

# Sarcasm on Social Media

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# Sarcasm

- Sarcasm is typically harder to identify when compared to other sentiments (e.g., anger, joy, etc.)
- Sarcasm includes two opposing meanings:
  - The literal meaning
  - The intended meaning
- These two meanings are the same for non-sarcastic statements

# Sarcasm

- Identifying sarcasm also requires context information

*“I am really happy for you.”*

- Sometimes context is given in a different format

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Sample sarcastic review: Thank you for your WONDERFUL service!



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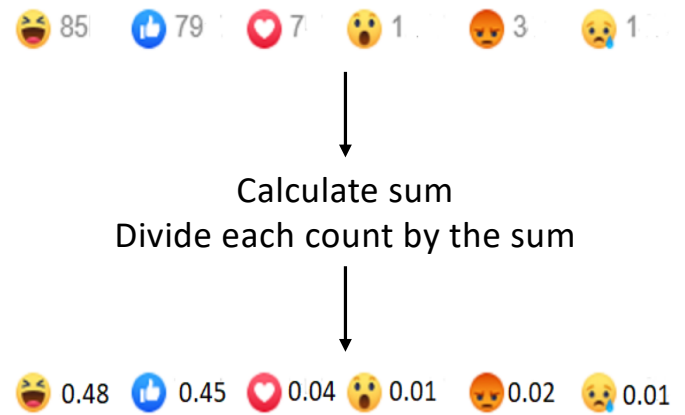
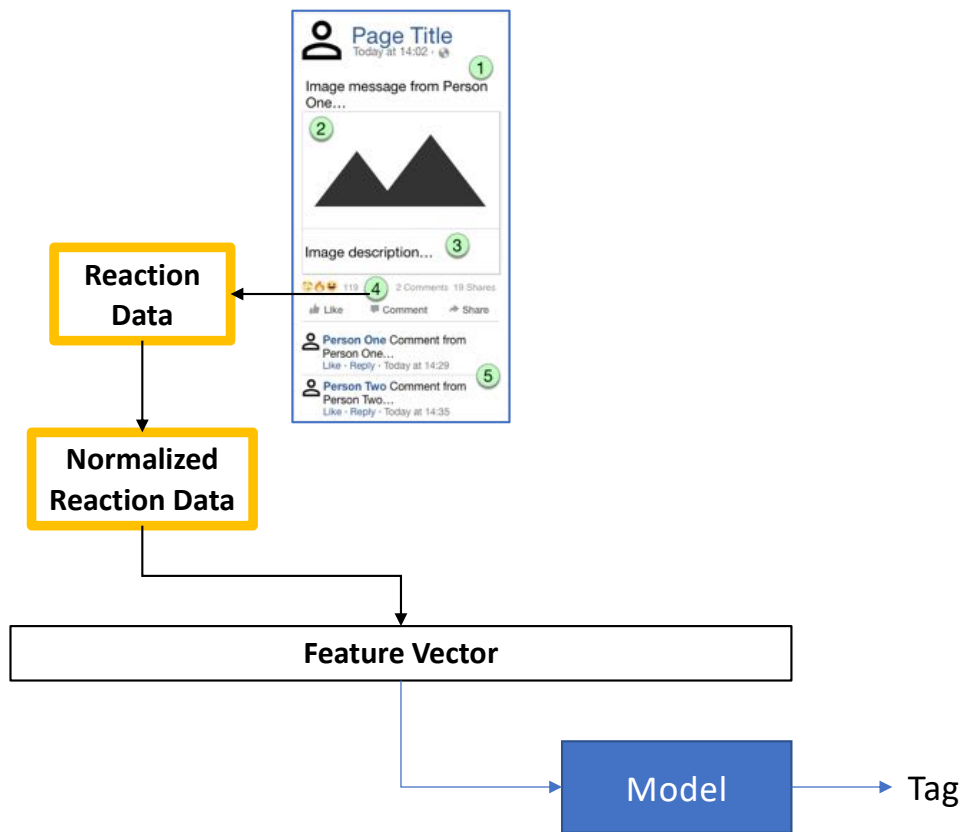
Sample auto-reply: Thank you for your kind review.

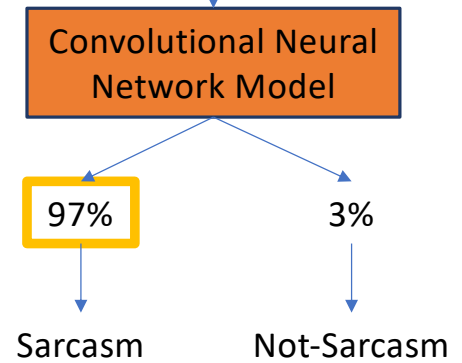
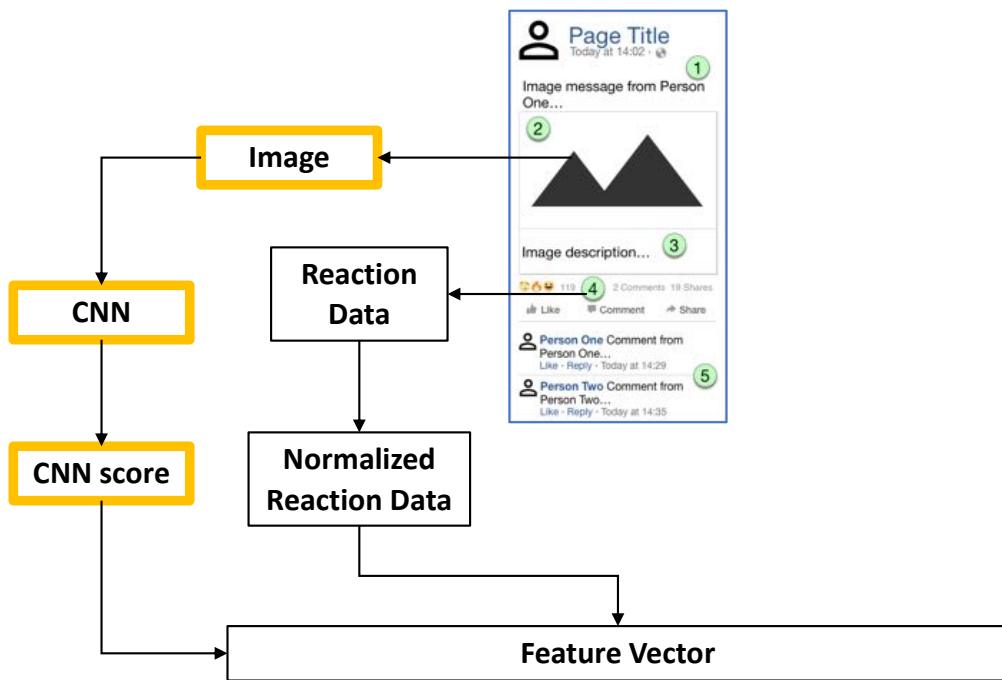
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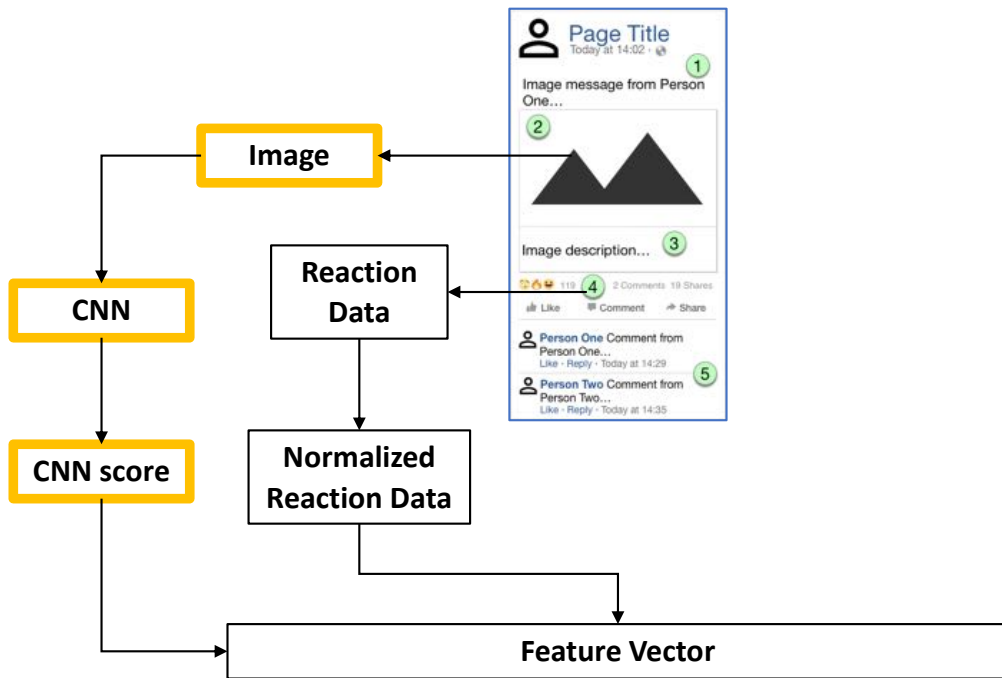
# Sarcasm Detection Tools

Long term: develop social media tools for tagging content

1. Classify posts as **fake news**, **satire**, **serious**, **funny**, etc.
2. Help new users that are not familiar with some forms of communication (e.g., memes)
3. Transfer tools to other languages and domains



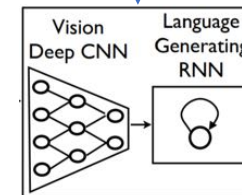
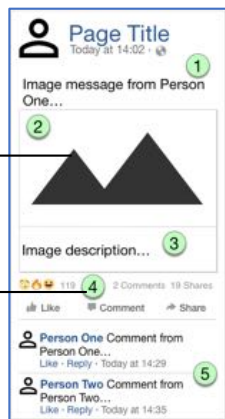
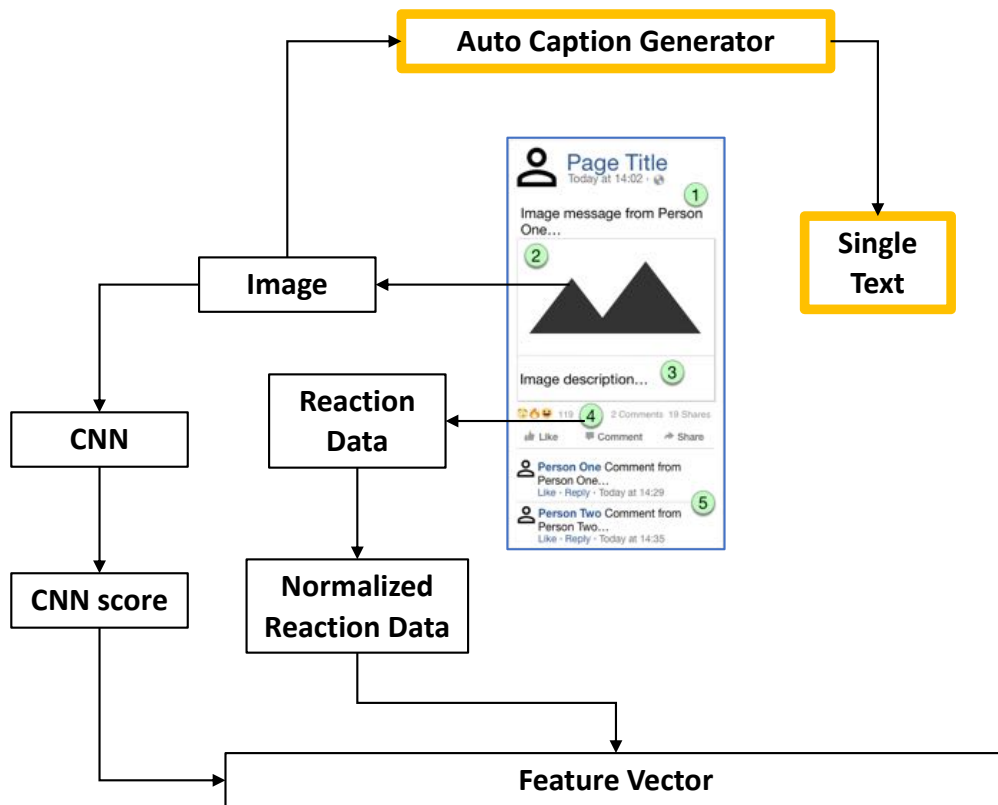




Sarcastic



Not Sarcastic

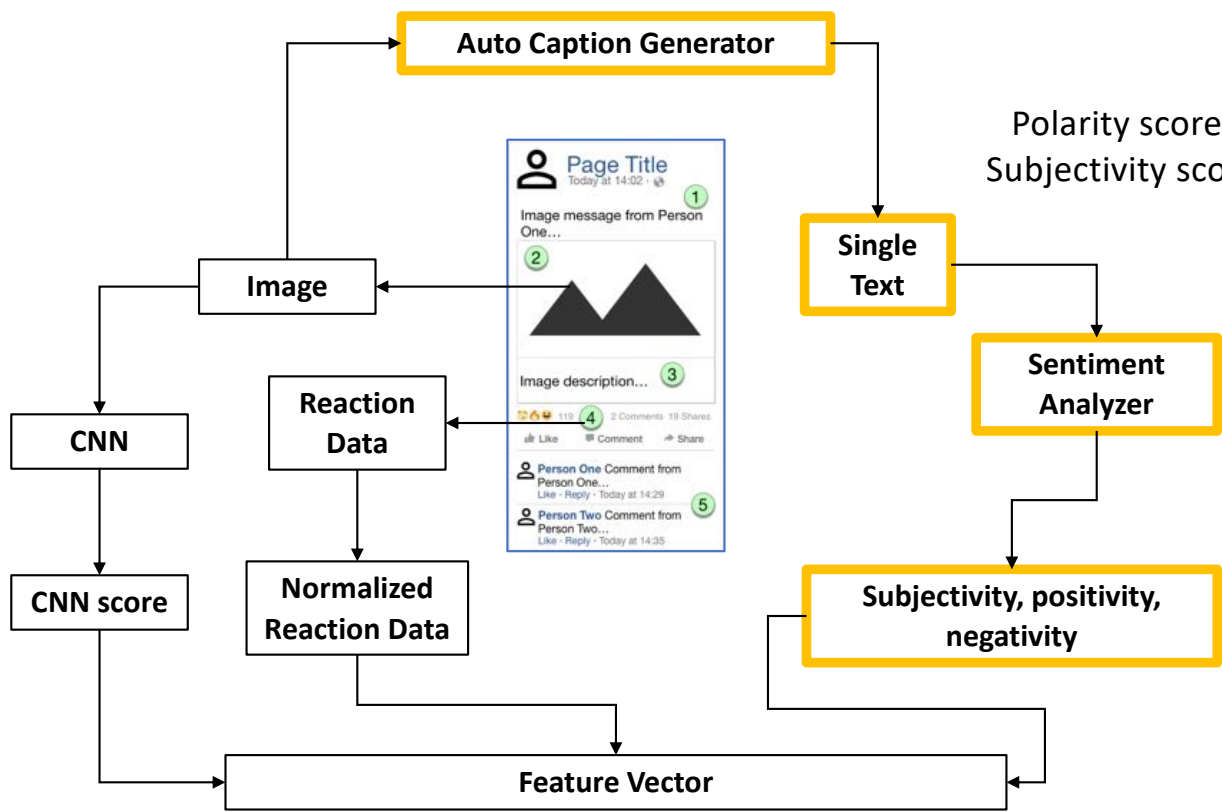


Vinyals et al

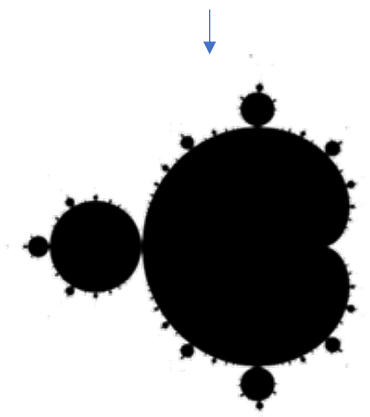
**A group of people shopping at an outdoor market.**

**There are many vegetables at the fruit stand.**



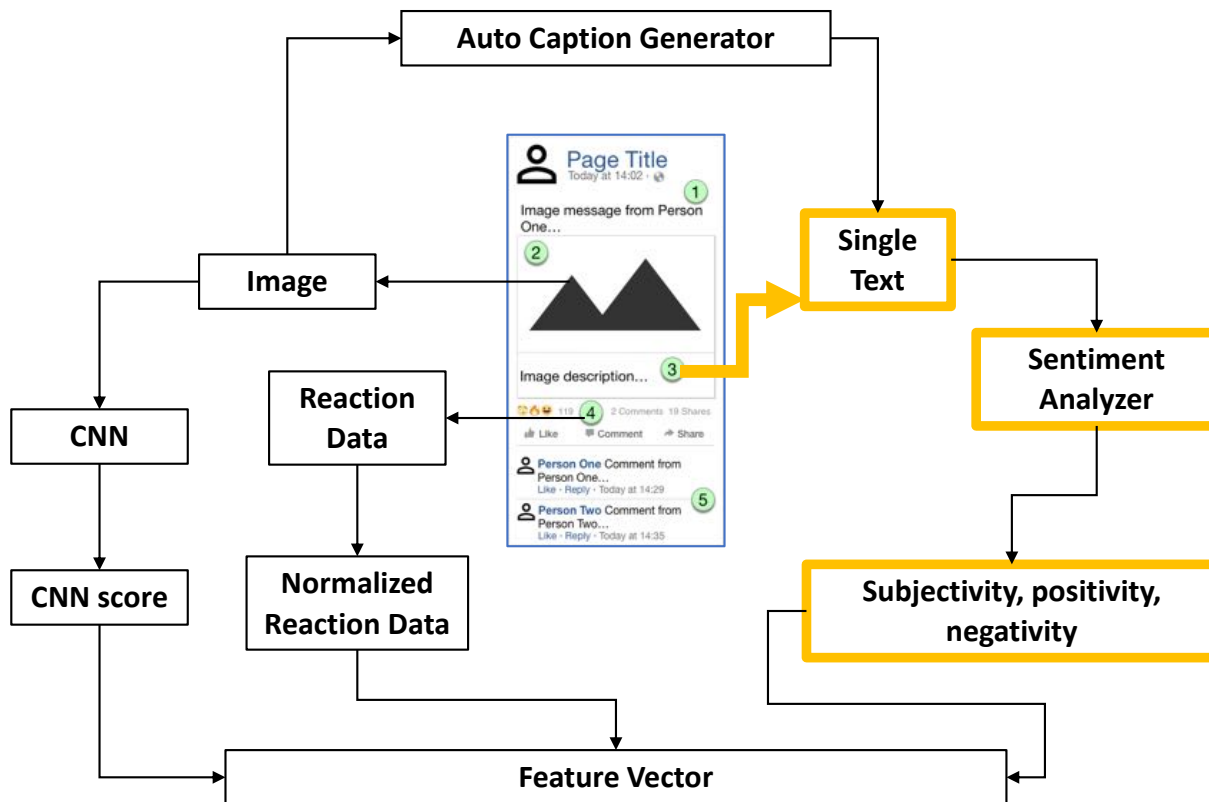


"Textblob is amazingly simple to use. What great fun!"



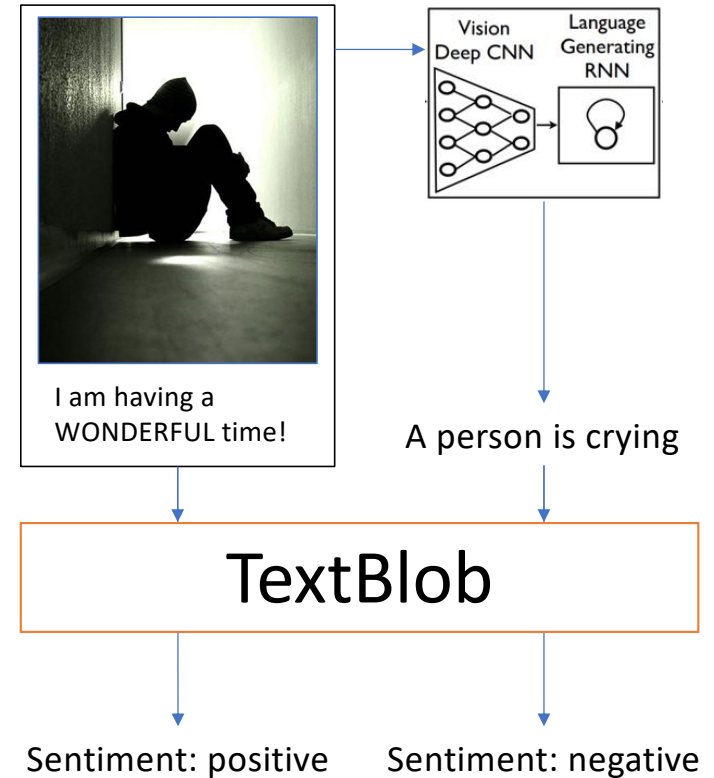
TextBlob

polarity=0.39  
subjectivity=0.44

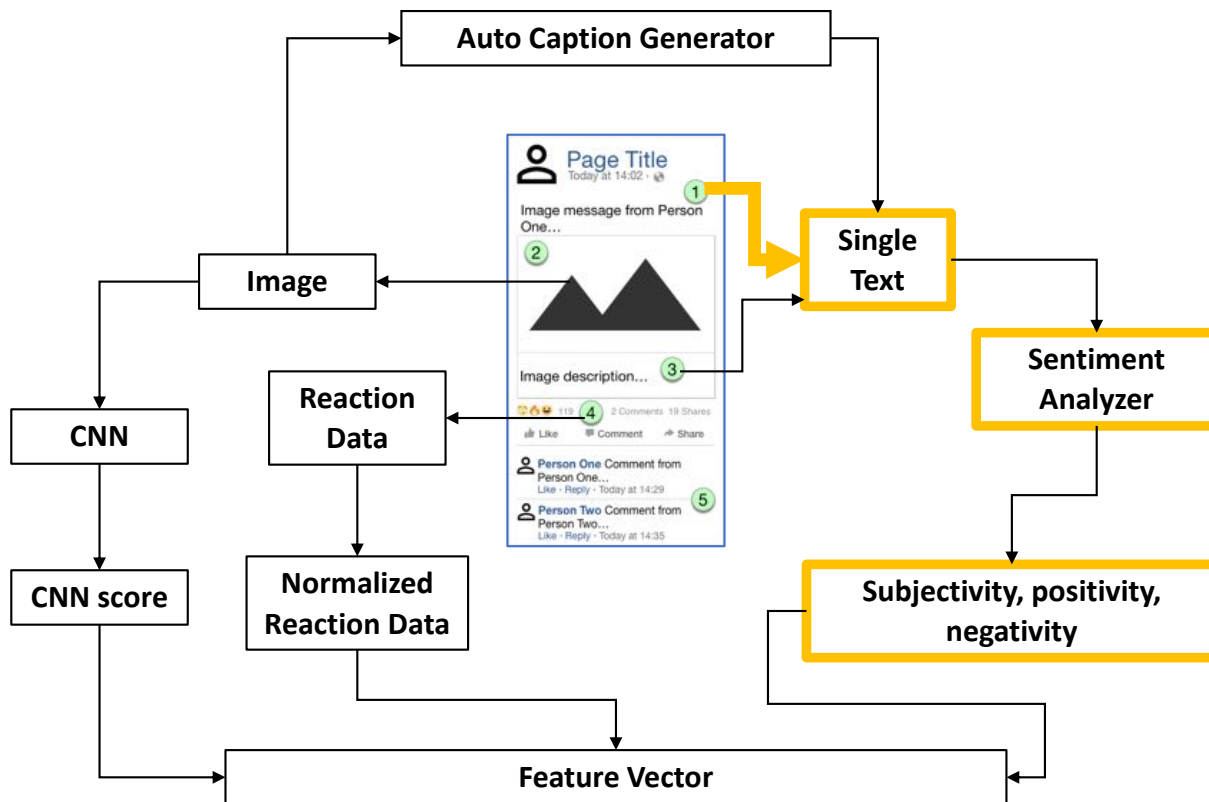


Two captions for each image:

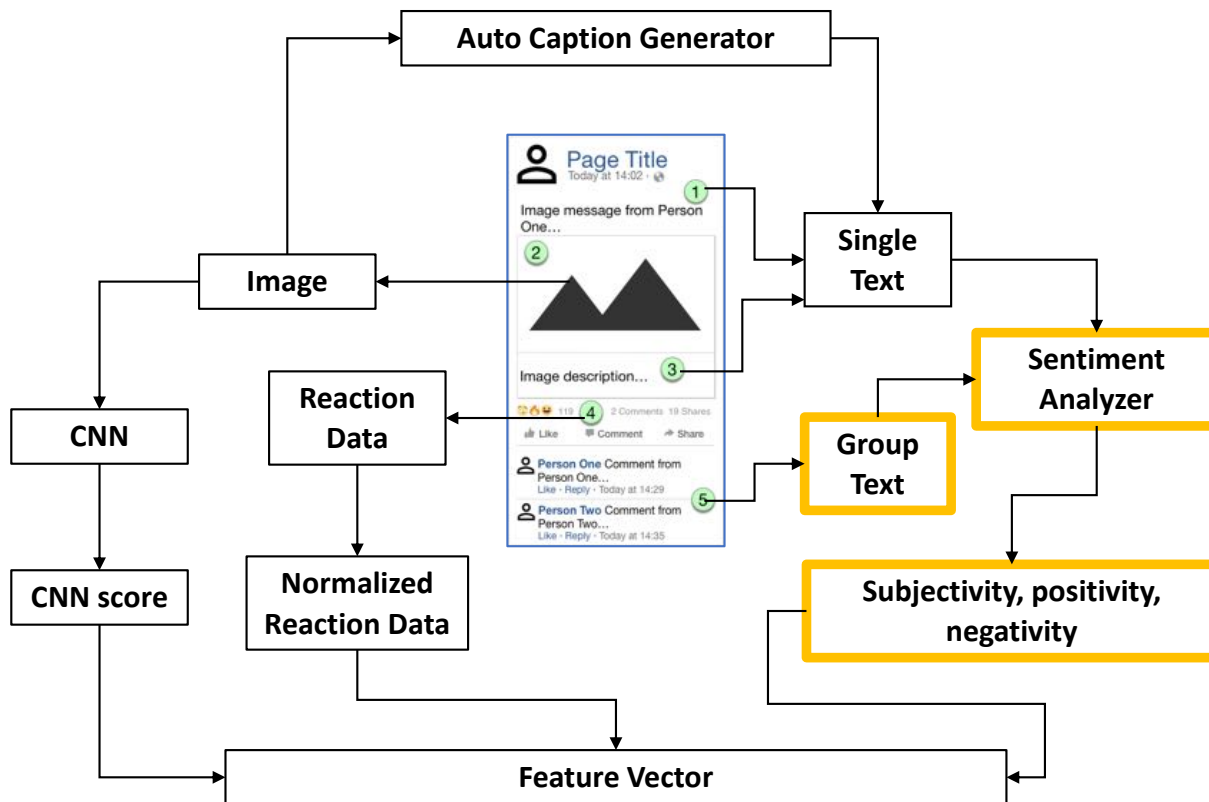
1. User-assigned caption
2. Auto-generated caption



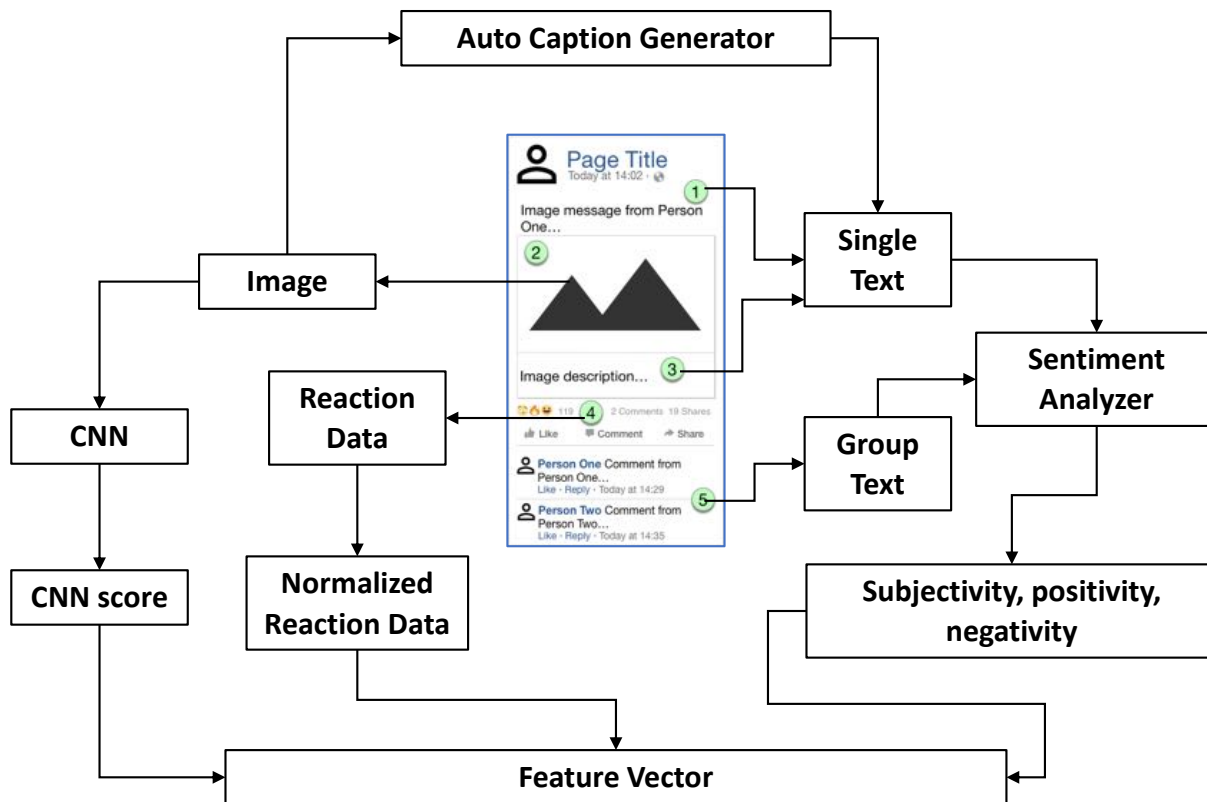
This is a sarcastic post overall, considering user given caption and image.



Posts can additional contain a message written by the person sharing the content



Posts can also include comments and discussions from other users.



The final model takes all of this information into account, but we cannot be certain that we are using the information appropriately.

# This Study

- We interviewed 20 avid users of Twitter and Facebook
- We asked them how they detect sarcasm on social media
- We asked them how they express sarcasm

# Related Work

Sarcasm detection is considered a form of sentiment analysis

- When a sarcastic statement is made in an in-person conversation, the audience has access to non-verbal cues and can more easily translate the statements into the corresponding intended meaning (Gibbs et al.)
- Sarcasm has always positive literal meaning with negative intended meaning and can be explained as violation of Grice's maxims of cooperative dialogues. (Filatova et al., Kreuz et al.)
- The first CS paper on sarcasm detection (2006) uses the phrase "yeah, right!" as the clue to find sarcasm. (Tepperman et al.)

## Related Work

- Most studies use self-annotated posts for labeling training data
- On Twitter, Facebook, and Instagram people use **#sarcasm**
- On Reddit posters will use **/s**



## Research Gap



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Goals: Understand **how users recognize sarcastic contents** on social media, with/without context

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Study what factors impact the ways of **how they express sarcasm**

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Study how users **respond to sarcasm**

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# Interviews

- Semi-structured interviews
- Interviews were roughly 25 minutes each
- 20 Participants:
  - 10 from Springfield, Missouri, USA (English)
  - 10 from Dhaka, Bangladesh (Bengali).
- Recruitment
  - Blend of Convenience, Purposive, Snowball Sampling.
  - Recruitment Flyer, Social Media
  - In-person, Skype.
  - Anonymous.

### Criteria:

- Must have an account with at least one SNS for more than a year.
- Must be an active user on SNS with spending 5-7 hours per week.

### Demography:

- Age range: 19 ~ 34 years
- Gender: 16 male, 4 female
- Language: 10 English, 10 Bengali
- Occupation: 5 undergraduate students, 6 graduate students, 6 employed with graduate/undergraduate degrees, 3 currently unemployed.

## Participants

# Data Collection and Analysis

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283 minutes of audio-recorded interview data

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A collection of field notes

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Transcribed for analysis

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Grounded theory: open codes – axial codes – final codes

# Types of Users on Social Media

- Users: understand and use sarcasm
- Disenchanted: understand but do not use
- Detectors: understand but do not know how to use
- Non-users: do not use or understand sarcasm

# Sarcasm Patterns

1. Exaggeration of sentiments
2. Opposing sentiments
3. Incorrect use of punctuation
4. References to recent phenomena
5. Posting of memes
6. Use of capitalization
7. Use of unusual writing styles
8. Incorrect spelling
9. Use of similar sounding words
10. Use of reactions and emojis

# Sarcasm Patterns

1. Exaggeration of sentiments
2. Opposing sentiments
3. Incorrect use of punctuation
4. References to reality
5. Posting of memes
6. Use of capitalization
7. Use of unusual writing styles
8. Incorrect spelling
9. Sounding words
10. Use of reactions and emojis

Look for words that indicate an extreme.

“It does not matter what emotion you are showing, exaggeration of it will automatically make your targeted person confused whether it is sarcasm or not, since it is so common.” (P8)

“That is absolutely the most incredible pizza of all time.”

# Sarcasm Patterns

1. Exaggeration of sentiments
2. **Opposing sentiments**
3. Incorrect use of punctuation
4. References to reality
5. Posting of memes
6. Use of capitalization
7. Use of unusual writing styles
8. Incorrect spelling
9. Sounding words
10. Use of reactions and emojis

Look for opposing sentiments instead of taking an average.

“Terribly terrific.”

“Wow! This is ugly.”



# Sarcasm Patterns

1. Exaggeration of sentiments
  2. Opposing sentiments
  3. Incorrect use of punctuation
  4. References to r
  5. Posting of mem
  6. Use of capitalization
  7. Use of unusual writing styles
  8. Incorrect spelling
- ounding words  
and emojis

Don't drop or ignore punctuation.

“Suppose, you are surprised and want to say “wow”, what mark will you use? You will use exclamation mark with that. But “wow” with a period after that just says that you are not much impressed, rather you might be annoyed and are trying to show your annoyance or callousness with a cold wow.” (P19)

“Wow.”

# Sarcasm Patterns

1. Exaggeration of sentiments
2. Opposing sentiments
3. Incorrect use of punctuation
4. **References to recent phenomena**
5. Posting of memes
6. Use of capitalization
7. Unconventional writing styles
8. Use of abbreviations
9. Use of similar sounding words
10. Use of reactions and emojis

Compare text to recent media.

“when a new Star Wars movie comes you can expect to see a lot of sarcastic comments referencing to famous quotes from the movie. Like, people might try to use “May the force be with you.” (P1)

“A few years ago, there was a live interview... The reporter asked how the people felt about the winter. So, one of them told... in local dialect, and a particular word in that dialect means something bad in proper Bengali... Every year when winter comes, you will see some people to refer to that.” (P17)

# Sarcasm Patterns

1. Exaggeration of sentiments
2. Opposing sentiment
3. Incorrect use of punctuation
4. References to recent phenomena
5. Posting of memes
6. Use of capitalization
7. Writing styles
8. Incorrect spelling
9. Use of similar sounding words
10. Use of reactions and emojis

Make image classifier meme-aware.



# Sarcasm Patterns

1. Exaggeration of sentiments
2. Opposing sentiments
3. Incorrect use of punctuation
4. References to reality
5. Posting of memes
6. Use of capitalization
7. Use of unusual writing styles
8. Incorrect spelling
9. Sounding words
10. Use of reactions and emojis

Do not alter or ignore case.

“If I say, the book is SOOOOO good that if you close it once you wouldn’t want to open it again. It obviously has opposing sentiments in a single sentence, but when I am using this type of sentence in a conversation, I don’t want others to miss that I made a sarcastic remark. So, it makes sense to emphasize to catch their eyes.” (P13)

# Sarcasm Patterns

1. Exaggeration of sentiments
2. Opposing sentiments
3. Incorrect use of punctuation
4. References to real world events
5. Posting of memes
6. Use of capitalization
7. Use of unusual writing styles
8. Incorrect spelling
9. Use of misspelling or misspelled sounding words
10. Use of reactions and emojis

Take into account common context specific information.

“You know, no one in general, nowadays write in Sadhu form. So, when you see a piece of text on Facebook that is in Sadhu language, if it is not from some old books or something, you instantly know there is something the person is trying to do. I often find that posts written in Sadhu, are actually sarcastic. At least the person is trying to say something funny, if it’s not exactly sarcasm.” (P12)

# Sarcasm Patterns

1. Exaggeration of s
2. Opposing sentiment
3. Incorrect use of punctuation
4. References to recent phenomena
5. Posting of memes
6. Exaggeration
7. Writing styles
8. **Incorrect spelling**
9. Use of similar sounding words
10. Use of reactions and emojis

Soft Bengali Sound	Hard Bengali Sound	English Sound
র	ড়	r
ত	ট	t
দ	ড	d
স	শ	s

# Sarcasm Patterns

1. Exaggeration of sarcasm
2. Opposing sentiment
3. Incorrect use of punctuation
4. References to recent phenomena
5. Posting of memes
6. Exaggeration
7. Informal writing styles
8. Incorrect spelling
9. Use of similar sounding words
10. Use of reactions and emojis

In Bengali, it was common to replace a word with a similar sounding word that has a different meaning.

# Sarcasm Patterns

1. Exaggeration of size
2. Opposing sentiment
3. Incorrect use of punctuation
4. References to recent phenomena
5. Posting of memes
6. Exaggeration
7. Unconventional writing styles
8. Incorrect spelling
9. Use of similar sounding words
10. Use of reactions and emojis.

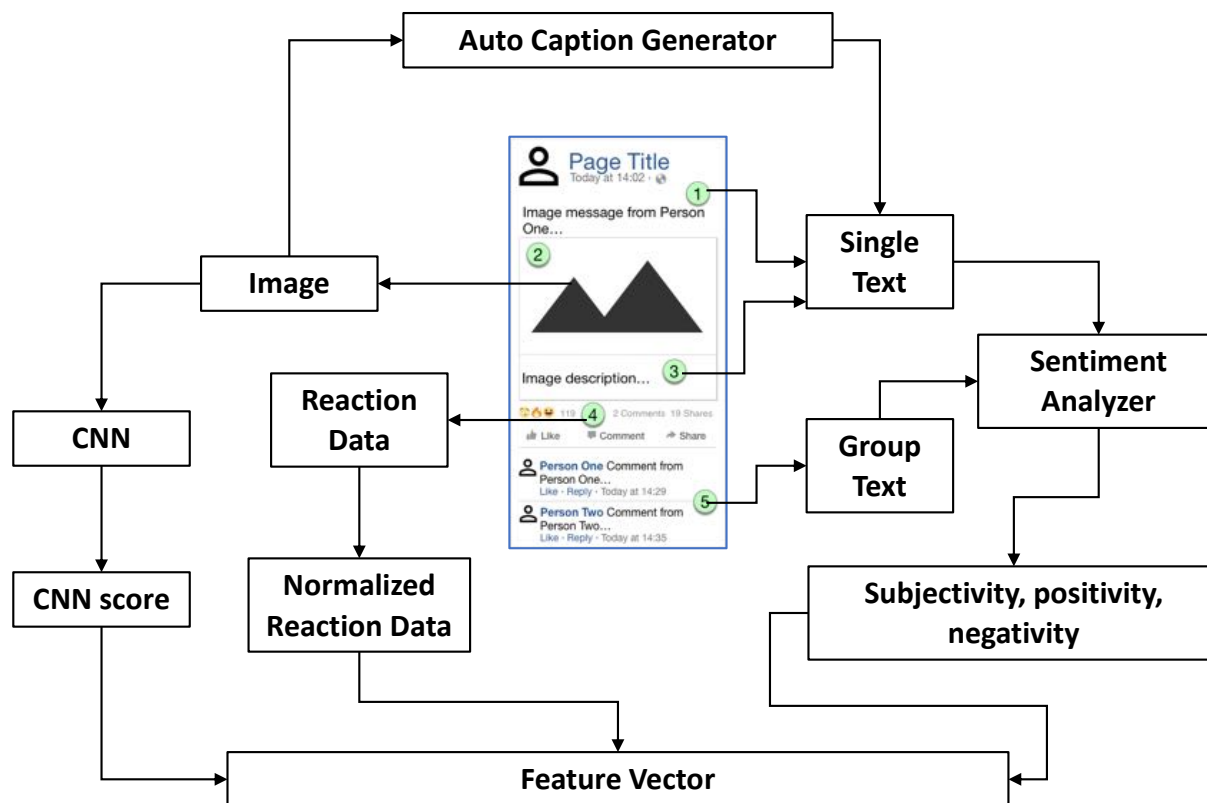
If I see a friend write something very serious and put a wink emoji at then end, then I'll know this person is being sarcastic about the comment.



## Why Detect Sarcasm

“It often happens that I am being ridiculous with my friends on a sarcastic post, and my aunt comments in a serious tone. Then, I have to explain that we are joking or being sarcastic.” (P1)

“There are some people who just take everything lightly. If I write about something, and someone gives a “haha” on that it upsets me a lot. I don’t know why even Facebook gave this emoji. ... I often write with my post, I will block whoever gives a “haha” without understanding the post.” (P16)



### Recommendations:

1. Look for extreme words
2. Look for opposing sentiments
3. Do not ignore punctuation
4. Do not ignore capitalization
5. Ensure that model is relevant (take into account cyclical or temporal context)
6. Make image classification meme-aware
7. Take into account regional context
8. Do not autocorrect text
9. Do not autocorrect grammar
10. Take emojis into account



Thank you!

Questions?

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