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CS 395

Final paper

I)   Introduction:

A major goal of natural language processing is the semantic understanding of natural language text. However, this task is challenging since it requires a deep understanding of the relationship between events. In recent years, many research has attempted to tackling the problem of event induction and learning narrative event chains from text is one of the better way. These narrative events describe the sequence of events revolve around a protagonist, for example X ate _, X cut_, X washed_.

To evaluate the algorithm, one effective test is the narrative cloze test in which an event is removed from chains of event and the model is tested on whether it can fill in the space. For instance, a cloze test can be: *Ben _____ for the bus.* And the correct answer for the previous test is the word *waits*

A paper by Prof. Dr. Chris Biemann, and Steffen Remus, MSc built on the same principal of using narrative chains and narrative cloze test to develop the model. Therefore, the core definitions remain the same.

II) Method

1. The algorithm starts with checking the length of two endings with the assumption of the longer the ending is, the more coherent the answer is. And in the case the length of two endings are equal, then we proceed to determine which is the correct ending using the pmi score.

- The pseudocode for the test:

```
Story1 # story with ending 1

Story2 # story with ending 2

If len(end1) != len(end2):

        # determine which one is longer and compare it with the correct answer

Else:

        Pmi = 0

        For (s1, s2) in zip(parsed_story1_dict, parsed_story2_dict):

                Pmi += table.pmi(s1[0], s1[1], s2[0], s2[1])

        If pmi<= 0:

                Pmi = 1

        Else:

                Pmi = 2

        # compare our guess with the correct answer
```

- The test was built upon an existing project (https://github.com/mrmechko/narrative_chains/)
and the libraries used in the project consisted of spacy, neuralcoref, and pandas

III)   Evaluation:

   Using the provided test cases "test.csv", I was able to achieve a correct percentage of
53.66%. The result was as expected of not having a much improvement compared to the
other existed models as it is built on many assumptions and there are many things that
can be optimized to achieve a better result.

IV)   Conclusion:

I have successfully implement the cloze test, and the correctness that I am able to obtain is 53.66%. And one of the thing that I want to improve my model is to work on the assumption that longer ending is good as it could contain totally nonsense whereas, the shorter one is more relevant to the protagonist.

Extra credit 1: I have improved the event detection and also have tried to improve counting but I did not have any idea.

Extra credit 2:

Link to Github repo: https://github.com/thangplum/narrative_chains_CS395