# Do you feel what I feel?
Social Aspects of Emotions in Twitter Conversations

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## Contributions
- Interlocutors converge toward a common sentiment/emotion as conversation proceeds.
- Twitter users express lots of love and joy even when the partner expresses a negative emotion.
- Sympathy, apology, and complaining influence emotion.

## Conversation Data
We define consecutive replies of tweets using the reply button as a "liaise." Only chains of length >= 4 are considered.

<table>
<thead>
<tr>
<th>Users</th>
<th>#Tweets</th>
<th>#Chains</th>
<th>#Tweets per chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>42,962</td>
<td>77,800</td>
<td>153,054</td>
<td>871,544</td>
</tr>
</tbody>
</table>

## Social Aspects of Emotions in Twitter Conversations

### Social Aspects of Emotions

#### Positive

- Love: Affection, Lust, Longing, Attraction, Dopamine, Oxytocin, Infatuation, Longing...
- Joy: Happiness, Excitement, Delight, Joy, Enthusiasm, Social Aspects of Emotions in Twitter Conversations...

#### Negative

- Anger: Irritability, Exasperation, Rage, Disgust, Envy, Torture, Aggravation, Agitation, Annoyance, ...
- Sadness: Grief, Sorrow, Loss, Depression, Melancholy, Solitude, Despair, Despair, Depression, ...
- Fear: Horror, Nervousness, Alarm, Shock, Fear, Horror, Terror, Panic, Hysteria, Anxiety, ...

#### Sensation

- Surprise: Astonishment, Surprised, Shocked, Amazed, Stunned, Surprised, Astonished, Surprised, Astonished, Surprised...

#### Emotion transition

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Love</th>
<th>Fear</th>
<th>Joy</th>
<th>Sadness</th>
<th>Surprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Love</td>
<td>love</td>
<td>sad</td>
<td>joy</td>
<td>fear</td>
<td>surprise</td>
</tr>
<tr>
<td>Fear</td>
<td>sad</td>
<td>fear</td>
<td>love</td>
<td>sad</td>
<td>surprise</td>
</tr>
<tr>
<td>Joy</td>
<td>joy</td>
<td>sad</td>
<td>love</td>
<td>sad</td>
<td>surprise</td>
</tr>
<tr>
<td>Sadness</td>
<td>sad</td>
<td>sad</td>
<td>sad</td>
<td>sad</td>
<td>sad</td>
</tr>
<tr>
<td>Surprise</td>
<td>surprise</td>
<td>surprise</td>
<td>surprise</td>
<td>surprise</td>
<td>surprise</td>
</tr>
</tbody>
</table>

### Sentiment Patterns in Conversations

- Interlocutors tend to converge toward a common sentiment as conversation proceeds.
- Interlocutors influence each other's sentiment.

### Emotion transition

- Love → Joy: happiness, love, affection, happiness, joy...
- Joy → Love: joy, happiness, love, happiness, joy...
- Sadness → Joy: sadness, despair, depression, sadness, joy...
- Joy → Sadness: joy, happiness, love, sadness, despair...
- Surprise → Love: surprise, shock, fear, love...

## Analyzing sentiment transition by sliding window method

### Sentiment-Topic Classification

<table>
<thead>
<tr>
<th>Topic</th>
<th>Love</th>
<th>Fear</th>
<th>Joy</th>
<th>Sadness</th>
<th>Surprise</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>love</td>
<td>sad</td>
<td>joy</td>
<td>sad</td>
<td>surprise</td>
</tr>
<tr>
<td></td>
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### Example of sentiment-opposing conversation

A: Sorry to hear about your bags. If you would like to get someone to contact you DM us your reference and contact number.
B: It’s on it’s way to Miami. If the woman on the check in desk in Miami hadn’t been trying to be all smart then no problem.
A: Sorry about that. Pleased to hear they located it quickly for you though.

## Finding Conversational Topics Using ASUM (LDA-based joint model of topics and sentiments)

ASUM automatically discovers topics for each sentiment.

### Sentiment-related words

<table>
<thead>
<tr>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>love</td>
<td>sad</td>
</tr>
<tr>
<td>joy</td>
<td>fear</td>
</tr>
<tr>
<td>happiness</td>
<td>despair</td>
</tr>
<tr>
<td>love</td>
<td>sad</td>
</tr>
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<td>joy</td>
<td>fear</td>
</tr>
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<td>happiness</td>
<td>despair</td>
</tr>
</tbody>
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### Emotion-related topics

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<thead>
<tr>
<th>Emotion</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Love</td>
<td>Topic 1</td>
</tr>
<tr>
<td>Fear</td>
<td>Topic 2</td>
</tr>
<tr>
<td>Joy</td>
<td>Topic 3</td>
</tr>
<tr>
<td>Sadness</td>
<td>Topic 4</td>
</tr>
<tr>
<td>Surprise</td>
<td>Topic 5</td>
</tr>
</tbody>
</table>

## Finding Emotional associations

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<th>Topic</th>
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<tr>
<td>Love</td>
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<tr>
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<td>Topic 1</td>
</tr>
<tr>
<td>Negative</td>
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### Social Aspects of Emotions

- Positive: Love, Joy, Happiness, Affection, Lust, Longing, Attraction, Dopamine, Oxytocin, Infatuation, Longing...
- Negative: Anger, Irritability, Exasperation, Rage, Disgust, Envy, Torture, Aggravation, Agitation, Annoyance, ...
- Neutral: Surprise, Astonishment, Surprised, Shocked, Amazed, Stunned, Surprised, Astonished, Surprised, Astonished, Surprised...

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