Rhetorical Figure Detection in Political Texts

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1 INTRODUCTION

Rhetorical figures can be described as a word or a phrase used in the non-literal sense so that the speech/writing becomes more persuasive, relatable and vivid. The literal meaning of the phrase or word is not taken into account. For example "He racked his brain so that he could come up for new ideas for his book". Generally, the literal meaning of rack is a device or instrument that in earlier ages people used to torture the servant or to break their limbs apart. But here it is used to make a great effort to think or to remember something. The figures of repetitions are a family of figures. They usually involve repetition of any linguistic element, ranging from sound, as in rhyme, to concept and ideas, as in tautology and pleonasm. A computer can easily detect the repetition of words on the other hand detecting only the ones provoking a rhetorical effect requires much effort and the reason is the presence of many irrelevant and accidental repetitions.

1.1 Motivation

We believe that this is a challenging project which is going to offer us great learning skills in terms of speech exploration and analysis, data pre-processing, data exploration, machine learning and visualization techniques. After successful completion of this project, we will be able to differentiate between a good and a persuasive speech. This work is inspired from these systems of Rhetorical Figure Detection : An Annotation Tool for Automatically Detecting Rhetorical Figures (Gawryjolek *et al.*, 2009), Rhetorical Figure Detection: Chiasmus, Epanaphora, Epiphora (Dubremetz and Nivre, 2018), Rhetorical Figure Detection: the Case of Chiasmus (Dubremetz and Nivre, 2015) and Automated Annotation and Visualization of Rhetorical Figures (Gawryjolek, 2009).

1.2 Goals

- A machine learning pipeline will be designed which will detect the potentially rhetorical figures from the Hansard Speeches corpus.
- In this project we will focus on the following three rhetorical devices of the repetitive figures family: Epistrophe, Epanaphora, and Epanalepsis
    - Epistrophe: repetition of the same word or words at the end (or near the end) of successive phrases, clauses or sentences. Also known as epiphora or antistrophe. (Ali wants pizza, Ahmad wants pizza, in fact, everybody wants pizza)
    - Epanaphora: repetition of the same word or group of words are repeated at the beginning of two or more clauses or sentences. Also known as Anaphora. (I can act. I can sing. I can do whatever I want to do)
    - Epanalepsis: repetition of similar words/phrases at the beginning and end of the same sentence. (A poor can feel the pain of a poor)
- The main challenge here is to detect only truly provoking rhetorical figures as there will be many false positive cases of repetitions as well which makes it a needle in the haystack.

2 PLAN

(1) A corpus from Hansard Speeches (Odell, 2019) will be used which contains speeches made in the British Parliament between the 1979 general election to the end of 2017.

(2) At the very next step, the data will be cleaned and pre-processed because the dataset is huge which contains the information of speakers, their party, gender, age, dates of joining and finishing as MP and much more. Only the selected columns will be used to perform the task.

(3) An algorithm will be designed for extracting all the candidates for the chosen rhetorical figures by comparing the location of word repetitions.

(4) Decision Tree classifier will be used to train on 80% of data which will then be tested of the rest of 20%.

(5) F1 scores look promising for the evaluation phase.

(6) We will be using pandas, nltk, scikit-learn, spacy and matplotlib libraries of python.

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