Paragraph-, word-, and coherence-based approaches to sentence ranking: A comparison of algorithm and human performance

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Abstract

Sentence ranking is a crucial part of generating text summaries. We compared human sentence rankings obtained in a psycholinguistic experiment to three different approaches to sentence ranking: A simple paragraph-based approach intended as a baseline, two word-based approaches, and two coherence-based approaches. In the paragraph-based approach, sentences in the beginning of paragraphs received higher importance ratings than other sentences. The word-based approaches determined sentence rankings based on relative word frequencies (Luhn (1958); Salton & Buckley (1988)). Coherence-based approaches determined sentence rankings based on some property of the coherence structure of a text (Marcu (2000); Page et al. (1998)). Our results suggest poor performance for the simple paragraph-based approach, whereas word-based approaches perform remarkably well. The best performance was achieved by a coherence-based approach where coherence structures are represented in a non-tree structure. Most approaches also outperformed the commercially available MSWord summarizer.