Summarization: Evaluation

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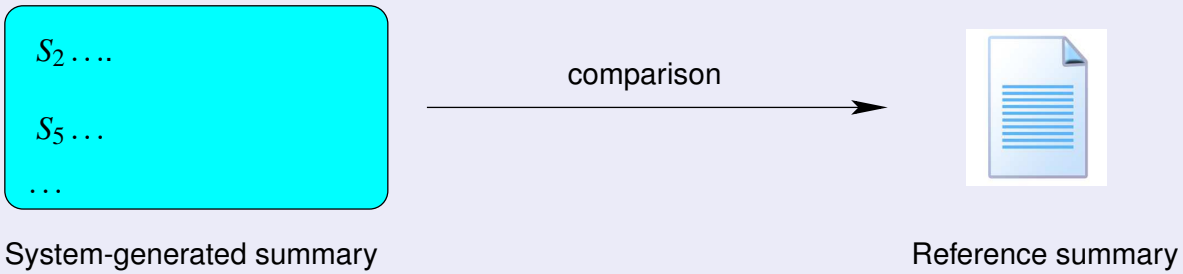
Week 11, Lecture 3

System Evaluation

Evaluation Criteria



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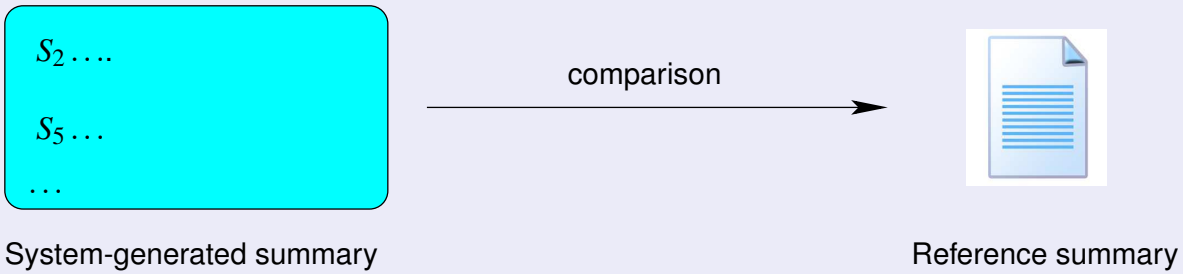

System Evaluation

ROUGE

Recall Oriented Understudy for Gisting Evaluation *Not as good as human evaluation but much more convenient*

Toolkit available for download.

ROUGE for evaluation

Given a document D, and an automatic summary X:

- Have N humans produce a set of reference summaries of D ($N \geq 1$)
- Run system, giving automatic summary X
- What percentage of the n-grams from the reference summaries appear in X?

$$ROUGE-2 = \frac{\sum_{S \in \{RefSums\}} \sum_{bi-gram \in S} Count_{match}(bi-gram)}{\sum_{S \in \{RefSums\}} \sum_{bi-gram \in S} Count(bi-gram)}$$

ROUGE Example

Reference Summaries

- **Human 1:** water spinach is a green leafy vegetable grown in the tropics.
- **Human 2:** water spinach is a semi-aquatic tropical plant grown as a vegetable.
- **Human 3:** water spinach is a commonly eaten leaf vegetable of Asia

System Summary

water spinach is a leaf vegetable commonly eaten in tropical areas of Asia.

ROUGE Example

Reference Summaries

- **Human 1:** water spinach is a green leafy vegetable grown in the tropics.
- **Human 2:** water spinach is a semi-aquatic tropical plant grown as a vegetable.
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System Summary

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ROUGE-2

$$\frac{3+3+6}{10+10+9} = 12/29 = 0.413$$

Further Discussions

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- Multi-document summarization

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- Query-specific summarization

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- Multi-document summarization
- Query-specific summarization
- Abstractive summarization