



# Controlled Text Reduction

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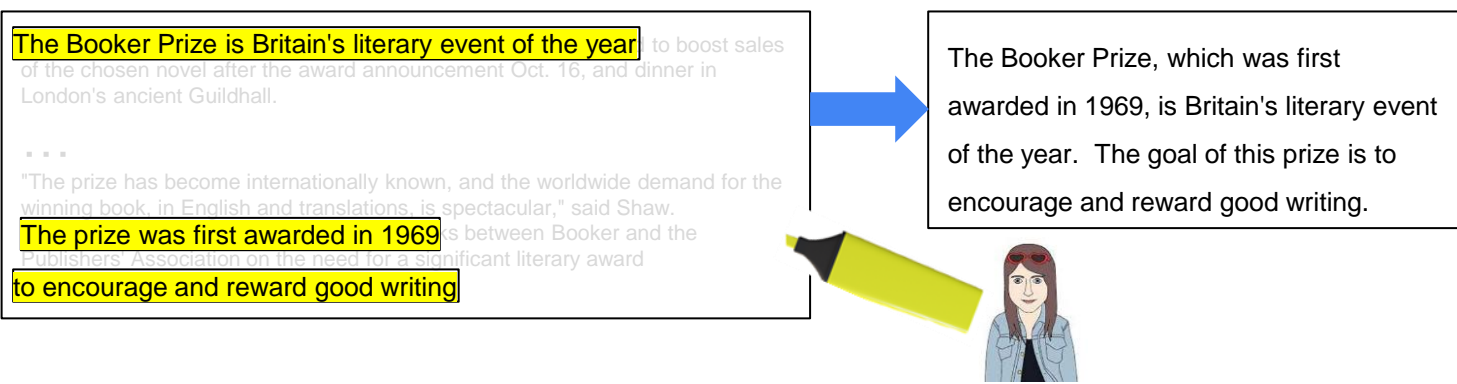


## The Nature of the Single Document Summarization Task

### Two inherent sub-tasks:

1. Choose important information.
2. Fuse it into a coherent text.

### Just like humans summarize:



## How the Task is Modelled and Evaluated

### Modelling:

Early methods - often composed of dedicated components for each sub-task.

Current methods - often end-to-end.

**Evaluation:** end-to-end.

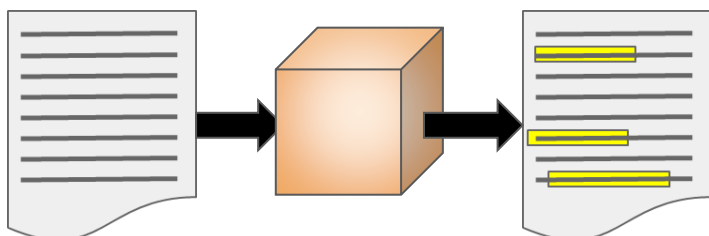
## Proposal: Promote Research on Decomposed sub-tasks

### Defining Two New Intermediate Tasks:

#### Content Selection as Highlighting Sub-task:

Input: document.

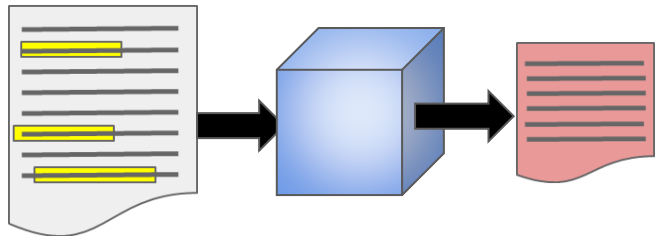
Output: salient spans (highlights).



#### Controlled Text Reduction Sub-task:

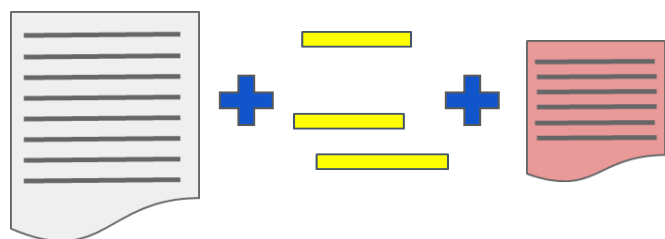
Input: document + highlights (highlights in context).

Output: custom summary (covering all & only the highlights).



### Supported by an Annotated Highlighting Dataset:

Each instance - document + highlights + summary.



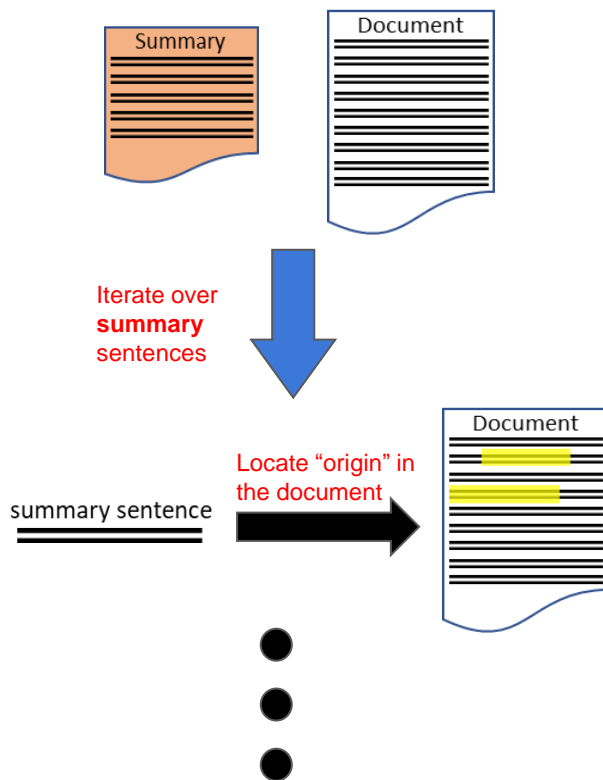
### Benefits

- **Transparency** of performance on each sub-task.
- **Modularity** of research and architectures:
  - Targeted research → better modelling.
  - Modular architectures (reusable models).
- **Human-in-the-loop**.

## Dataset Construction

### Crowd Sourced Evaluation Dataset:

**Reverse-engineer** expert summaries (DUC):



### Training (Silver) Dataset:

**Automatically** with a proposition alignment model.

## Focus on Controlled Text Reduction

**Baseline model** (Text + highlights as input).

- Used LED (Longformer Encoder-Decoder).

**Compare** to model with only text as input.

### Results (Compared to highlights)

Input	P	R
Only doc	29.94	27.33
Doc + highlights	<b>52.48</b>	<b>45.68</b>

### Room for Improvement?

- Designing **better models**:
  - Covering as much of the highlighted content as possible.
  - Less prone to incorporate unhighlighted content.
- Constructing **better training data**.