

Ling 573 Summarization Presentation

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Abstract

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1 Introduction

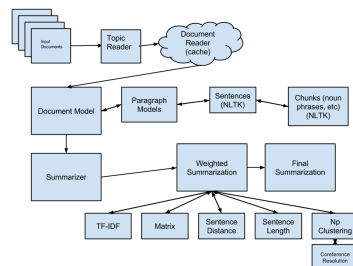
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2 System Overview

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3 Approach

3.1 System Architecture



Architecture.png

3.2 Content Selection

We used a variety of methods initially to help with content selection. First, we used a basic tf-idf score for every sentence to help rank the highest sentences. Next, we implemented a matrix similarity algorithm, which looked at each sentence's most common words, then selected the most connected sentences. We also implemented a noun phrase clustering algorithm, where we used co-reference resolution to resolve pronouns for their most likely antecedent, and then compared each sentence's noun phrases to each other sentence. The highest scored sentences were then selected.

3.3 Information Ordering

Each method had its own ordering criteria. Tf-idf selection was ordered by the highest sum sentences. Np-clustering selection was ordered by the number of matches each sentence had to every

other. Matrix selection was ranked by the most common words. The highest sentence selection technique was ordered by the longest sentences. The sentence position technique was ordered by the sentences nearest to the beginning.

3.4 Content Realization

Our realization was simple, the highest ranking sentences were realized into the summary. We used a weighted summarization class to look at every technique, given a defined weight, and selected the top sentences (with a one hundred character limit) to be realized for the summary.

3.5 Best Technique

The best technique we found, currently is tf-idf selection. Disabling the other techniques and just using this one produced the best outcome, as can be seen in the next section.

4 Results

Our best score was with tf-idf:

Rouge Technique	Recall	Precision	F-Score
ROUGE-1	0.55024	0.52418	0.53571
ROUGE-2	0.44809	0.42604	0.43580
ROUGE-3	0.38723	0.36788	0.37643
ROUGE-4	0.33438	0.31742	0.32490

The score for just the np-clustering technique was:

Rouge Technique	Recall	Precision	F-Score
ROUGE-1	0.45691	0.53378	0.49056
ROUGE-2	0.33306	0.39053	0.35813
ROUGE-3	0.28221	0.33196	0.30386
ROUGE-4	0.24758	0.29237	0.26700

The score for just the matrix clustering technique was:

Rouge Technique	Recall	Precision	F-Score
ROUGE-1	0.48228	0.56860	0.52048
ROUGE-2	0.36821	0.43541	0.39787
ROUGE-3	0.31484	0.37348	0.34065
ROUGE-4	0.27465	0.32683	0.29757

There are many things to still tweak with both np-clustering and the matrix comparison. For example, we could do better normalization with other co-referents rather than just pronouns. We will be experimenting with these techniques further.

5 Discussion

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6 Conclusion

Conclusions have been made as can be seen from the following Nenkova, Radev, and Jones (Nenkova et al., 2007) (Jones, 2007) (Radev et al., 2001). We used co-referenced based off ideas from (Cardie and Wagstaff, 1999).

References

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- Dragomir R Radev, Sasha Blair-Goldensohn, and Zhu Zhang. 2001. Experiments in single and multi-document summarization using mead. *Ann Arbor*, 1001:48109.