

EmoTag1200 👍 : Understanding the Association between Emojis 😄 and Emotions 🐱💖



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Plain Text vs +ve Emojis vs -ve Emojis



: Could you explain to me why you did that.



: I'll explain it later.



: Ok.



: Could you explain to me why you did that.



: I'll explain it later. 😊



: Ok. ❤️



: Could you explain to me why you did that. 🤔



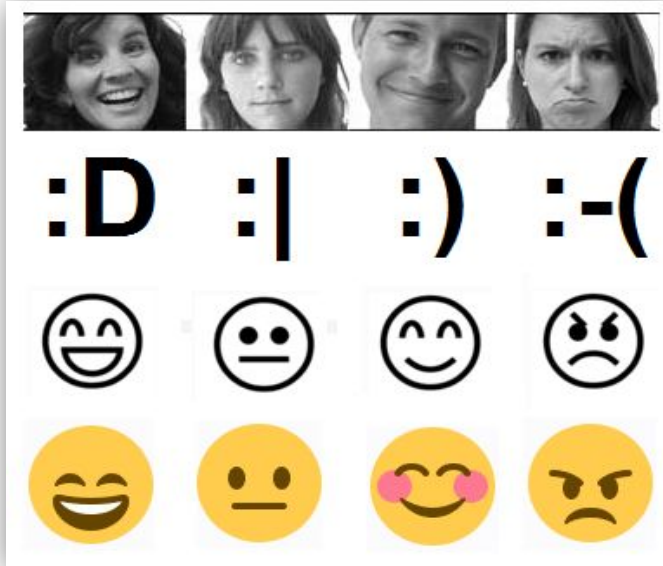
: I'll explain it later. 😞



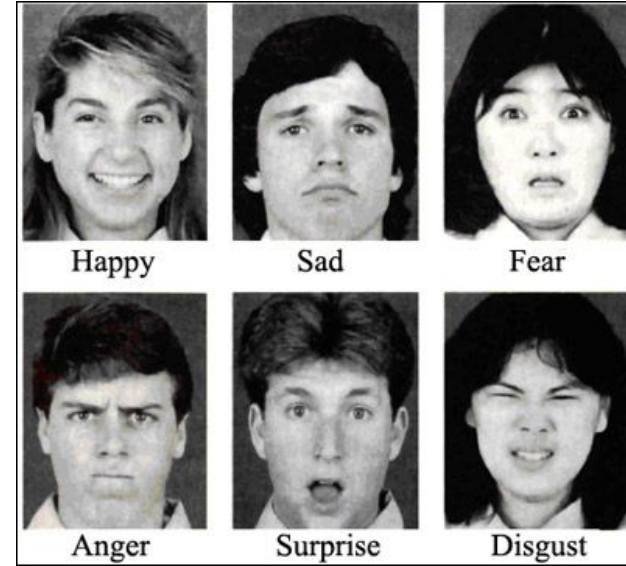
: Ok. 😞



Emojis and Emotion



Emoji vs Facial Expression¹



Ekman's 6 Basic Emotions

1: Emoticons in mind: An event-related potential study by Churches et al. (2014)

EmoTag 1200

1,200 emoji-emotion ratings
to better understand the association between emojis and emotions



0.25
Anticipation



0.92
Joy



1.00
Anger



0.5
Fear







0.72
Trust

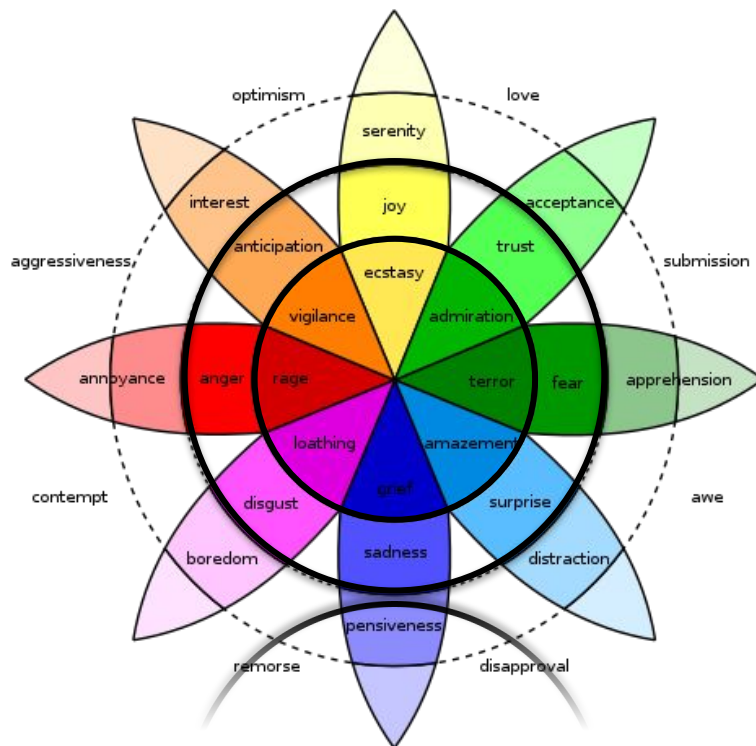
Annotation Task

- 8 Emotions
- 5 Association Levels (0-4)
- Total 150 Popular Emojis

Please rate to what extent you believe the following emojis are associated with each of the listed emotions. The scores range from 0 (no association) to 4 (very strong association).

| Unicode | Twitter Image | Emoji | Anger | Anticipation | Disgust | Fear | Joy | Sadness | Surprise | Trust |
|------------|---|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| your email | | | | | | | | | | |
| 1f622 |  | crying face | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 |
| 1f605 |  | smiling face with open mouth and cold sweat | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 |
| 1f609 |  | winking face | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 |
| 1f64f |  | person with folded hands | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 | 0 1 2 3 4 |

<https://shoeb.info/emotag/experiment/>

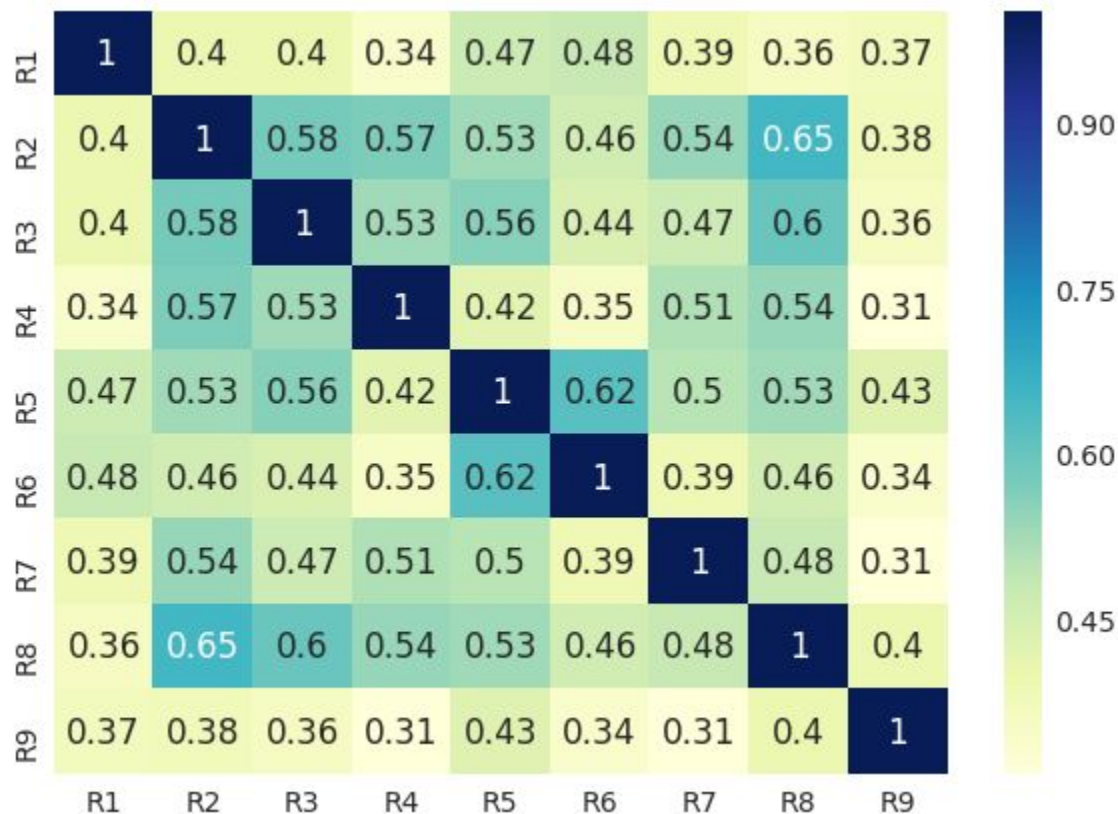


Plutchik's Wheel of Emotions

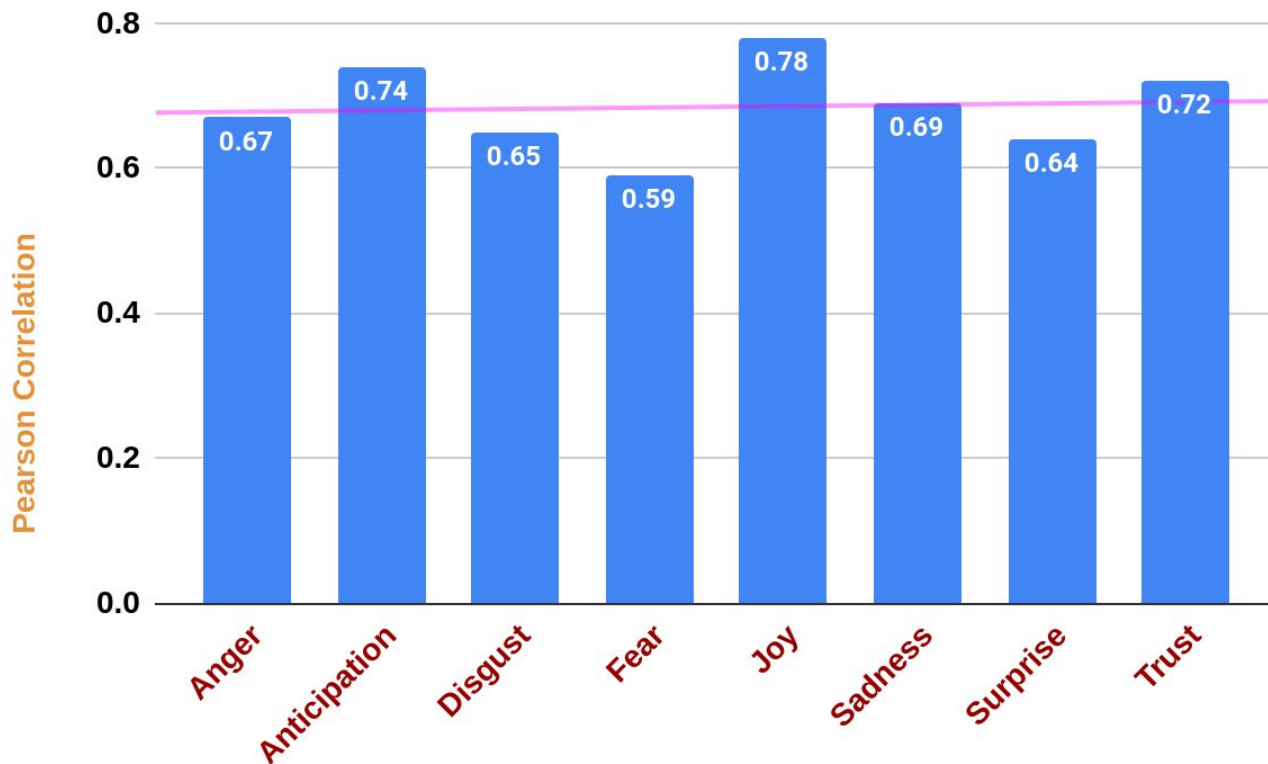
Annotation Process

- Each final rating is an average of 9 human ratings
 - Consistent set of 9 human annotators
 - Native/near-native speakers of English, age 25–35
 - Extensive prior experience in using emojis for communication
- Annotation Setup
 - Raters were asked to do one set of 25 emojis per day
 - The order of emojis was randomized for each rater

Overall Inter-Annotator Agreement



Correlation between Rater & Gold Scores



Prediction Experiments

Can You Predict Emotion?

To make it easy, a short list of emotions are given for a particular emoji.

 (Disgust or Fear or Joy) ?

 (Joy or Surprise or Trust) ?

 (Joy or Surprise or Trust) ?

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 (Joy or Surprise or Trust) ?

Can You Predict Emotion?

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 (Joy or Surprise or Trust) Joy

















































 (Joy or Surprise or Trust) Trust

Comparison of Different Prediction Models

| Source | Anger | Anticip. | Disgust | Fear | Joy | Sadness | Surprise | Trust | Average |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| GloVe | 0.05 | 0.05 | 0.11 | 0.09 | 0.34 | -0.05 | 0.18 | 0.18 | 0.12 |
| EmoTag + EmoLex | 0.62 | -0.03 | 0.81 | 0.50 | 0.19 | 0.57 | -0.27 | -0.04 | 0.29 |
| EmoTag + NRC-EIL | 0.74 | 0.23 | 0.59 | 0.65 | 0.72 | 0.74 | 0.08 | 0.46 | 0.53 |
| EmoTag + DepecheMood++ | 0.58 | N/A | N/A | 0.37 | 0.41 | 0.78 | 0.10 | N/A | 0.44 |
| Human Agreement | 0.67 | 0.74 | 0.65 | 0.59 | 0.78 | 0.69 | 0.64 | 0.72 | 0.69 |

Pearson Correlation scores for all considered prediction methods. Bolded scores represent the highest correlation observed for the emotion in the respective column except for the human agreement score.

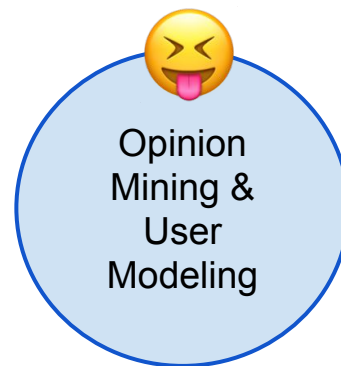
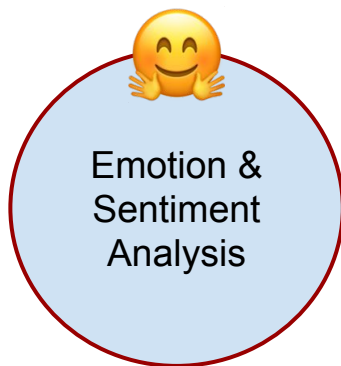
Top-Ranked Emotion Intensive Emojis

| Emotions | Top 150 Emojis (EmoTag1200) | Other Predicted Emojis (excluding Top 150) |
|--------------|---|---|
| Anger |  Angry Face  Pouting Face  Face with Steam from Nose |  Japanese Goblin  Japanese Ogre  Hocho |
| Anticipation |  Eyes  Thought Balloon  Money Bag |  Fireworks  Shooting Star  Person with Veil |
| Disgust |  Confounded Face  Persevering Face  Thumbs Down |  Ant  Japanese Ogre  Astonished Face |
| Fear |  Fearful Face  Face Screaming in Fear  Anxious Face with Fear |  Hocho  Japanese Ogre  Japanese Goblin |
| Joy |  Smiling Face  Grinning Squinting Face  Face with Tears of Joy |  Birthday Cake  Confetti Ball  Heart with Ribbon |
| Sadness |  Crying Face  Loudly Crying Face  Broken Heart |  Hocho  Baby Angel  Crying Cat Face |
| Surprise |  Double Exclamation Mark  Exclamation Mark  Face Screaming in Fear |  Face with Open Mouth  Dizzy Face  Weary Cat |
| Trust |  Kissing Face with Smiling Eyes  Two Hearts  Rose |  Church  Family  Anchor |

Conclusion: EmoTag1200

- We created the first resource describing emoji–emotion pairs
- We found that ratings can be predicted automatically based on emotion data

Potential Use Cases



Thank You!



A Big Thanks  to All Our Annotators

Contact - abu.shoeb@rutgers.edu
All resources can be found at <http://emoji.nlproc.org>