Problem Definition:
❖ Image captioning that exhibits the same emotion that is conveyed in the image.

A happy group of children running merrily through a playground.

Pipeline:
Visual Features ➔ Sentiment Features

Deep Learning ➔ Descriptive caption

Textual Analysis ➔ Emotion ➔ Expressive Caption

Sub-Problem: Expressive Caption Conversion
❖ Descriptive caption: describes objects and actions displayed by the image
❖ Expressive caption: describes objects and actions, while expressing the same emotion conveyed in the image
❖ Goal: convert descriptive caption to expressive caption

Expressive caption conversion: A happy group of children running merrily through a playground.

Data Set Used:
❖ MPII Movie Description dataset [1]: movie clips and audio descriptions for blind people

Expressive Captioning: Textual Analysis
Lance Lebanoff, Jonathan Pham, David Hill
Mentor: Mahdi Kalayeh

Challenges:
❖ No data set for descriptive sentences and corresponding expressive sentences
❖ No data set for expressive sentences and emotions conveyed by the sentences

Approach:
❖ Training
  ➢ Divide expressive captions into clusters by emotion
  ➢ Generate corresponding descriptive captions
  ➢ Convert captions to vectors
  ➢ Quadratic programming

❖ Testing
  ➢ Classify emotion of descriptive caption
  ➢ Compare caption emotion to image emotion
  ➢ If different, add expressive modifier words (adjectives and adverbs)

Emotion Classifier: [Diagram]
Features (based on method of [2]):
❖ Emotion of individual word
❖ Part of speech
❖ Dependency tree features

Sentence Emotion
Someone is standing amidst the delirious crowd, smiling to himself, drinking in the adulation.
Joy
Someone's look of disbelief at his changing physique.
Surprise

Emotion Classifier Results:

Future Work:
❖ Convert captions into vectors
  ➢ Skip-thought vectors [4]
❖ Train model to add expressive adjectives and adverbs to a given sentence
  ➢ Quadratic programming

References: