

Motivation

When simplifying text, lexical or syntactic transformations may be **insufficient**: there may be **additional background information** that readers need to deeply understand content in the original text.

Original

Results, she said, “could help the team better understand ancient Egyptian health” and, correspondingly, modern-day health. For instance, some mummies still have arteries in their mummified remains, Miller-Thomas said. And, sometimes, scientists can tell if those arteries had hardened.

Simplified

The scans could help the team understand about ancient Egyptians’ health. For example, some mummies still have arteries. **An artery is a tube that moves blood through the body. The artery could show if the person had been healthy or not.**

Elaborative Simplification

We introduce **elaborative simplification**, the insertion of content during the simplification process, meant to **aid document understanding**.

Meta-examples of elaborative simplification include:

Definitions or other background information about key entities in the original text

Explicit explanations of implicit connections readers are expected to make in the original text

Further reasoning or analysis to highlight a central idea or point made in the original text

Elaborations are **sentences containing new content** semantically absent from the original text.

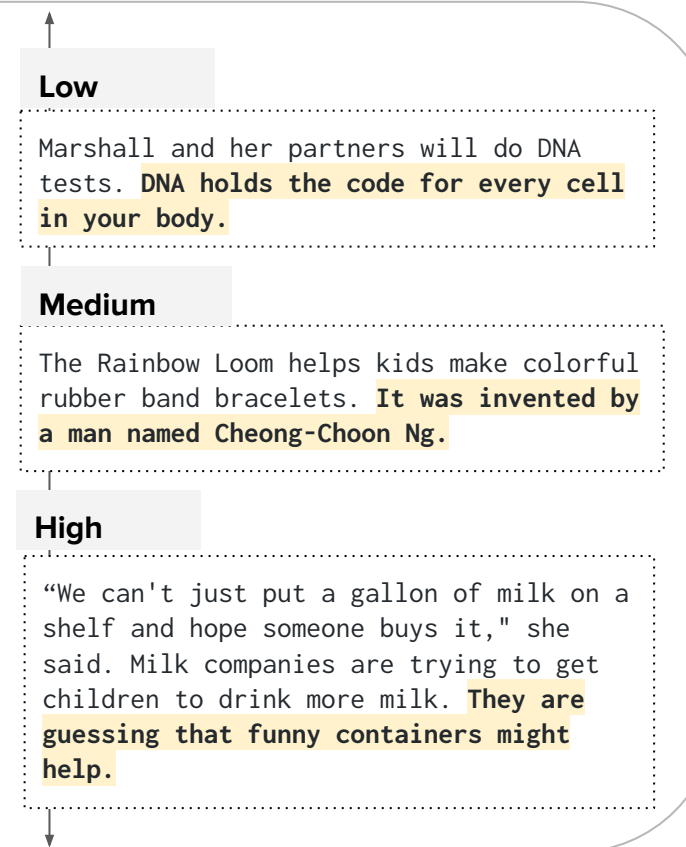
We study elaborative simplification in the **Newsela corpus**:

- The Newsela corpus is a simplification dataset consisting of sets of news articles manually simplified by professional editors
- We select the document for the lowest grade level as our simplified text

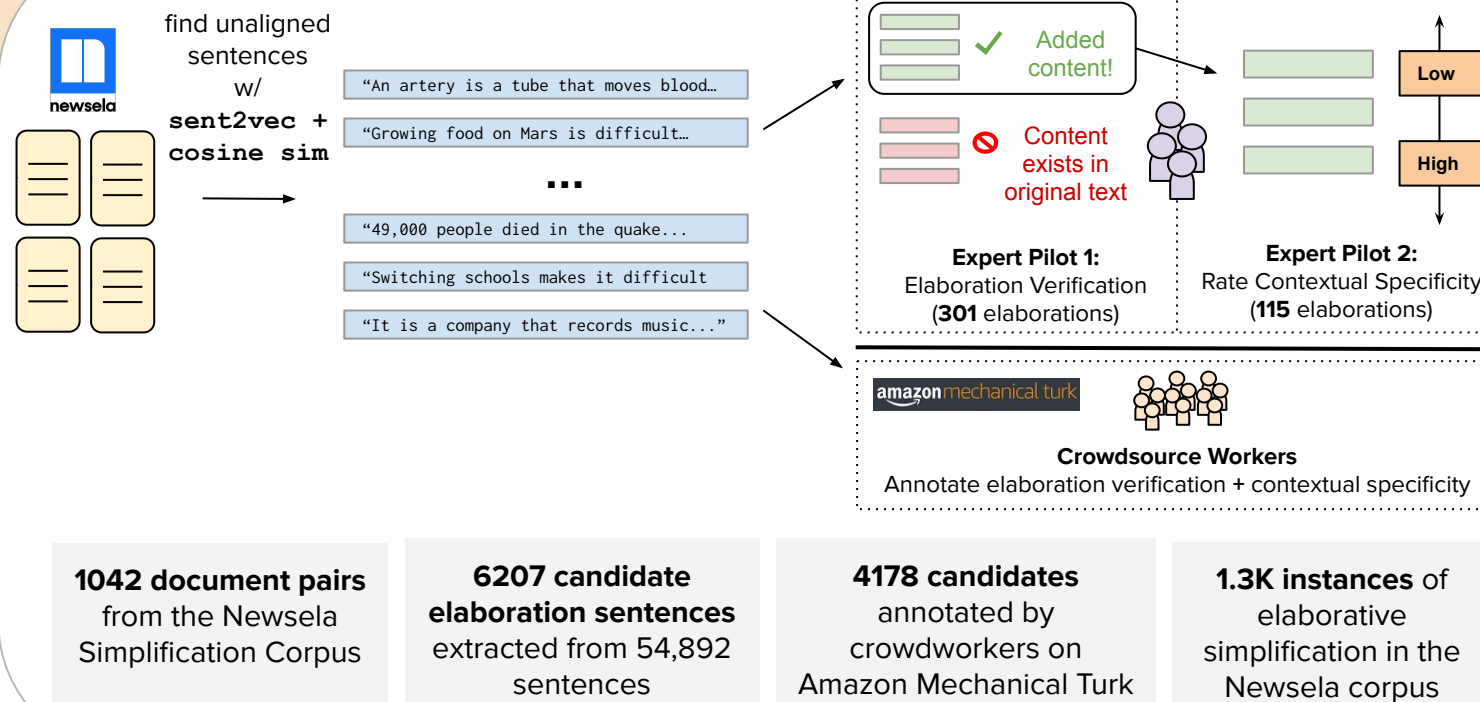
Contextual Specificity

In studying elaborative simplification in the Newsela corpus, we discover that elaborations vary in **contextual specificity** - i.e how specific elaborations are to the surrounding context.

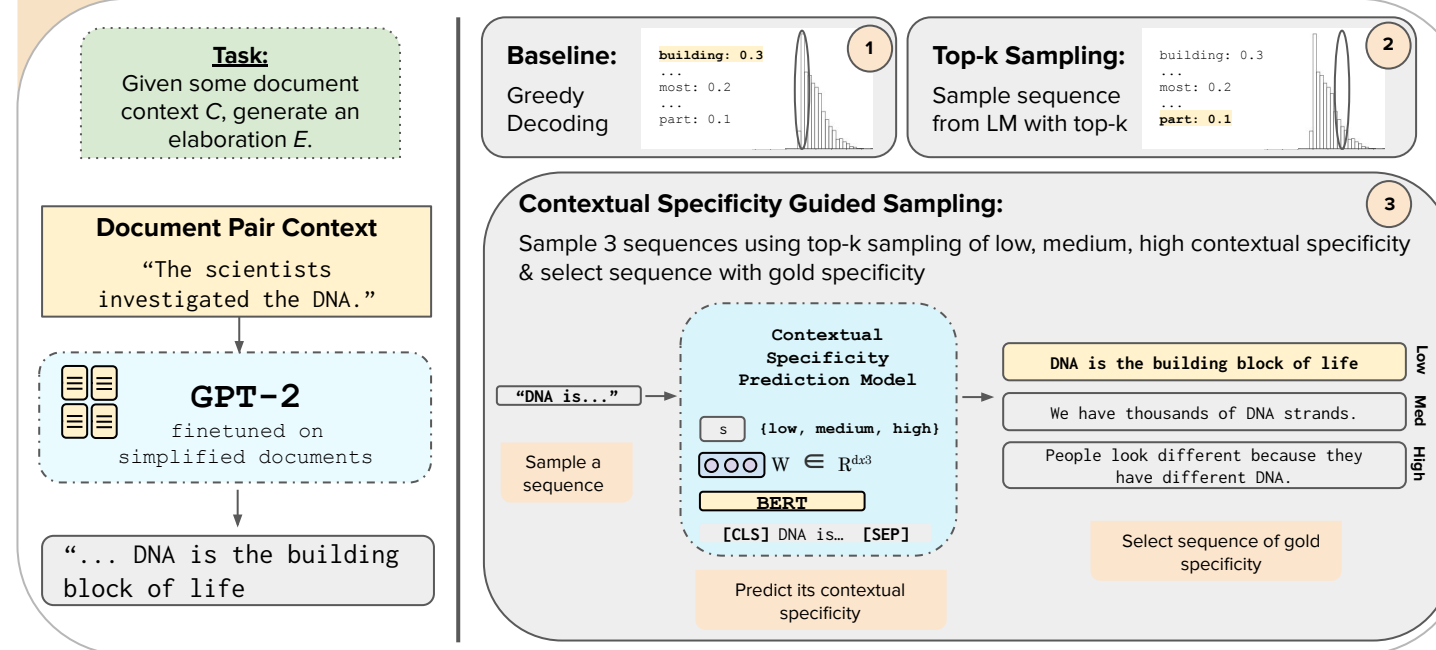
We draw inspiration from prior work in text specificity (Li et al., 2016; Ko et al., 2019), and “decontextualization” (Parikh et al., 2020; Choi et al., 2021) or how a sentence “stands on its own”.



Corpus Collection



Elaboration Generation



Evaluation & Example Results

Context	BLEU					
	Greedy		Top-k		Contextual	
	B-1	B-2	B-1	B-2	B-1	B-2
C_{4s}	20.8	5.54	19.7	6.06	22.4	7.56

BLEU Score for three decoding methods, with varying context from the original and simplified document.

Context consisting of 4 sentences prior to the gold elaboration with contextual specificity guided sampling performs best according to BLEU.

System	Human Evaluation		
	Greedy	Top-k	Contextual
% selected	53.2	44.9	58.0

% of annotations for which **human evaluators** selected elaborations generated from each decoding strategy.

Results from our human evaluation study, using the best model according to BLEU. Our human evaluators preferred elaborations generated with guidance from the gold contextual specificity.

Example Result

Simplified Text

It also has a high amount of smoking for a big city, according to a health department report. In Philadelphia, smoking is more common among the poor than people who aren't poor, said Giridhar Mallya. He works for the Philadelphia Department of Public Health. Being poor can be very hard on a person's mind. **It is not easy to relax, or to feel positive.**

Generated Elaborations

Greedy: "It's not just the money," he said.

Top-k: Mallya said the study showed that the poorest people in the city smoke a lot more than the richest people.

Contextual: **It can make them feel guilty.**