Using text summarization models to improve digital reading of scientific papers

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SUMMARIZER TOOL

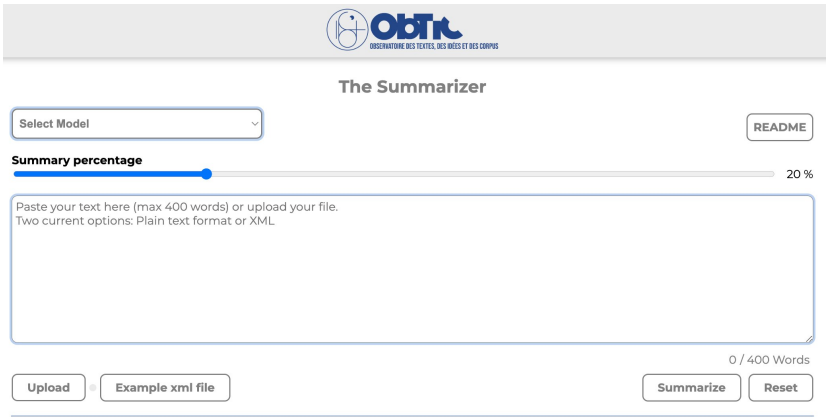
How to facilitate the reading of academic content?
▶ Distant reading

Summarization

BART (Lewis et al., 2019) **PEGASUS** (Zhang et al., 2020) **T5** (Raffel et al., 2020)

Keywords extraction

KeyBert model
https://maartengr.github.io/KeyBERT/



ABOUT

What we did

Some references

Iskender, N. et al. (2021). "Reliability of Human Evaluation for Text Summarization: Lessons Learned and Challenges Ahead"
Lewis, M. et al. (2019). "BART: Denoising Sequence-to-Sequence Pre-training for Natural Language Generation, Translation, and Comprehension".
Mani, I. (2001). "Summarization evaluation: an overview"
Raffel, C. et al. (2020). "Exploring the Limits of Transfer Learning with a Unified Text-to-Text Transformer".

EVALUATION

Corpus

21 articles

XML format, IMRaD structure
Comunicar: Scientific Journal of Media Education

Criteria (Mani, 2001)

- Content quality
- Syntactic and morphological validity
- Vocabulary accuracy

Mean Opinion Score scale (Iskender et al., 2021)

1.Bad 2.Poor 3.Fair 4.Good 5.Excellent

The unweighted average of these scores represented the overall quality of the summary.

Results

- T5 model best summarized the content of each section
- BART and PEGASUS models reached similar scores, indicating a level of quality between "Fair" and "Good"
- In some cases, the extracted keywords enriched the summary content.
- Combining the summary with related keywords improved the reader's orientation and contextualization of the article