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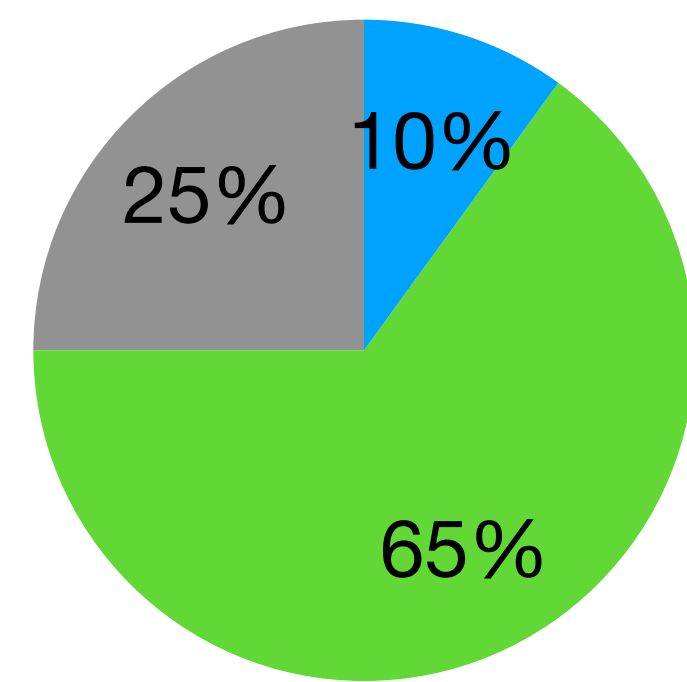
Overview

We isolate and define the problem of sentence decontextualization: taking a sentence together with its context and rewriting it to be interpretable out of context, while preserving its meaning.

This can support models for question answering, dialogue agents, and summarization often interpret the meaning of a sentence in a rich context and use that meaning in a new context.

Task

Given a Wikipedia page and a sentence inside it, rewrite the sentence such that it can stand alone.



Sometimes it is not feasible (e.g., a sentence in the middle of a narrative).

Sometimes it is unnecessary (e.g., first sentence in the Wikipedia page)

● Infeasible ● Feasible ● Unnecessary

Dataset

Sentences from English Wikipedia, specifically answer sentence from Natural Questions dataset and another sentence sampled from the same document.

Train dataset 1-way annotated, evaluation dataset 5-way annotated.

	Train	Dev	Test
# examples	11,290	1,945	1,945

Decontextualization Examples

Document Title: Croatia at the FIFA World Cup
Paragraph: Croatia national football team have appeared in the FIFA world cup on five occasions, since gaining independence in 1991. Before that, from 1930 to 1990 Croatia was part of Yugoslavia. Their best result thus far was reaching the 2018 final, where they lost 4-2 to France.

Original Their best result thus far was reaching the 2018 final, where they lost 4-2 to France.

Decontextualized The Croatia national football team's best result in FIFA world cup thus far was reaching the 2018 final, where they lost 4-2 to France.

Original It stars professional dancer Lauren Taft alongside Petricca .

Decontextualized The music video for Shut Up and Dance stars professional dancer Lauren Taft alongside Nicholas Petricca .

Edits required to decontextualize

Phenomena	Example	% examples with phenomena
Pronoun / NP Swaps	he Bernie Sanders	40%
Bridging	characters characters of Toy Story 3	19%
Name / Acronym Expansion	Clinton Hillary Clinton	11.5%
Add Information	Charles Darwin Charles Darwin, an English naturalist and biologist	10%
Discourse Marker removal	However	3.5%

Original In 1850 , the first experimental electric telegraph line was started between Calcutta and Diamond Harbour.

Decontextualized In 1850, the first experimental electric telegraph line in India was started between Calcutta and Diamond Harbour.

Original Although offered reinstatement after the threat is over, Hobbs decides to remain officially retired to spend more time with his daughter and his new "family", being Dom's team.

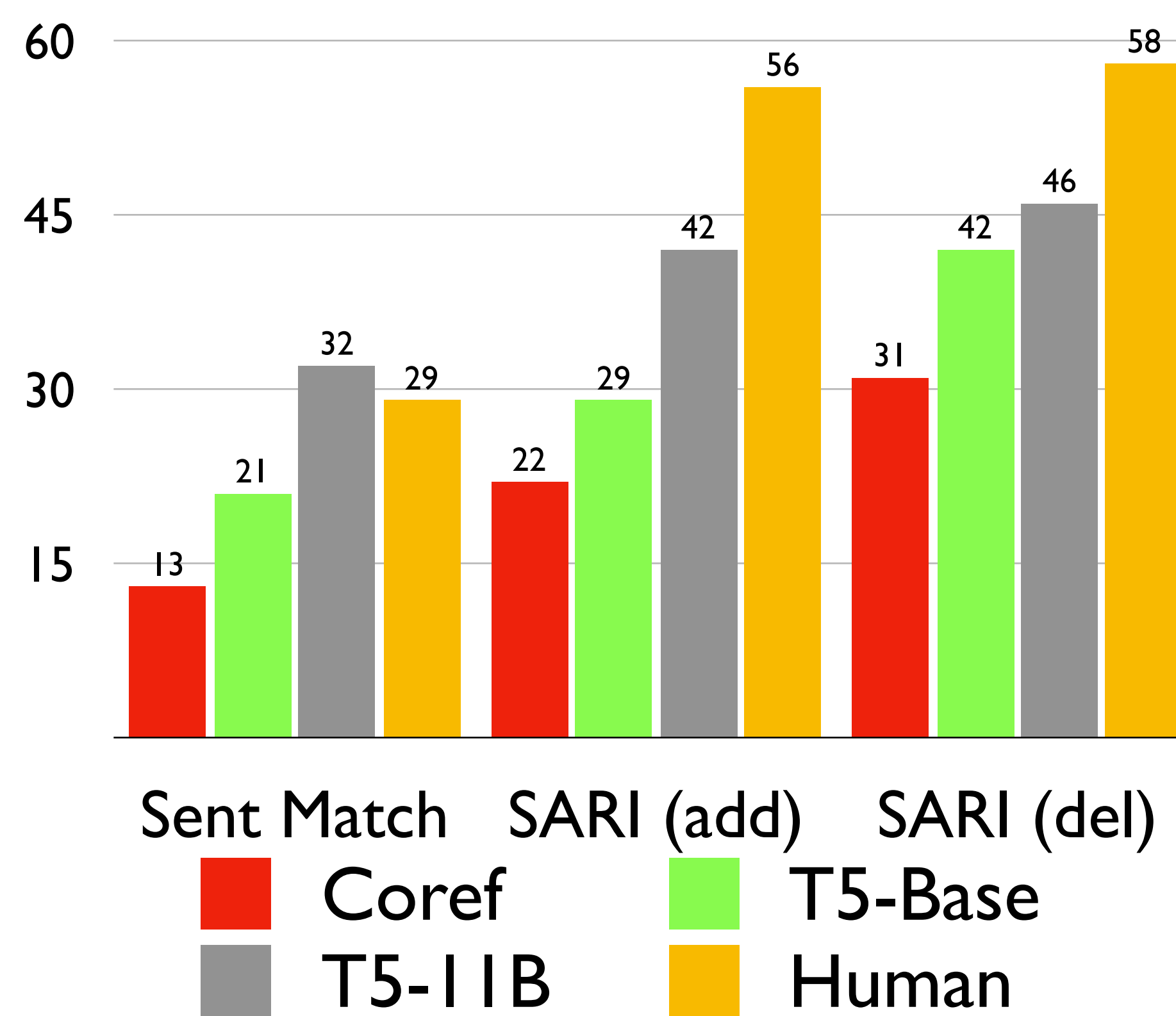
Impossible!

Intrinsic Evaluation

Evaluation Measures Exact Match (on one of four references, feasible examples only)
 SARI-add (added token overlap F1)
 SARI-del (deleted token overlap F1)

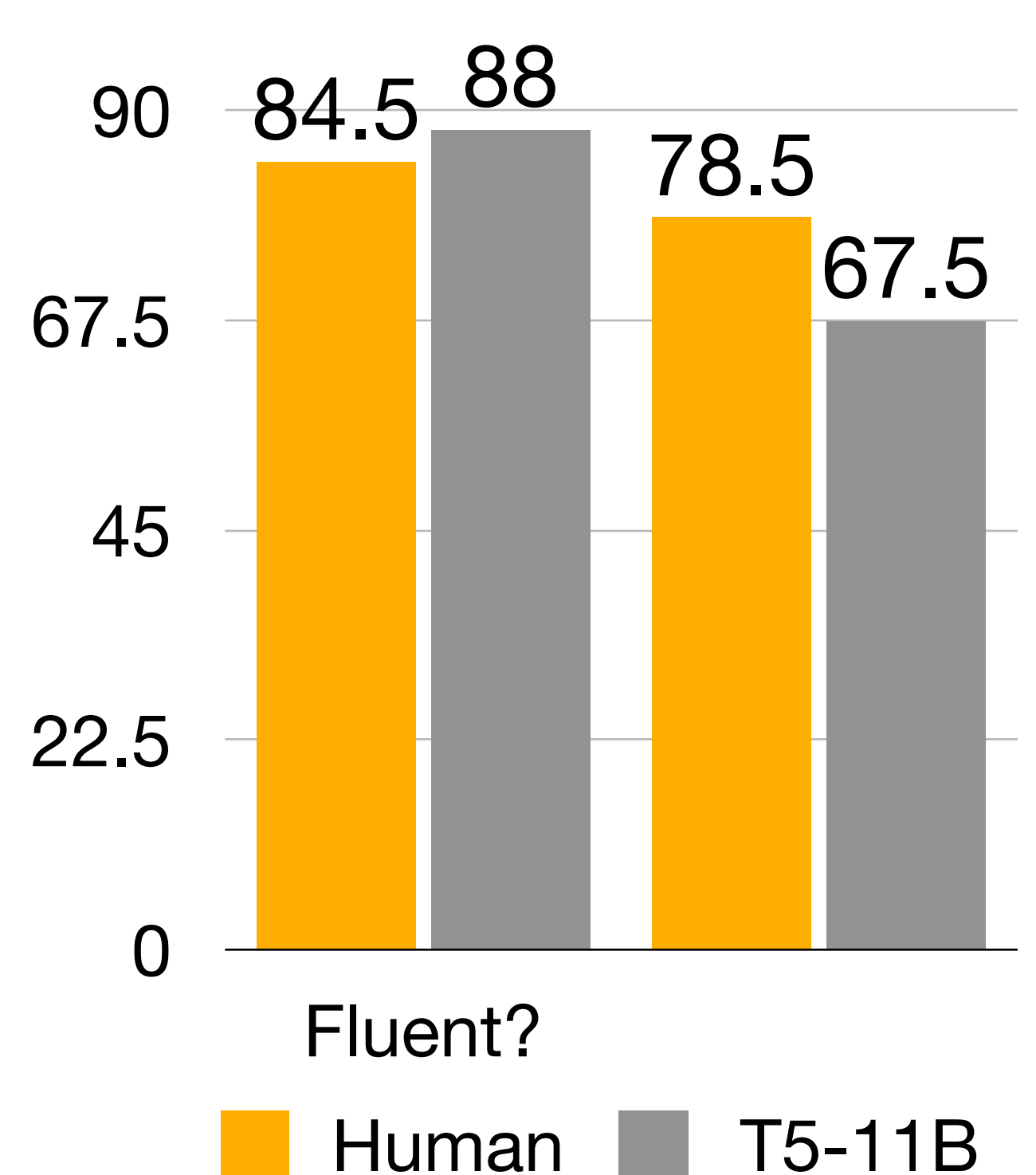
Models	Coref	SpanBERT model, Untrained baseline
Base line	T5-base	Seq2Seq model, fine-tuned with decontextualized data
Upper Bounds	Human	Annotator

Results



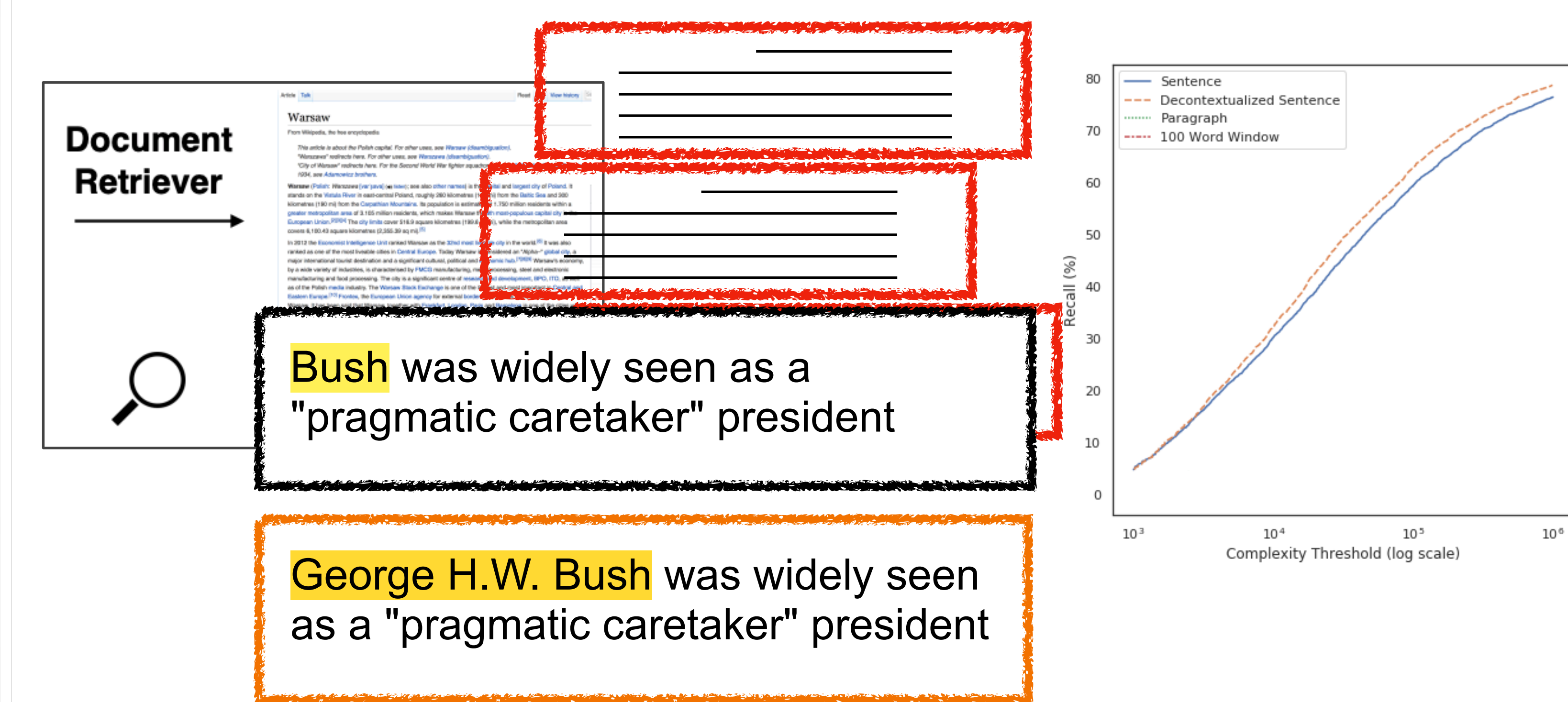
- Well trained seq2seq model performs surprisingly well
- Vanilla evaluation metric is challenging to tell apart good vs. bad decontextualization

Manual Eval



Application 1: Decontextualization as preprocessing

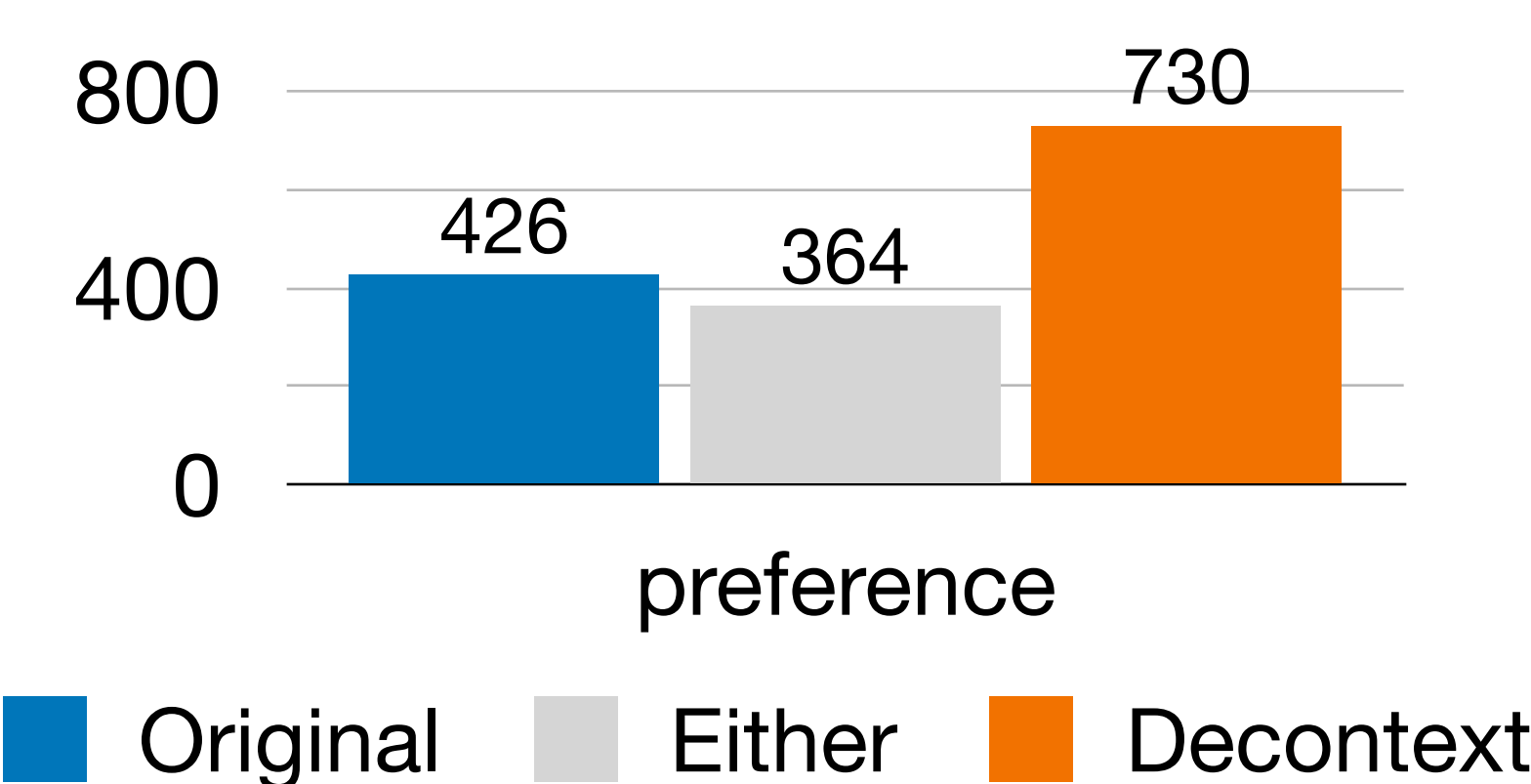
Use decontextualization to generate retrieval corpus for open domain QA. Using decontextualized sentences as a retrieval corpus provides a better retrieval performance than using the original sentence.



Application 2: Decontextualization As Is

For question answering, instead of showing answer highlighted in the original answer sentence, we present an answer highlighted in a decontextualized answer sentence.

Q: what is the most viewed video on youtube in 24 hours?
Original The most viewed music video in this time period is Taylor Swift 's Look What You Made Me Do.
Decontextualized The most viewed music video on Youtube within 24 hours of its release is Taylor Swift 's Look What You Made Me Do.



Users preferred decontextualized answer sentence, for providing succinct yet informative answer to the question.