The Importance of Understanding Emoji: An Investigative Study

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Abstract

With the explosion of social media usage, emoji have become a trending topic in digital communication technological researches. People have started using emoji as a new language in social media to colour and humanise their text messages. Human-Computer Interaction (HCI) experts must dedicate their effort to understanding emoji and their related issues, specifically from a design perspective. Therefore, to understand how emoji work and how they affect people’s daily lives, a review has been conducted to discover important facts, including a clear understanding of how and why designers and HCI experts need to evaluate emoji, as well as their implications and limitations.

Keywords
Emoji; Emoticons; Stickers; Design; Applications; Sentiment Analysis; NLP; HCI.

1 Introduction

The word ‘emoji’ comes from the Japanese language: 絵 (e ≡ picture) 文 (mo ≡ writing) 字 (ji ≡ character; Davis & Edberg, 2016). Emoji are the new generation of emoticons on smart devices that users include in their communications through social media. The main technological companies have realised the importance of emoji and have taken considerable strides towards developing emoji and including them in their systems. For example, in 2011, Apple added the emoji keyboard to iOS as an international keyboard (Dimson, 2015). Therefore, Human-Computer Interaction (HCI) specialists have considered emoji and emoticons in their recent studies. This paper will review previous studies on the main factors relevant to emoji evolution and its impacts on people’s lives. First, the paper will provide a brief historical and comparative review on the background of emoji and emoticons and on their structure from a programming and encoding perspectives. Second, the study will try to understand the influence of emoji on people’s real lives by reviewing studies in three aspects
of human science—psychology, sociology and linguistics—alongside some health and marketing studies. The third and fourth reviews will be on the global popularity of using emoji and its meaning in different contexts, followed by some emoji technical implications. This study will then recommend strategies to resolve the issues revealed through the literature review. Finally, the study will conclude with proposals to help HCI specialists and designers enhance their creativity and use emoji more efficiently with a discussion of the emerging issues that may affect the future of emoji.

2 Background

2.1 The History of Emoji

In 1982, Professor Scott E Fahlman used the first known smiley face emoticon in a post to Carnegie Mellon University’s computer science general board (Churches, Baron-Cohen, & Ring, 2009). In 1999, Shigetaka Kurita, a Japanese designer, made emoji available for the first time by introducing them on i-mode, the first Japanese mobile Internet system (De Abreau, 2015). According to Davis and Edberg (2016), the first proposal submitted to encode the DoCoMo emoji in Unicode was made in 2002. Thereafter, in 2006, Google started converting Japanese emoji to Unicode private-use codes, which led to developing the internal mapping tables to support the transferable emoji by Unicode characters in 2007. Emoji did not begin receiving considerable media attention until 2013 (Davis & Edberg, 2016).

2.2 Emoticons, Emoji and Stickers

The terms emoticons, emoji and stickers are often used interchangeably, although they are different in their creation, their software providers and their regularity and purpose.

Emoticons refer to a series of text characters (punctuation or symbols) that are utilised to textually form a gesture or a facial expression. According to Davis and Edberg, (2016), emoticons preceded emoji; however, they were modified to include Unicode characters. This modification uses not only ASCII characters but also U+203F (‿), U+FE35 (︵), U+25C9 (◉) and U+0CA0 (ಠ) to form facial expressions, as is shown below.

^‿^  ◯ ◯  ◯ ◯

Emoji, on the other hand, are actual icons that appear on the keyboard and can be used in texting digital communication media. As previously mentioned, digital communication users had used emoticons before emoji were invented. Consequently, many platforms exploit
emoticons by allowing them to be used to input emoji. For example, the emoticon ;-)) can be converted to 😄 in certain chat windows.

Comparing to emoticons and emoji, **Stickers** are customised pictures used instantly by many messenger platforms, such as MSN, Facebook messenger, Line and Snapcash. Compared to emoticons and emoji, stickers are not a standardised language that can be exchanged between different platforms; stickers are less adaptable and are mainly used by the specific apps that create them, and they are treated as pictures.

### 2.3 Emoji Encoding (Skeleton and Appearance)

The unseen coding skeleton for emoji is the Unicode standard, which is the foundation for text in all modern writing systems. Within Unicode, various code points, or numbers, transform characters into emoji. To parse these points and numbers and to make them machine understandable, a special encoding system is needed, called Unicode Transformation Format (UTF). There are three main UTFS that could be used to encode emoji in different software and systems:

- **UTF-8**: represents Unicode code points as 8-bit variable-length, which maximises compatibility with ASCII. Thus, characters in low code-point ranges (e.g. English text) may be represented in 1 byte, while characters in higher ranges could have up to 4 bytes (Cameron, 2008).

- **UTF-16**: represents Unicode code points as 16-bit variable-length. Characters in low code-point ranges are represented in 2 bytes, while characters in higher ranges are represented in 4 bytes. Higher ranges are encoded using two 16-bit units called ‘surrogate pairs’ (Cameron, 2008). This is the encoding used for many programming languages, like objective-C, Python and Java.

- **UTF-32**: consistently represents Unicode code points as a 4-byte sequence.

Chang, Hecht, Johnson, Miller, Thebault-Spieker and Terveen (2016) stated that there are currently 1,282 emoji in the Unicode Standard, each of which has a code and name, e.g. U+1F602 for ‘face with tears of joy’, but they lack pictures (appearance). This algorithm is akin to the Unicode text character, where the Unicode character U+0041 indexes the Latin capital letter ‘A’; however, it does not show how ‘A’ graphically looks. Therefore, a mechanism called rendering that renders the Unicode characters into an appearance such as a font or emoji, has been used by many platform vendors. For example, Apple, Microsoft and Google, use this mechanism to imply their own rendering of the Unicode characters to produce
their own emoji pictures. Hence, this is why the same emoji can have different appearances on different platforms. Emojipedia, a website working as an ‘emoji encyclopaedia’, contains 17 numerous platforms (A & G, 2015), which means that there may be at least 17 different renderings for each given Unicode emoji character (Chang, Hecht, Johnson, Miller, Thebault-Spieker, & Terveen, 2016). The following Table 1 shows how the same emoji character can appear differently on various platforms:

<table>
<thead>
<tr>
<th>Platform Vendor</th>
<th>Emoji</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>😂</td>
</tr>
<tr>
<td>Google</td>
<td>😄</td>
</tr>
<tr>
<td>Microsoft</td>
<td>😝</td>
</tr>
<tr>
<td>Samsung</td>
<td>😄</td>
</tr>
</tbody>
</table>

However, Davis and Edberg (2016) claimed that emoji may be represented by normal glyphs encoded in fonts like other characters, called emoji characters, or may be represented internally as graphics. As a result, some Unicode characters are normally displayed as plain text, some are displayed as emoji and some can be displayed in both forms.

2.4 Emoji Official Meanings (Spirit)

Google and Apple jointly proposed the initial standardised names for emoji and submitted them to the Unicode Consortium, a non-profit organisation that coordinates the development of the Unicode standard. The Unicode Consortium revised the emoji names (meanings) and made them official in the submitted proposal for the release of Unicode version 6.0. (A & G, 2015). Many digital communication users have no idea about the official meaning of each emoji they use. Therefore, Emojipedia, a special web search engine, has been developed to help users to figure out the official meaning of any emoji standardized by the Unicode Consortium.
3 Literature Review

3.1 Theoretical Review

Considering emoji as a communication language used on digital media necessitates a theoretical investigation regarding the impact of this language on users and how it contributes to related human science areas, such as psychology, sociology and linguistics, as well as health and marketing.

3.1.1 Psychological Aspect

In the absence of non-verbal cues, emoticons can translate emotions to express facial expressions, e.g. a smile (Walther & D’Addario, 2001). Humans imitate, in an exchangeable manner, their expressions and emotions when they talk face to face. According to Hatfield (1993), there is a phenomenon, named Emotional Contagion, in which similar emotions and corresponding behaviours are directly triggered from one person to others. This phenomenon can occur automatically through the synchronisation and mimicry, an evolved similarity between different organisms (Maynard, John, Harper, & David, 2007), of vocalisations, movements, postures or expressions. This is how people share empathy and create relationships; however, online systems lacked this empathy before the invention of emoji.

Churches, Nicholls, Thiessen, Kohler and Keage (2014) have discovered that the same sections of the human brain are activated when an individual sees an online smiley face as when seeing the face of a real human smiling. The findings determined that this reaction from the brain is not inborn but was cumulatively developed during the emergence of online systems and their unique language, (i.e. emoji). More interestingly, Churches et al. (2009), have conducted an experiment that presented images of real faces, old fashion smiley face emoticons (written with punctuations, parentheses and hyphens) and an undefined stream of characters to 20 participants. The results were stated by Churches as follows:

“There is no innate neural response to emoticons that babies are born with. Before 1982 there would be no reason that ':)' would activate face sensitive areas of the cortex but now it does because we've learnt that this represents a face. This is an entirely culturally-created neural response. It's really quite amazing” (Churches et al., 2009).

Similarly, emoji could have crucial psychological and emotional effects on users based on many other factors, not only the brain reaction. As Churches stated, surrounding environments and culture may lead people to adopt and acquire new skills that they were not born with.
Accordingly, when people understand the meaning of a textual smiley face (i.e. emoji) they will emotionally react toward it as they emotionally react toward an actual facial expression.

### 3.1.2 Sociological Aspect

Recent studies have shown that emoji are not just representations of affective attitudes; they play various roles related to sociology. Through emoticons, and similarly emoji, people can express their intentions, sociocultural differences and identities (Derks, Bos, & Von Grumbkow, 2007; Schnoebelen, 2012; Park et al., 2013). Many researches have further explored the role of digital emoji usage in society and culture. Kelly and Watts (2015) conducted a study that interviewed 20 culturally diverse participants about the different uses of emoji in digital textual communication with strong personal linkages. The study found that, besides conveying emotions, emoji are used for other purposes, like establishing conversations, enabling playful interactions and creating confidential uniqueness within a relationship. In fact, emoji supports the possibility to express diversity in many forms, such as race, gender, religion or ethnicity. Apple, for example, has created a range of emoji updates in its operating systems OS X 10.10.3 and iOS 8.3 that take advantage of the new emoji skin tone modifiers, recommended by the Unicode Consortium in November 2014, and added a feature in its keyboards that enables the user to select from a collection of different emoji with a variety of skin tones (see Figure 1). Furthermore, the update provides a family relationship emoji and allows users to choose any variety of two adults (men, women or mixed) with one or two children (boys, girls or mixed; see Figure 2). These types of emoji choices encourage communication among families and strengthen such relationships.

![Figure 1: Skin Tone Race Choices in Apple Keyboards (Emojipedia.org).](image-url)
3.1.3 Linguistics Aspect

Emoji is changing our speech patterns. In recent years, text emoticons have been profoundly investigated and considered to be the way of conveying thoughts and feelings by simulating nonverbal signs in speech (Rezabek & Cochenour, 1998; Wolf, 2000; Crystal, 2006). Nonverbal information is the piece of information that the human brain processes and recognises as an emotional interaction when perceiving an emoticon or an emoji (Yuasa, Saito, & Mukawa, 2011). People read these picture characters (i.e. emoji) as emotional information and not words; thus, texting with emoji is as important as texting with words to clearly articulate the meaning of messages via digital communication. Interestingly, linguists have found that individuals who have been prevented from using gestures while talking become less voluble in speaking (Finlayson, Forrest, Lickley, & Beck, 2003). Basically, emoji in digital communication helps represent the human gestures, voice tones and physical expressions people do when communicating vocally, whether using telephones or talking face to face. As described in the previous section, the meaning of emoticons in a textual digital communication exceed the attitudes’ effectiveness and differ with the individual personality and the social context (Derks, Bos, & Von Grumbkow, 2007; Schnoebelen, 2012; Park et al., 2013). Here, from a linguistic point of view, a review has been done involving Dresner and Herring’s (2010) study that drew inspiration from Austin’s (1975) speech act theory. The authors argued that emoticons indicate the speaker’s intention, and they concluded three linguistic functions for emoticons. Firstly, they consider emoticons as emotional indicators that are directly correlated
to facial expressions, e.g. sad or angry. Secondly, they consider emoticons as non-emotional indicators that are also correlated to facial expressions, e.g. joking. Lastly, they consider emoticons as illocutionary force indicators that are not correlated to facial expressions but to deep intention (Dresner & Herring, 2010). Pavalanathan and Eisenstein (2015) performed a similar investigation on emoji and came to a similar conclusion. The results showed that emoji seem to play similar functions in human language, which is why we compare them with emoticons in this investigation (Pavalanathan & Eisenstein, 2015).

3.1.4 Medical and Health Aspect

Emoji usage could influence many health issues and medical aspects. For example, Vidal, Ares and Jaeger (2016) investigated food-related emotional experiences by analysing emoji usage on Twitter. Köster and Mojet (2015) conducted an earlier research aimed at understanding the impact of emoji usage on the food-related emotional reactions during different eating situations. However, Vidal, Ares and Jaeger (2016) provided a deep knowledge about the way that food consumers transmit emotional reactions to eating and drinking situations along with the product they consume. The study considered the tweets describing food purchase, preparation or consumption. Accordingly, the results showed that the frequency of using emoji is based on whether the user was with other people or alone. Users who accompanied others used emoji related to positive emotional reactions, such as the OK hand sign 👍, the smiling face with heart-shaped eyes 😍 or the face with tears of joy 😢. In contrast, negative emotional reactions have been reported when people were alone, and emoji like the pensive face 😔 and the loudly crying face 😢 were used. The study also considered tweets that described eating in different places, like restaurants, work or school. Tweets mentioning restaurants included emoji that indicate positive emotional reactions, whereas tweets describing work or school had emoji related to negative emotional reactions. The third examination performed in the study observed situations associated with or a consequence of food consumption. For example, users intentionally used negative emoji, such as a weary face or an unamused face, when they felt hungry. Users also expressed their positive emotional reactions using emoji when they described positive hedonic experiences, such as feeling full or satiated. In conclusion, the paper suggested that emoji tend to be a handy tool and an intuitive approach to express emotions within the food context. Such a study introduces opportunities for future researches in the health care area using an emoji analysis approach.
3.1.5 Business and Marketing Aspect

According to Speier (2015), marketers have recently noticed the importance of emoji and their popularity and have incorporated them digitally in their marketing strategies for mobile apps, emails and social media platforms.

Yakın and Eru (2015) claimed that the most crucial reason to employ social media as a promotion channel is to cover a wide audience with a low financial plane. Moreover, social media helps target the appropriate audience for each campaign. On that account, a study was conducted using an experimental design method and applying a survey on a selected sample. The results showed that emoji is a suitable tool for advertising campaigns and for successfully explaining the project. Additionally, the study participants stated that the messages transmitted during the campaigns were informative and effective, which make the campaign attractive, creative and innovative (Yakın & Eru, 2015).

Similarly, McDonald’s created a billboard to promote its restaurants near London that shared its marketing message using emoji (Speier, 2015). The billboard contains traffic and construction emoji, likely indicating the reasons for delays on the highway, and then shows a crying face due to the delays, followed by McDonald’s famous arches and a smiley face (Speier, 2015; see Figure 3).

Figure 3: McDonald’s Billboard in London (twitter.com/SocialSecretUK/).
3.2 Practical Review

Two further investigations needed to be performed. The first, investigating in emoji meaning within a textual context, and the other measuring the popularity of emoji usage world widely.

3.2.1 Emoji Meaning Within Context

Emoji may not be correctly interpreted because of their nuanced graphical details. Emoji also have different appearances due the respective platform, leading to misunderstandings. Therefore, without text attached to them, emoji can be translated into different meanings based on the context and the part of speech (Chang, Hecht, Johnson, Miller, Thebault-Spieker, & Terveen, 2016). Thus, it is necessary to examine studies that tried to understand emoji contextual meaning using Natural Language Processing (NLP) approaches.

EmojiNet, modelled by Balasuriya, Doran, Sheth and Wijeratne (2016), is one of the first machine-readable sense inventories for emoji. To show how emoji could have various potential misconceptions, the EmojiNet creators considered the 😂, 🚹 and 💰 emoji and their usage in different tweets (see Figure 4).

![Figure 4: Emoji Usage in Social Media with Multiple Senses (Balasuriya, Doran, Sheth, & Wijeratne, 2016).](image)

The study showed that people translate the 💰 emoji as money, expensiveness and working hard; the 😂 emoji as humour, laughter and happiness; and the 🚹 emoji as shootings, anger and killing. This ambiguity in emoji meaning and its usage required a project like EmojiNet, which targeted systems to make them understand the meaning or the sense of emoji by linking
Unicode emoji representations to their English meanings extracted from the Web using BabelNet (Navigli & Ponzetto, 2012). BabelNet is the most recent comprehensive multilingual sense inventory. The detailed functionalities provided by EmojiNet can be listed as follows:

- Provides the sensibility of part-of-speech tags (PoS tags) for a specific use of emoji.
- Provides the definition of an emoji and the senses in which it is used.
- Provides the usage example of emoji for each sense.
- Provides the links of emoji senses to other inventories or knowledge bases, such as BabelNet or Wikipedia.

As Balasuriya, Doran, Sheth and Wijeratne (2016) stated in their paper, introducing an emoji sense inventory like EmojiNet could draw scholars’ attentions towards a new emoji research direction, such as emoji understanding, emoji sense disambiguation and emoji similarity analysis.

### 3.2.2 Emoji Global Popularity and Usage

A single specific emoji can have different popularity from one country to another. In 2015, Oxford University Press nominated the face with tears of joys 😢 as the **word** of the year. Since then, the Oxford University Press has partnered with the SwiftKey company, the author of the most recent detailed analysis of emoji around the world (SwiftKey, 2015).

Ljubešić and Fišer (2016) examined emoji popularity in two stages: the overall emoji popularity and the popularity of a specific emoji. The authors used the word ‘density’ to indicate the number of tweets containing emoji. In the first stage, the study found that, in Southeast Asia, the highest density has been observed in Indonesia, with 46.5% of tweets containing emoji, followed by the Philippines, with a density of 34.6%. In South America, the highest overall ranking was found in Paraguay (37.6%), followed by Argentina (30.7%). In Africa, emoji are highly popular in the north, with Algeria ranking first (33.5%), Egypt ranking second (30.4%) and Libya ranking third (29.7%). In the Arab peninsula, Qatar comes first (32.6%), followed by the UAE (27.1%). The two highest ranking European countries are Latvia (24.4%) and Spain (24.1%), followed by the Czech Republic, Portugal and the Russian Federation. Interestingly, Japan, the home of emoji, is ranked 163rd, with only 7% of tweets containing emoji. The United States, the factory that is responsible for spreading emoji worldwide, is ranked 152nd, with only 10% of tweets containing emoji.
In the study’s second stage, where the investigation focused on the popularity of each emoji individually, the frequency distribution of emoji per country shows that the most frequent emoji on Twitter since December 2015, with around 2.6 million uses in the study’s emoji dataset, is the ‘Face with tears of joy’ 😂, accounting for 6.7% of all emoji usage. Second was the ‘Smiling face with heart-shaped eyes’ 😊, with 3.72%. Third place was the ‘Emoji modifier Fitzpatrick type-1-2’ 🅃, with 2.3%. Next was the ‘Smiling face with smiling eyes’ 😊, with 2.1%, followed by the ‘Face throwing a kiss’ 😘, with 2.1%. The study gave a full list of encountered emoji with their frequency and popularity around the world in a separate publication named ‘The Emoji Atlas’ (Ljubešić & Fišer, 2016).

4 Emoji Technical Implications

The previous review findings have significant implications. Instagram and Twitter, for example, have utilised emoji in their hashtags. In the case of Instagram, the technical team has added a supportive feature to its system to enable using emoji characters in hashtags (Dimson,
2015). Such a feature allows people to conveniently tag and search content using their favourite emoji. Since then, the evolution of digital language has been enhanced so that nearly half of comments and captions reported on Instagram contain emoji characters (Dimson, 2015).

Similarly, Google has included emoji in its search engine to enable users to search using emoji instead of words. Facebook has even substituted the dislike button with a group of seven emoji, named ‘Reaction Buttons’: thumbs up, beating heart, laughing face, smiling face, surprised face, crying face with an animated tear and red/angry/pouting face. By using these buttons, users can react differently to each post (see Figure 6).

Figure 6: Facebook Reaction Buttons (Facebook).

Facebook made a wise choice to have different ‘empathy’ buttons instead of a single button. Such choices help users who have social issues to be more active and to communicate their opinions.

Another important emoji implication can be found in the academic field. By knowing the meaning of emoji, a significant enhancement could be made to applications that study, summarise and analyse digital communications using NLP techniques. Many sentiment analysis studies have reported that emoji contribute to improving sentiment analysis scores (Balasuriya, Doran, Sheth, & Wijeratne, 2016). For example, users may use different emoji to describe one feeling, like using a joy and smile emoji to express happiness or using a cry and tears emoji to express sadness. Therefore, understanding which feeling the emoji represents could help understand its sentiment much better. Projects like EmojiNet could contribute to improving academe researches (Balasuriya, Doran, Sheth, & Wijeratne, 2016).

5 Discussion

Designers (e.g. app designers, web designers, graphical designers) and HCI specialists could benefit from this investigative study by considering the following emoji-related issues and their corresponding resolutions.
5.1 The Usage of Vernacular (Slang) Vocabulary

Sentiment analysis researchers, whose work requires analysing users’ digital communication sentimentally, could encounter the usage of abstruse short words and informal languages in platforms like Twitter and Facebook. This kind of language is difficult to be analysed sentimentally due to the lack of knowledge regarding its meaning or its purpose in a specific context. Emoji could mitigate this problem. According to an Instagram technical report, it has been discovered that as emoji usage increases, the usage of vernacular words, like ‘rofl’ and ‘bae’, on the Internet has been decreased (Dimson, 2015). It is essential to point out that emoji do not have grammar or vocabulary to entirely replace the written language; instead, emoji are simply supplementary characters that help emphasise the sense and strengthen the context of a message.

5.2 Misunderstanding Plain Text Messages

Texting with plain text that does not contain any emoji could be misunderstood through digital communication. Therefore, Emoji could help elucidate the meaning of plain text messages. The only condition, however, is to use emoji that are already understood by the receiver of the message, thus avoiding ambiguity. For example, when people have a digital conversation, they exchange questions and answers as they communicate face-to-face. (see Figure 7).

Figure 7: Plain Text Conversation.

Such a conversation could be translated positively or negatively. In Figure 8, a positive impression has been articulated in the conversation, using positive emoji like 😍 and 😊.
However, in Figure 9, negative emoji have been used with the same text, which change the impression into negative. The receiver will not understand the exact impression that sender tend to express without using emoji.

5.3 Inability to Express Gestures and Emotions

In digital communication, users may encounter the inability to express physical gestures, intonations and facial expressions that are easily found in face-to-face communications. Emoji could solve this problem by providing a variety of picture characters to effectively express opinions, feelings and personality (e.g. sense of humour). For example, application designers can utilise emoji in multimedia applications (i.e. audio podcasting or video streaming) to translate some language features for deaf individuals. This could help when the content of the media contains spoken sarcastic metaphors that need facial expressions or voice tone changes and cannot be expressed easily in a written text.
5.4 The Need for Delightfulness and Usability

When using any application for the first time, users need that application to be flexible, memorable and functional. Furthermore, delightfulness, or experiencing happiness while using the app, motivates engagement and interaction and is a critical feature that must be considered. Emoji offers more than a symbolic way of humanising platforms and expressing emotions. By using emoji, users could add useful ambiguity to their messages, for example, allowing the writer to articulate many different potential concepts at the same time. Many people are also attracted by the challenge of constructing messages with emoji and figuring them out, which could add some delightfulness to their communication.

6 Some Emoji Limitations

Many issues have been raised regarding emoji meaning and intention. Since there is significant diversity among emoji users, the meaning and usage will also vary. Some emoji may mislead the receiver and cause the message to be misunderstood. Furthermore, there are many elderly users with sight problems and less experience in using emoji who will not use them in their texting. Chevrolet, an American automobile brand, claimed that only the younger generation understands and widely uses emoji (Speier, 2015). Therefore, Chevrolet made a video series called ‘Emoji Academy’, which involved popular celebrities such as Zendaya and Ashley Benson. The series helped make sense of emoji for less-experienced users and justified the meaning and purpose of emoji (Speier, 2015). This attempt was a clever approach to bridge the gap between Chevrolet’s vast audience and to add some personality to the brand using emoji.

Another crucial emoji limitation is related to the Unicode, which is the basic construction factor in its unseen skeleton. In fact, emoji is a language that has vastly grown and been widely distributed. According to Parkin (2016), John Hudson, a prominent typographer within Unicode, has stated that, “The set of little pictures that people might want to send between mobile devices is boundless; therefore, it needs a technology that is endlessly extensible, which Unicode is not”. Therefore, if emoji keep growing at the current rate, Hudson thinks that a much more flexible technology is needed to send and receive images between devices more efficiently and flexibly.
7 Conclusion

Besides some emoji technical implications, the paper has discussed various topics and factors that contribute directly or indirectly to emoji meaning and purpose. This paper mainly targeting designers and HCI researchers to draw their attention towards the influence and the effectiveness of emoji in people’s daily lives.

In conclusion, emoji have many advantages, such as reducing slang words in digital communications, enabling emotional expression, enhancing sentiment analysis applications and adding delightful features to a design. However, emoji has multiple limitations which could be summarised as follows: vague meanings may limit emoji use, and the Unicode restrictions may affect the future of emoji.
References


