

Emoji Foundation 🤗

The Emoji Resource for Emoji art, games, news, and meanings. Home of the Emoji Dictionary.



EMOJI RESEARCH

Can Computers “Get” Emoji? EmojiNet Says YES!

December 15, 2017 - by Sarah Vickers-Webb - [Leave a Comment](#)

EmojiNet at Work

Let’s disambiguate the sense of the 🙏 emoji
*my family 🙏 God gained an angel today and
celebrate.* EmojiNet lists two senses for 🙏 and
words from sense definitions available in Em
highfive(N) – {palm, high, hand, slide, celebr
{worship, thanksgiving, saint, pray, higher, god
of the words in tweets with the words extrac
This leads us to decide that the 🙏 emoji in T1
to highfive(N).

“Having access to EmojiNet can help computers to interpret the meaning of emoji.” -Sanjaya Wijeratne

Sorry Freud. But when it come to emoji, a cigar isn’t always a cigar (if there was, in fact, a cigar emoji).

In 2016, Wright State University computer science Ph.D student [Sanjaya Wijeratne](#) was working to identify at-risk youth using social media posts. While following twitter accounts of the gang-affiliated youth he began to notice unique emoji uses. Tweets expressing anger towards law enforcement, for example, frequently featured gun and police officer emoji.

But the most frequently used emoji? The gas pump. “We were surprised at first, but by looking at tweets using this emoji we discovered they mainly use it when talking about drugs, because “gas” is a slang term for marijuana.”

“That’s when it first struck me that emojis could take different meanings. I saw people using the same emoji in different contexts with different meanings, and I wanted to find a resource that lists all the meanings for a particular emoji.”

Flash forward to [EmojiNet](#), the first machine-readable sense inventory for emoji,

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developed by Sanjaya and his group at [Kno.e.sis](#), a project of Wright State University. Since Sanjaya's gas pump epiphany, he and his [team](#) composed of fellow graduate student [Lakshika Balasuriya](#), and advisors [Prof. Amit Seth](#) and [Dr. Derek Doran](#), published [three papers](#) on their work, and are currently developing applications to help computers automatically infer emoji meaning.



Semantic Search

Sanjaya's research on emoji is closely related to the concept of [semantic search](#), a growing area of study and application related to database and web searching. Rather than searching by keyword, semantic search considers the searcher's intent and the context in which search terms are used to improve accuracy, and generate better results.

Semantic search has huge implications for [search engine optimization](#), as users have begun to lengthen search queries to gain more precise results. Google recently reorganized its search algorithm to consider context and intent, prioritizing the "understanding" phase of search over "achieving", "filtering and clustering" and "ranking".

So how do we figure out what a word means in a given context? For us, it's mostly subconscious. For computers? Not so much. One of the cornerstones of semantic search is [word-sense disambiguation](#). Word-sense disambiguation is a long-term with a simple meaning: determining the meaning of a word used in a particular sense, when the word has multiple possible meanings.

So... back to emoji.

Making an Emoji Sense Inventory

Sanjaya and his team are developing programs to help computers detect and understand multiple meanings of emoji. In other words, they study emoji sense disambiguation. An easy way to understand *emoji sense disambiguation* is to compare the results of two open source emoji databases.

[Emoji Dictionary](#) and [Emojipedia](#) are both unicode-based emoji databases, with starkly different purposes. [Emojipedia](#) results contain static definitions of each emoji, followed each rendering of the emoji, statistics, and links to related emoji. In other words, [Emojipedia](#) is the emoji equivalent of a dictionary. An [Emojipedia](#) search for "folded hands", for example, displays the following [result](#):

Folded Hands

Two hands placed firmly together, meaning *please* or *thank you* in Japanese culture. Other common uses for this character include prayer/praying hands, or a [high-five](#).


A previous version of this emoji displayed a [yellow burst of light behind the two hands](#) on iOS. Android showed a blob-character with [closed eyes and folded hands](#) in Android 5.0.

Folded Hands was approved as part of [Unicode 6.0](#) in 2010 under the name “Person With Folded Hands” and added to [Emoji 1.0](#) in 2015.


Copy and paste this emoji:



Also Known As

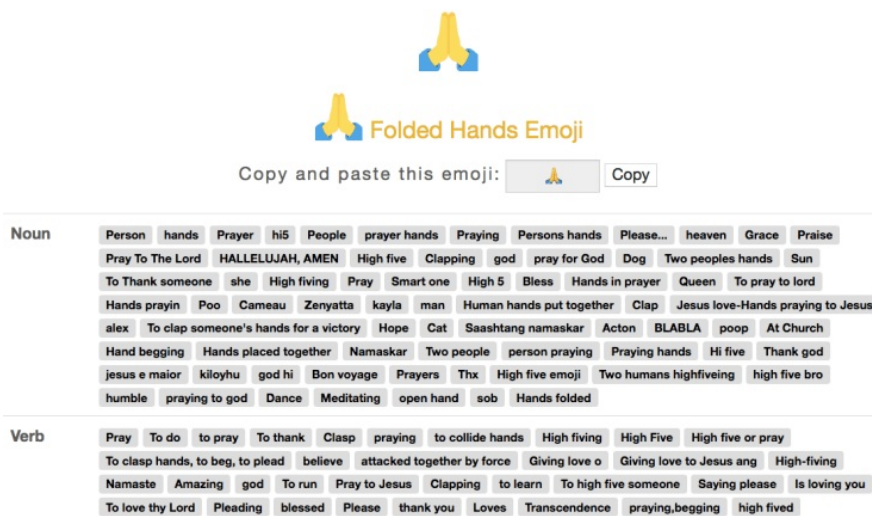
 High Five

 Please

 Praying Hands

Portion of [Emojiopedia](#) result for “folded hands” emoji

[Emoji Dictionary](#), on the other hand, presents fluid and contextual search results, based on crowd-sourced definitions, nouns, verbs, adjective, and adverbs. Like [Urban Dictionary](#), [Emoji Dictionary](#) explores multiple meaning of emoji based on content and intent. Compare the previous “folded” definition to [Emoji Dictionary’s results](#):



The screenshot shows the 'Folded Hands Emoji' entry in the Emoji Dictionary. It features the emoji at the top, followed by a 'Copy and paste this emoji:' button. Below this, there are two sections: 'Noun' and 'Verb'. Each section contains a list of related terms and phrases, such as 'Person hands', 'Prayer', 'High five', 'Clapping', 'god', 'pray for God', 'Dog', 'Two peoples hands', 'Sun', 'To Thank someone', 'she', 'High fiving', 'Pray', 'Smart one', 'High 5', 'Bless', 'Hands in prayer', 'Queen', 'To pray to lord', 'Hands prayin', 'Poo', 'Cameau', 'Zenyatta', 'kayla', 'man', 'Human hands put together', 'Clap', 'Jesus love-Hands praying to Jesus', 'alex', 'To clap someone's hands for a victory', 'Hope', 'Cat', 'Saashtang namaskar', 'Action', 'BLABLA', 'poop', 'At Church', 'Hand begging', 'Hands placed together', 'Namaskar', 'Two people', 'person praying', 'Praying hands', 'Hi five', 'Thank god', 'jesus e maior', 'kiloyhu', 'god hi', 'Bon voyage', 'Prayers', 'Thx', 'High five emoji', 'Two humans highfiveing', 'high five bro', 'humble', 'praying to god', 'Dance', 'Meditating', 'open hand', 'sob', 'Hands folded'.

Portion of [Emoji Dictionary](#) result for “folded hands” emoji

Whereas [Emojiopedia](#) gives a short, concise definition of the “folded hands” emoji, [Emoji Dictionary](#), on the other hand, provides a flexible list nouns, verbs, adjective, adverbs and examples, indicative of user intent and context.

Sanjaya and his team’s goal was to create a machine readable “sense inventory” of emoji, so computers could understand the semantic meaning of an emoji in a particular sentence. Upon discovery of several open source emoji databases online, including [Unicode Consortium](#), [Emoji Dictionary](#), [iEmoji](#) and [Emojiopedia](#). the team extracted contextual and part of speech meaning (noun, verb, adjective, etc.) of each emoji from [Emoji Dictionary](#), then integrated the information with [BabelNet](#), a multilingual semantic dictionary and database dedicated to word-sense disambiguation.

Thus was born [EmojiNet](#).

EmojiNet

[EmojiNet](#) is the first machine-readable sense inventory for emoji, linking emoji represented as Unicode with English language meanings from the Web. By integrating online emoji databases with [Babelnet](#), [EmojiNet](#) allows users to infer sense definitions from communication using emoji. For a better picture, check out [EmojiNet results for “folded hands”](#).

“Emoji plays a huge role in deciding the sentiment or emotion of a particular text. But in certain platforms, and certain carriers, emoji are shown differently. If you look at how people use face with tears of joy emoji, they mostly use it to express happiness, but sometimes it is associated with sadness too. But if we build an application that can disambiguate emoji meanings, we’d be able to tell the meanings of an emoji in a text context, that would have a direct impact on applications such as sentiment and emotion analysis.”

The team is also focused on measuring [emoji similarity](#) by determining pairs of emojis frequently used together to enhance semantic search, and develop applications to automatically process and infer meaning from emoji based communication. These applications could improve web and database search, sentiment analysis, and interface design. Grouping similar emoji together on mobile keyboards, for example, could make texting with emoji less time consuming.

What’s Next?

Sanjaya and his team’s attempts to promote his team’s paper were frustrated by the current administration’s immigration policy. When the group’s paper was accepted at the [International AAAI Conference on Web and Social Media](#), Sanjaya was unable to attend . A Sri Lankan native, Sanjaya is on a student visa. “We wanted to promote our paper at IABC , but If I left the country, I’d have to return to Sri Lanka to reapply.” With the current administration’s immigration policy, this is not a chance Sanjaya wanted to take.

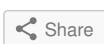
Despite earlier frustration, [EmojiNet](#) is beginning to get attention from tech companies. Recently, data science platform [Kaggle](#) inducted [EmojiNet](#) as a [featured dataset](#). [EmojiNet](#) is also in the process of organizing an emoji prediction challenge with [Google](#), [Microsoft](#), and [Kaggle](#) using [EmojiNet](#) data.

Sanjaya is excited to unleash [EmojiNet’s](#) potential. “I would argue that having access to [EmojiNet](#) can help computers to interpret the meaning of emoji. We want to improve tasks such as sentiment and emotion analysis with this information.”

To learn more about [EmojiNet](#), emoji similarity, and emoji sense disambiguation, check out these articles!

- [EmojiNet: Building a Machine Readable Sense Inventory for Emoji](#)
- [EmojiNet: An Open Service and API for Emoji Sense Discovery](#)
- [A Semantics-Based Measure of Emoji Similarity](#)
- [A Semantics-Based Measure of Emoji Similarity \(Poster\)](#)

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