Autocomplete Using LLMs for Simplifying Health-related Texts

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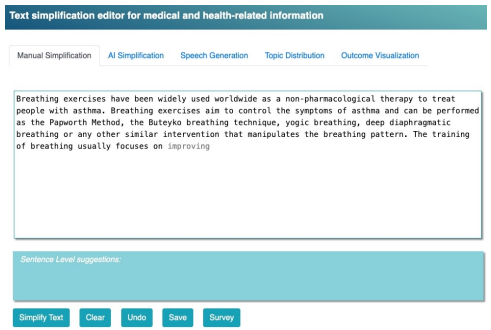

Autocomplete is a useful feature for simplification tools to help writers create simpler medical texts.

Challenge: generic LLMs have two key problems:

1) They are general-purpose and **not** tailored towards *simplicity* or the *medical domain*.

2) They always suggest autocompletions even if the quality of the suggestion isn't good

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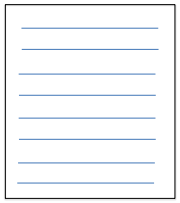
Autocomplete task



Plain Language Adaptation of Biomedical Abstracts (PLABA)

"Diabetes mellitus is a common disease whose complications are severe."

previous words	word to predict
Diabetes	mellitus
Diabetes mellitus	is
Diabetes mellitus is	a
Diabetes mellitus is a	common

Evaluation

Randomly picked 200 sentences from PLABA: 3,755 test cases

Metrics:

- *Accuracy* – prediction match word
- *Word frequency* – measure simplicity
- *Word2vec similarity* – allows for near matches

Approaches

Baseline: GPT 3.5 Davinci

Fine-tuned: fine-tuned GPT 3.5 on 167K aligned sentence pairs from English Wikipedia and Simple English Wikipedia

Fine-tuned + repetitions: repeatedly queried the model, selected the most frequent suggestion

Results

	GPT 3.5	Fine-tuned
Accuracy	20.1%	21.1%
Word frequency	271B	3.23B
Word2vec	0.188	0.195

Fine-tuning makes the suggestions more accurate and simpler

# of repetitions	Accuracy	% predicted
1	16.3%	40%
2	18.2%	28%
3	33.7%	15%
4	51.5%	8%
5	70.5%	9%

Repetition is a strong predictor of quality and can be used to improve accuracy and to filter suggestions