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# Computational and Analytical Approaches to Emotion Detection

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# Importance of our project

- Vocal Assistant
- Chatting Platforms
- Social Medias





## Question that our project will address

- How will the computational model interpret human emotion?
  - Differences between how human understand the emotion and how computational model understand the emotion
  - Whether to expand the CRUM to include the emotion
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# Part 1: Human participant Procedure

1. Provide Survey to the participants
  2. Participants will read the given sentences
  3. Classify emotion of given sentences as positive or negative
  4. Provide the thoughts and reason behind the decision
  5. Compare the classification with computational result
  6. Analyze the difference and reasons based on cognitive science model
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# 0 target	# 1467810369 id	Mon Apr 06 22:19:49 PDT 2009 date	NO_QUERY flag	_TheSpecialOne_ user	@switchfoot http: ... text
		774362 unique values	1 unique value	659775 unique values	1581465 unique values
0	1467810672	Mon Apr 06 22:19:49 PDT 2009	NO_QUERY	scotthamilton	is upset that he can't update his Facebook by texting it... and might cry as a result School today ...

training samples and evaluate the performance using the validation and test samples

4. Apply early-stopping when the model starts to overfit

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# Evaluation

## Validation Accuracy:

- 81.8%

Input: this is a great movie

$P(\text{negative}) = 0.12$

$P(\text{positive}) = 0.84$

Input: what an awful day

$P(\text{negative}) = 0.91$

$P(\text{positive}) = 0.09$

## Test Accuracy:

- 81.3%

Input: Nice perfume.

$P(\text{negative}) = 0.31$

$P(\text{positive}) = 0.65$

Input: Nice perfume. How long did you marinate in it?

$P(\text{negative}) = 0.49$

$P(\text{positive}) = 0.46$

Input: I'm glad I had the genius idea of getting a car wash the one day it's supposed to rain

$P(\text{negative}) = 0.39$

$P(\text{positive}) = 0.53$

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# Discussion

- We use embodied cognition for our model
  - We discussed and studied our project from the perspectives of:
    - Language comprehension
    - Memory
    - Learning
    - Reasoning
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# Findings

- Humans' ability of emotion recognition involves memorization and learning.
  - Mistakes human made could be because of mis-matching between context and sensory motor
  - Human's bias affects their judgement
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# Limitation

- Hard to determine whether participants have bias on different context
  - Hard to measure how much bias they have. If we could, then we can study how bias affect cognitive behavior in emotion
  - Participants' feedback is subjective, and such feedbacks conduct result inaccuracy
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