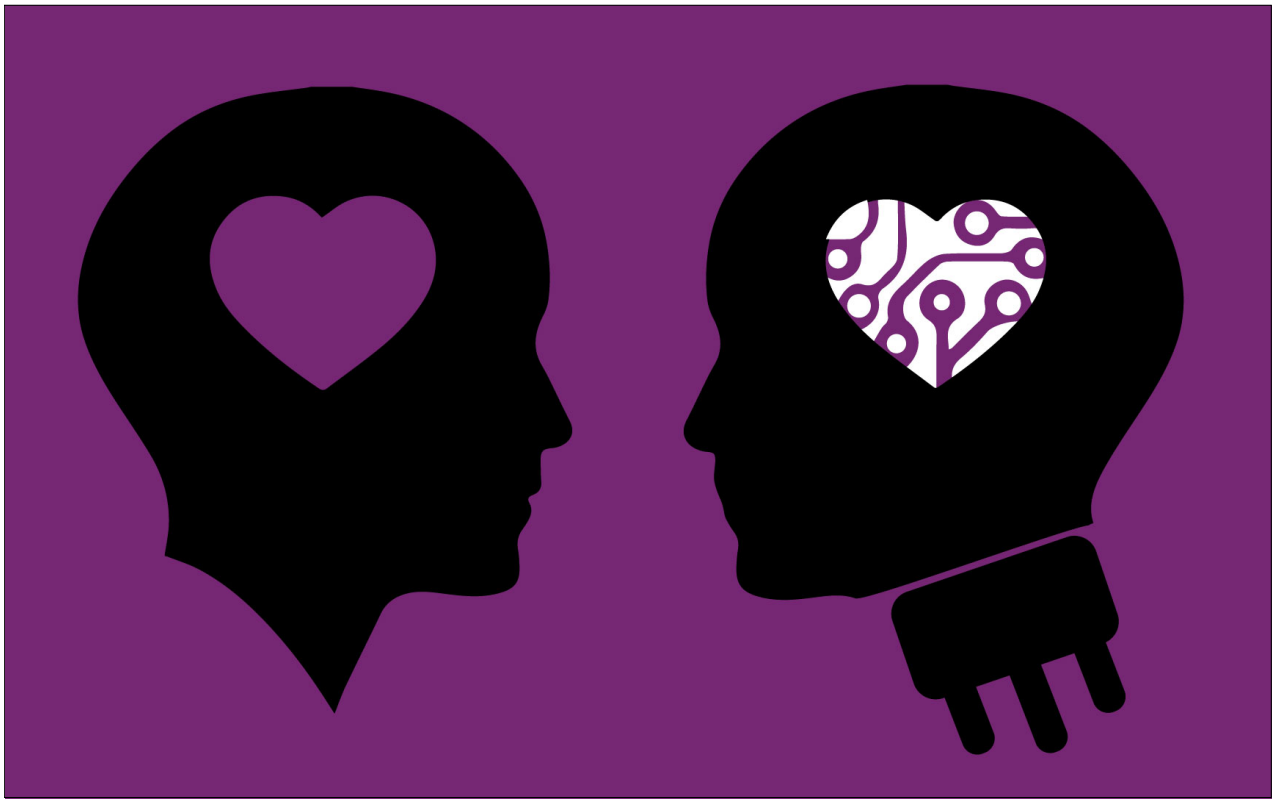

Text Emotion Detection Based on LSTM

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PROJECT SUMMARY

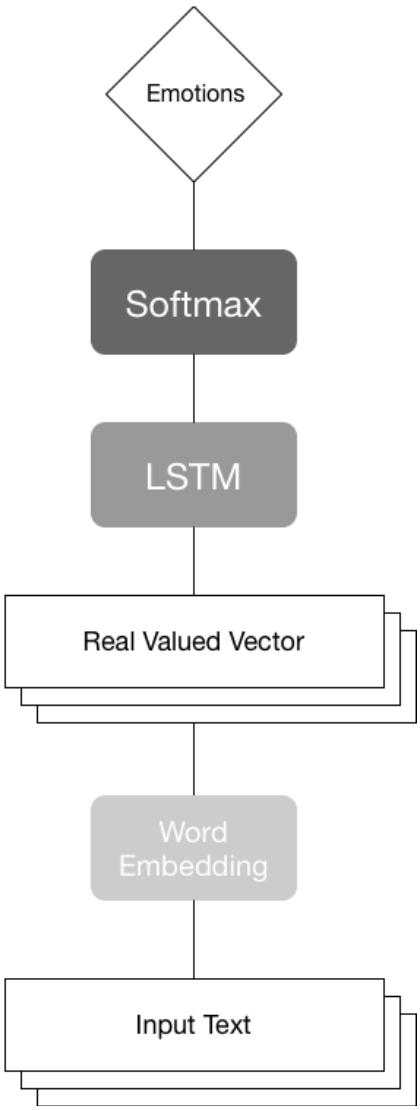
Introduction and Project Descriptions

Emotions and feelings have been a hold back to strong artificial intelligence for a long time. The first step for AI to generate feelings and emotions is to let them feel and detect emotions. Though there are several sentiment analysis researches, none of them can be considered as real sentiment since they can only tell positive from negative, but can not recognize real emotions such as joy, sad, anger, etc. Thus, our project is to give a model derived from LSTM[1] for AI to detect emotions in a more detailed way - six basic emotions: anger, disgust, fear, happiness, sadness and surprise [2]

Proposed Method

- Word Embedding: Map the word in to a real vector domain, so that the similarity will be represent as distance in vector domain
- LSTM (Long Short-Term Memory): take advantage of LSTM's 'remember' property to analysis the relation between the combinations of different words and sentences (in the form of real valued vectors) and emotions to express.

The flow chart of proposed method is shown on the right.



Dataset Description

- Affective Text (labeled): Affective Text is a data set consisting of 1200 dataset, each of them annotated with the six Eckman emotions. [3]
- Twitter Dataset (unlabeled): This is a dataset for sentimental analysis, which is labeled as positive or negative.

Proposed Experiments

- Manually label Twitter set, and divide all the data into training set, develop set and test set
- Implement word embedding method and set up LSTM model
- Train the LSTM model with training set and adjust with develop set
- Test the model with test set

Resource Feasibility

MacBook Pro (15-inch, Mid 2012)
Processor: 2.3GHz Intel Core i7
Memory: 16GB 1600MHz DDR3

Tentative timeline and the necessary steps

11/14/2016 ~ 11/25/2016: Label dataset and build up model prototype
11/25/2016 ~ 12/07/2016: Train model and test model

REFERENCES

[1] Sepp Hochreiter and Jurgen Schmidhuber, Long Short-Term Memory. Neural Computation 9(8):1735-1780, 1997.
[2] Handel, Steven. "Classification of Emotions". Retrieved 30 April 2012.
[3] Dataset Source: Affective text: http://web.eecs.umich.edu/~mihalcea/affectivetext/