

cross domain counterargument retrieval

Bachelor thesis of Janko Götze

Motivation

- Strengthening arguments by preparing for possible counters
- Also, the opposite: preparing against an argument by gathering counters
- Unbiased help in decision-making
- Possible applications in Marketing, Education, Research and others

Research Questions

- Wachsmuth et al (2018) defined a counter-argument as the one that "invokes the same aspects as the (input) argument while having the opposite stance". Their approach to find the best counterargument is to select the most semantically similar to the given argument and simultaneously most dissimilar to it in terms of stance.

In the context of this idea, I pose the following research questions:

1. To what extent can we effectively predict persuasive counter-arguments in online discussions using the proposed approach?
2. Can this approach be adapted or modified to improve its effectiveness in online persuasive discussions?

Main Inspiration

- "invokes the same aspects as the (input) argument while having the opposite stance"
- Concrete: similar words, but different stance
- Realized through word similarity and embedding similarity
- Used to form a score

Change my view (CMV)

- Subreddit (online forum)
- Someone posts a claim
- Others try to convince them otherwise
- If convinced comments can be awarded with deltas

Example

Posted by u/TritonMage4 17 hours ago

33 **CMV: You can't really get over a fear of dying. You can just learn to postpone it.**

Delta(s) from OP

EDIT: **GUYS. I fear DYING. Not DEATH.**

Yeah.

I am currently going through this right now after subjecting myself to reading the major ongoings in the news and have been pondering the inevitability of dying (not DEATH, but the process of dying. Death is the state of not being alive anymore, whereas dying is HOW you become dead).

I have now developed an intense fear of dying, moreso than i had before.

I dont want to be in car accident, burned alive, stabbed, shot, decapitated, etc....

But someday, I will die, and i can only hope it will be peaceful and quick after a long, fulfilled, happy life.

almightySapling · 12 hr. ago

13Δ

...

Vote Reply Share ...

TritonMage4 OP · 11 hr. ago

!delta

Vote Reply Share ...

DeltaBot MOD · 11 hr. ago

∞Δ

Confirmed: 1 delta awarded to [/u/almightySapling \(13Δ\)](#).

[Delta System Explained](#) | [Deltaboards](#)

Vote Reply Share ...

Datasets

ArguArna Corpus	Cange my view
idebate.net	reddit.com
Topics get reviewed	Everyone can post
Clear structure	General rules
One argument and one counterargument	Many comments with potentially many delta comments
Generally objective	Highly subjective

Experiments

- Recreation of Wachsmuth method in python
 - Originally in Java with proprietary tools
 - Not one to one replica achieved
 - About 10% less accuracy
 - Probably because of tokenizers and embeddings
- Change my view
 - Only threads with delta comments
 - Two settings:
 - Only root comments
 - All comments

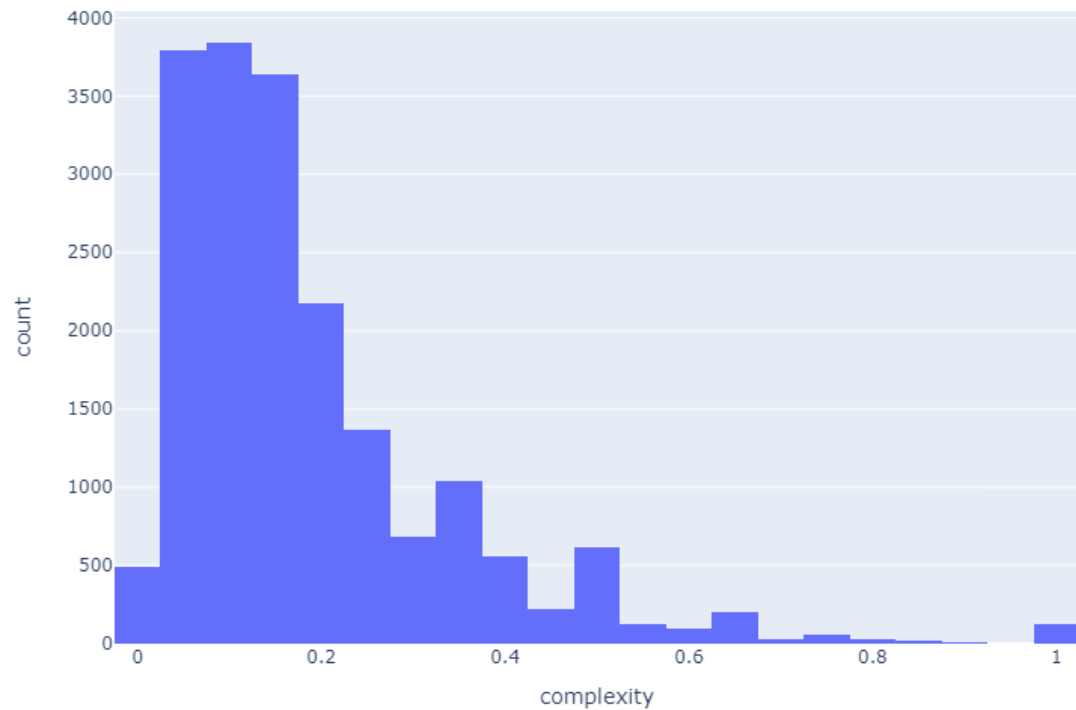
Results

- Pretty bad performance
- Better than random
- Beat by baseline heuristics

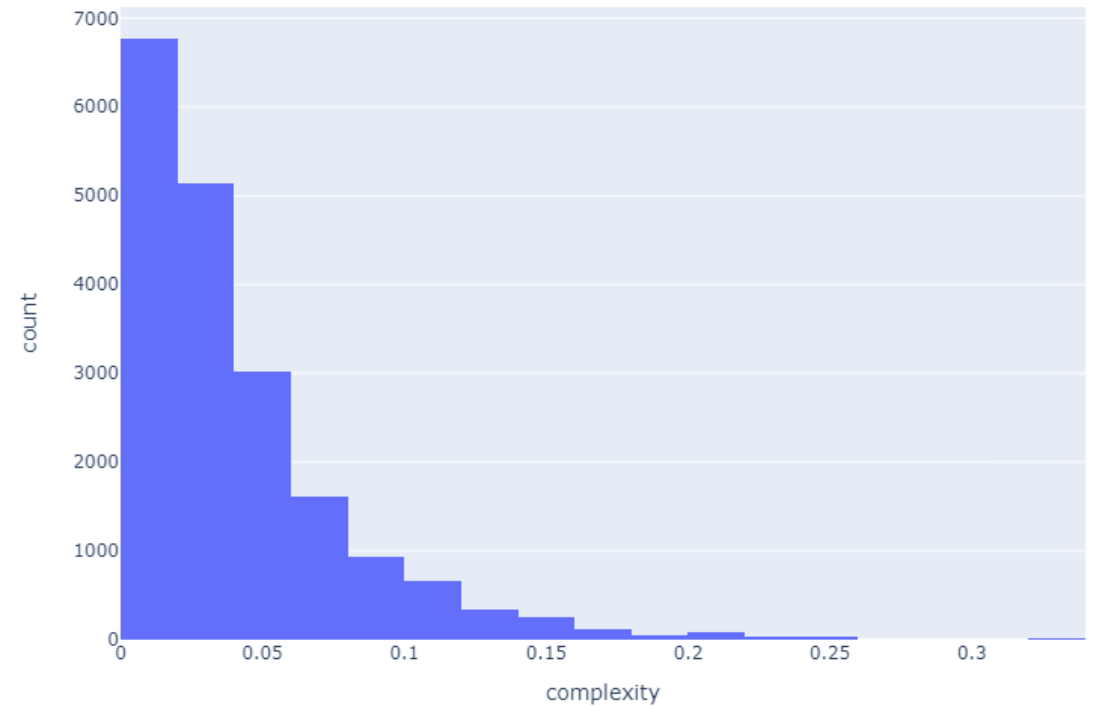
Accuracy	Root comments	All comments
My Method	23.85%	7.83%
Random	18.20%	4.10%
Longest	32.53%	20.35%
Earliest	25.85%	8.93%

Dataset distribution

Complexity = delta comments / total comments



Only Root comments

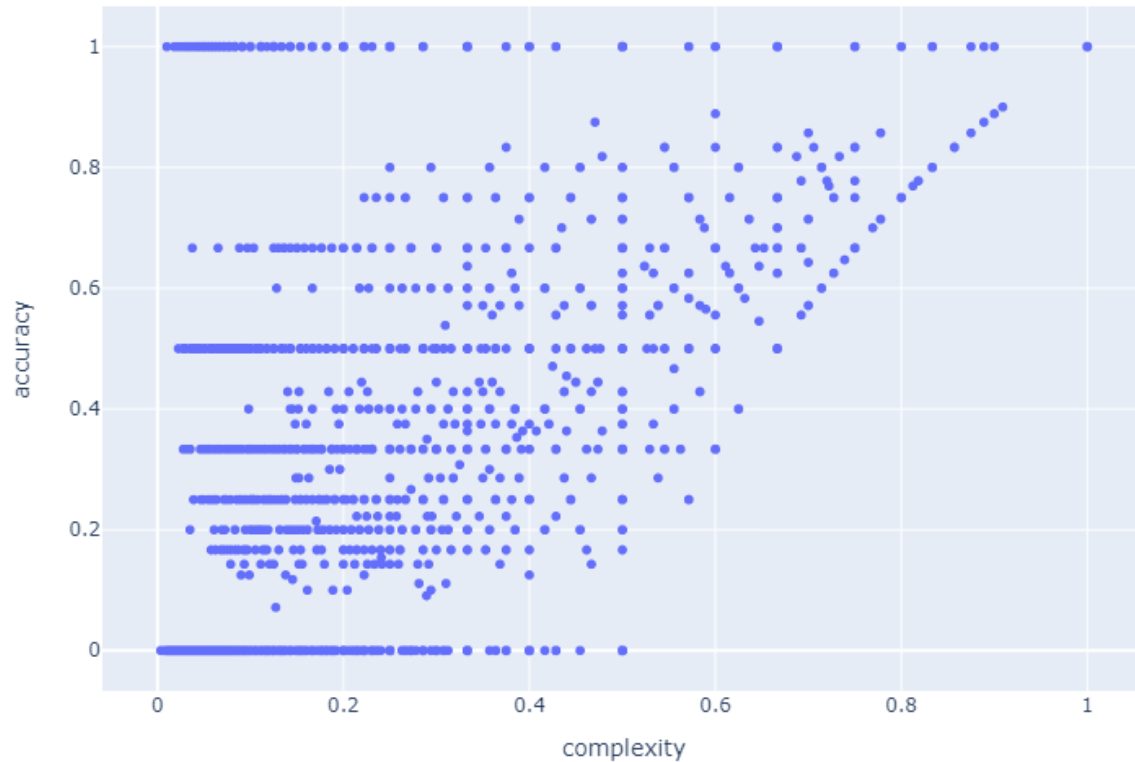


All comments

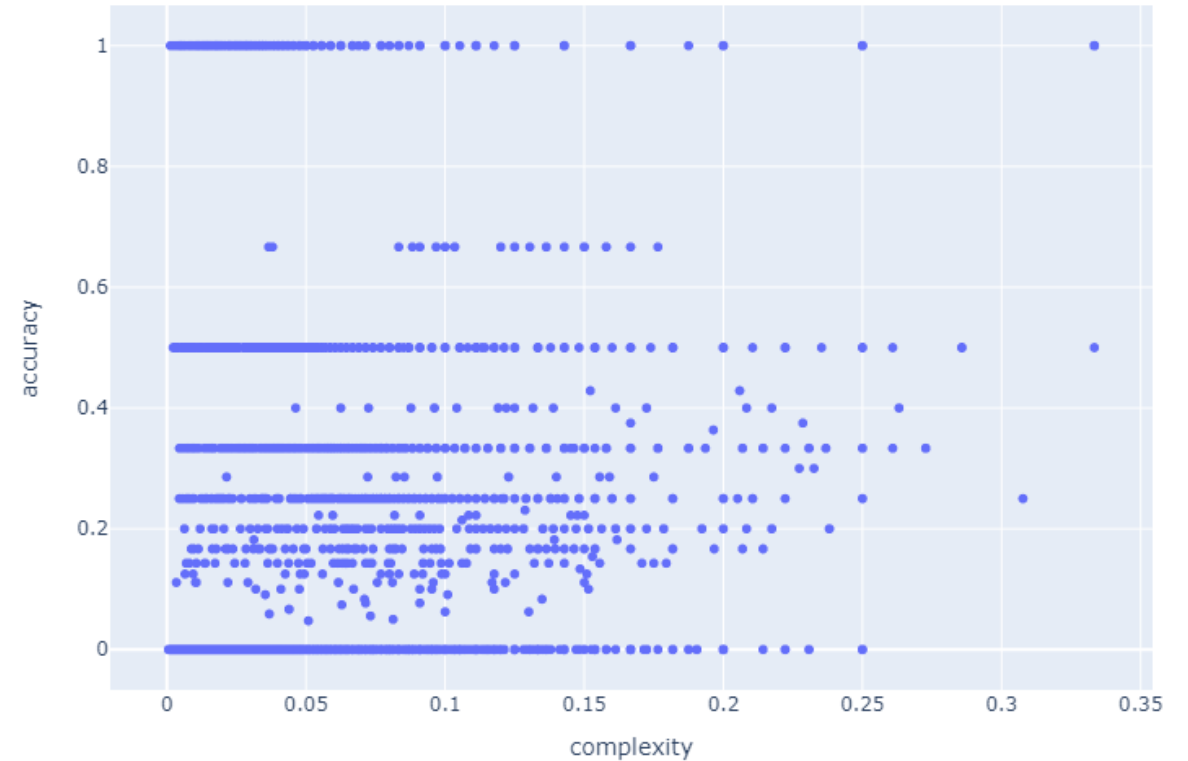
Evaluation

Clear groups at low fractions: 0.25, 0.33, 0.5

Might seem reasonable, until we look at the distribution



Only Root comments

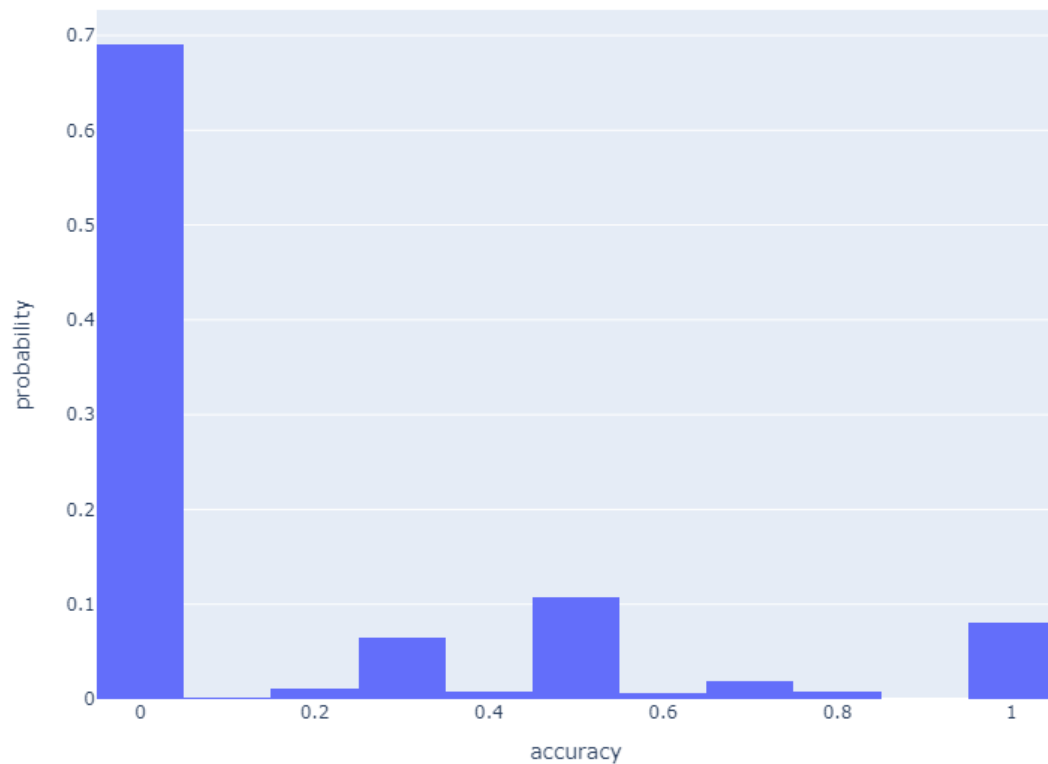


All comments

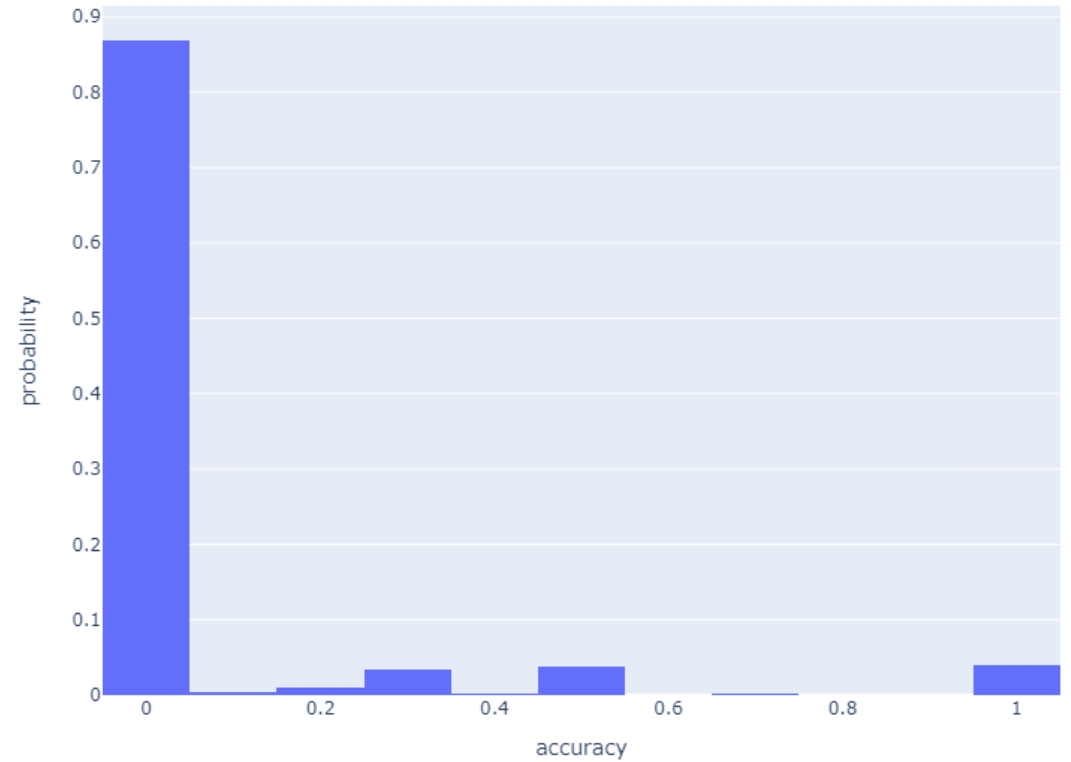
Evaluation

For roots: nearly 70% have 0% accuracy

For all comments: over 85% have 0% accuracy



Only Root comments



All comments

Conclusion

- Did not work effectively for online discussions
- Various potential factors
 - Length of Thread
 - Length of comments
 - Complexity
 - Other nuances like citations of OP
- More Investigation needed

TODOs /
future work

In depth error analysis

Improve example evaluation

Try different improvements like
prefiltering and multiple passes