoji. Therefore, the dialect choice apparatus is an important function (Zhou, Hentschel, & Kumar, 2016). All tools and techniques were equipped to adjust the cues of the level of the knowledgeable measurements. The standard shading and the lay out of the emoji, which are being utilized around the world are considered. Thus, the adaptation of such tools and the techniques are quite important for the affective development of the emoji. The changing of the text style and the lay out is therefore critical for the conveyance of the correct level of the choice. Therefore, the multi option is necessary to provide the right and the accurate functioning and the positioning of the pictorial depiction of the emoji.

The essential needs of the emoji are its capacity of the exact portrayal of the outward appearances in the electronic gadgets. Subsequently, cautious thought is very required in that unique situation. Other devices have been utilized for the textual style choices. The use of the tools and the techniques are subject to the programming language and the font capacity of the software. Overall, the tools and the techniques provide customization of the software application, which has been designed to use the application.



The users will be in position to find out what is the basic impact and the level of the conceptual application. The above-mentioned dialogue box provides an idea about the tools and the techniques that were used to make the software functional. The application for such kinds of tools and the techniques are necessary for the developers, while making decisions and the right level of the approaches to provide the accurate and the right level of understanding. Therefore, these applications and tools were utilized in the development of the procedures to provide the right simulation and the pictorial depiction of the human emotions in the electronic gadgets.

CONCLUSION

This project is developed to create an application for emoji. Emojis are basically pictorial depiction of the human emotions such as fear, happiness, angriness, and related emotions. These emotions are important in day to day conversations, which takes place in our daily lives. The use of the emoji was first introduced by the Japanese companies. After then, emojis were present in almost every electronic communication form, from e-mail to SMS and through related means of communication. In addition, the uses of the emojis was first introduced in mobile phones such as Vodafone.

The emoji has power to reflect the same level of the human expression as it happens in the real life. Therefore, the role of emojis are important in our lives. This project creates an application, which delivers and develops emojis through programming languages such as, HTML and Java. Different kinds of the emojis are developed and these emojis were discussed in-detail in the previous chapters. The objective of this project included the development of an application, designed to demonstrate the emojis in the conversation. Furthermore, an application was built affectively to attain the development of emojis. The levels of the establishment of the emoji world bot is an essential method that is utilized as a part of the application. This method provided an application of the different level of the languages which are needed and required. There are critical devices and strategies which should have been available in the product application. For instance, the dialect choice device is critical as it allows systems to adjust the emojis, the measurements, the details of the photo, and the arrangement of the photos in the software application. These things are important as it provides the correct level and views of the application which are the part of developing emojis. Therefore, the right way of the selection of the pictorial depiction must be provided. The improvement and the utilization of such

instruments are vital for the general adaptation of the setting. Moreover, one must remember that the level of appearance of the emoji is very essential to successfully demonstrate the communication as well as emotions. Thus, these two programming languages were used in the development of the emoji.

Another important thing that was considered was the use of the tools and the techniques to develop the emojis. The developmental tools and the techniques include the use of the different features and the functions such as deletion, addition, copying, pasting, and related functions. These functions were developed affectively with the use of the different kind of the techniques. The level of the process provides an accurate and important way of providing the implication of the emoji in the software application development for the electronic devices. The use of the future implications and the area of the research are also important. This area of research is related to the capturing of the facial expression and using it as an emoji. The new way of using emojis is important for the development and the establishment of the improved version of the emoji. The use of the camera plays a vital role. The camera will capture the movement and this movement will be then be use as the source of the emoji. Critical steps are taken to provide the right level of the analysis. The application of this future version will be significant. The future research direction is important for the researchers, the community, and the practitioners as well. Therefore, the right delivery of the expertise is thus crucial as an application progresses.

Furthermore, the utilization of the devices and the strategies, which are related to the development of the emojis are considered. These apparatuses and the methods were identified with the improvement and the utilization of emojis in the software development application procedures. The utilization without bounds suggestions and the range of the exploration are additionally critical for the developmental techniques for the software. This better approach for

utilizing the emoji is consequently imperative for the advancement and the foundation of the enhanced variant of the emojis in the software technology. Basic and critical were also investigated. The application affectively gave levels of arrangements and gave the utilization of the distinctive level of the ideas. Therefore, the presentation of the future idea for the emoji development. One must understand that the role of developing emojis is promising. Overall, all necessary steps are taken to provide the right level of the analysis.

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