SENTIMENT ANALYSIS OF MEMES

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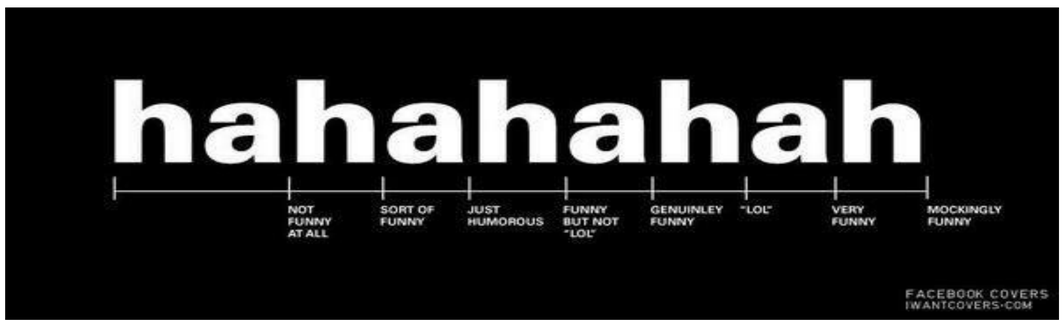
Abstract

New memes are constantly emerging in today's society. Sentiment analysis also called contextual mining. It defines and categorise a meme as positive, negative or neutral. In this project, we used OCR to extract text from image and captioned memes using Image captioning. To classify text into sentiment, fastText algorithm. is used. This research successfully demonstrated the use of memes to emphasize semantic content in social communication.

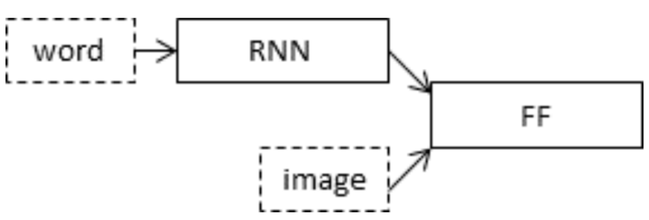


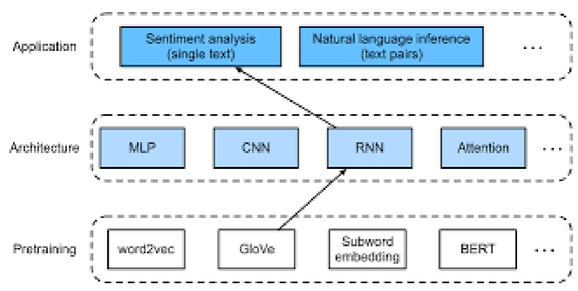
Introduction

Nowadays, people share a lot of content on social media in the form of memes. A meme is a concept or behaviour that spreads from person to person. Sentiment analysis is the interpretation and classification of emotions within text data using text analysis techniques. As a part of this project, we aim to predict the emotional category of a Meme ie., positive, negative or neutral.

Proposed Method

Image captioning is used for visual content and OCR(Optical Character Recognition) for the textual content. Up sampling technique is used to balance the dataset. And used the supervised learning algorithm of fastText to classify the text into sentiments. Pre-trained GLOVE model used to convert word to vector.





Experimental Results and Discussion

This project analyses the emotion that a meme represent. The Dataset contain a total of 6992 memes which is in the form of csv file. It contains 4160, 2201, 631 positive, neutral and negative memes respectively. Using this model, we have 80% train accuracy and 75% test accuracy.

```
Model: "model_1"
__________________________________________________________________________________________________
Layer (type)                    Output Shape         Param #     Connected to
==================================================================================================
input_2 (InputLayer)            (None, 43)           0
__________________________________________________________________________________________________
input_1 (InputLayer)            (None, 2048)         0
__________________________________________________________________________________________________
embedding_1 (Embedding)         (None, 43, 200)      341400      input_2[0][0]
__________________________________________________________________________________________________
dropout_1 (Dropout)             (None, 2048)         0           input_1[0][0]
__________________________________________________________________________________________________
dropout_2 (Dropout)             (None, 43, 200)      0           embedding_1[0][0]
__________________________________________________________________________________________________
dense_1 (Dense)                 (None, 256)          524544      dropout_1[0][0]
__________________________________________________________________________________________________
lstm_1 (LSTM)                   (None, 256)          467968      dropout_2[0][0]
__________________________________________________________________________________________________
add_1 (Add)                     (None, 256)          0           dense_1[0][0]
                                                                 lstm_1[0][0]
__________________________________________________________________________________________________
dense_2 (Dense)                 (None, 256)          65792       add_1[0][0]
__________________________________________________________________________________________________
dense_3 (Dense)                 (None, 1707)         438699      dense_2[0][0]
==================================================================================================
Total params: 1,838,403
Trainable params: 1,838,403
Non-trainable params: 0
__________________________________________________________________________________________________
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motorcyclist is riding an orange motorcycle

Conclusions

We conclude that sentiment analysis is easier to predict the emotion that a meme depicts. We used specific models to check whether the meme is positive, negative or neutral .More we improve the training dataset more we can get accurate results.. From booth approaches, we can conclude that multimodal learning have more accuracy than unimodal.

References

https://miro.medium.com/max/1400/1*vur3rKJfPJPZ-SFK4KKBrg.jpe
https://d2l.ai/chapter_natural-language-processing-applications/sentiment-analysis-rnn.html

Team No. - 94