A Corpus of Sentence-level Revisions: Towards Understanding Statement Strength in Communication

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Kunming Attack

The members of the Security Council (UN) condemned in the strongest terms the terrorist attack on March 1, 2014 in Kunming Train Station

[Chinese media] accused Western media of soft-pedaling the attack and failing to state clearly that it was an act of terrorism." [The New York Times]

"Some Western media, including CNN, The Associated Press, The New York Times and The Washington Post, were mystifying, confusing, even to the point of sowing discord."
'Completely hypocritical and callous,' [People's daily]

In particular …

…, the US embassy referred to this incident as the "terrible and senseless act of violence in Kunming".

After Prodding, U.S. State Department Labels Kunming Attack 'Terrorism'

By DIDI KIRSTEN TATLOW MARCH 4, 2014 1:05 AM 19 Comments

A weibo user: "If you say that the Kunming attack is a 'terrible and senseless act of violence', then the 9/11 attack can be called a 'regrettable traffic incident'"

Understanding statement strength is important!

We regret to inform you that your paper has been rejected

A first step to understand statement strength is to distinguish strong and weak statements.

Statement strength is inherently relative.

Authors post latex source for different versions of the same paper

arXiv.org > math > arXiv:1109.4363

Mathematics > Probability

The Segregated Lambda-coalescent

Nic Freeman

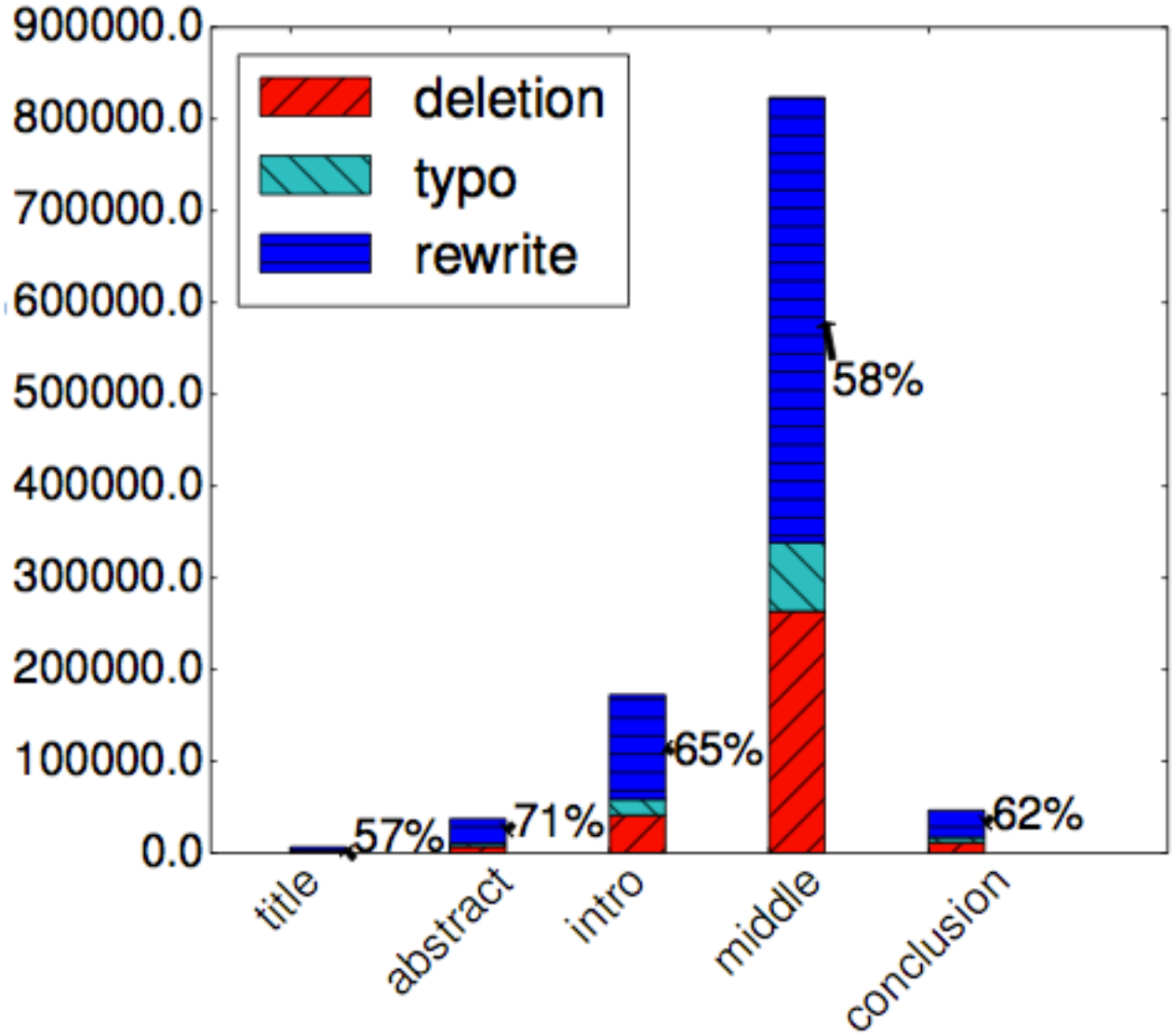
(Submitted on 20 Sep 2011 (v1), last revised 2 Nov 2013 (this version, v3))

Submission history

From: Nic Freeman [view email]
[v1] Tue, 20 Sep 2011 17:13:33 GMT (125kb,D)
[v2] Wed, 9 Nov 2011 15:03:40 GMT (137kb,D)
[v3] Sat, 2 Nov 2013 22:15:38 GMT (108kb,D)

Is it only typos?

A lot of rewrites are made between different versions



Align different versions of the same paper to find sentence pairs [Barzilay and Elhadad 2003]

Phase transitions in a spatial coalescent

Nic Freeman

(Submitted on 20 Sep 2011 (this version), latest version 2 Nov 2013 (v3))

We construct a natural extension of the Lambda-coalescent to a spatial continuum, and analyse its behaviour. Like the Lambda-coalescent, at any time t>0 the individuals in our model can be separated into (i) a dust component and (ii) large blocks of coalesced individuals. We identify a five phase system, where our phases are defined according to changes in the qualitative behaviour of the dust and blocks. We completely classify the phase behaviour, and obtain necessary and sufficient conditions for the model to come down from infinity.

The Segregated Lambda-coalescent

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Examples of potential strength changes

The algorithm is *studied* in this paper .

... circadian pattern and burstiness in *human communication activity* .

The algorithm is *proposed* in this paper .

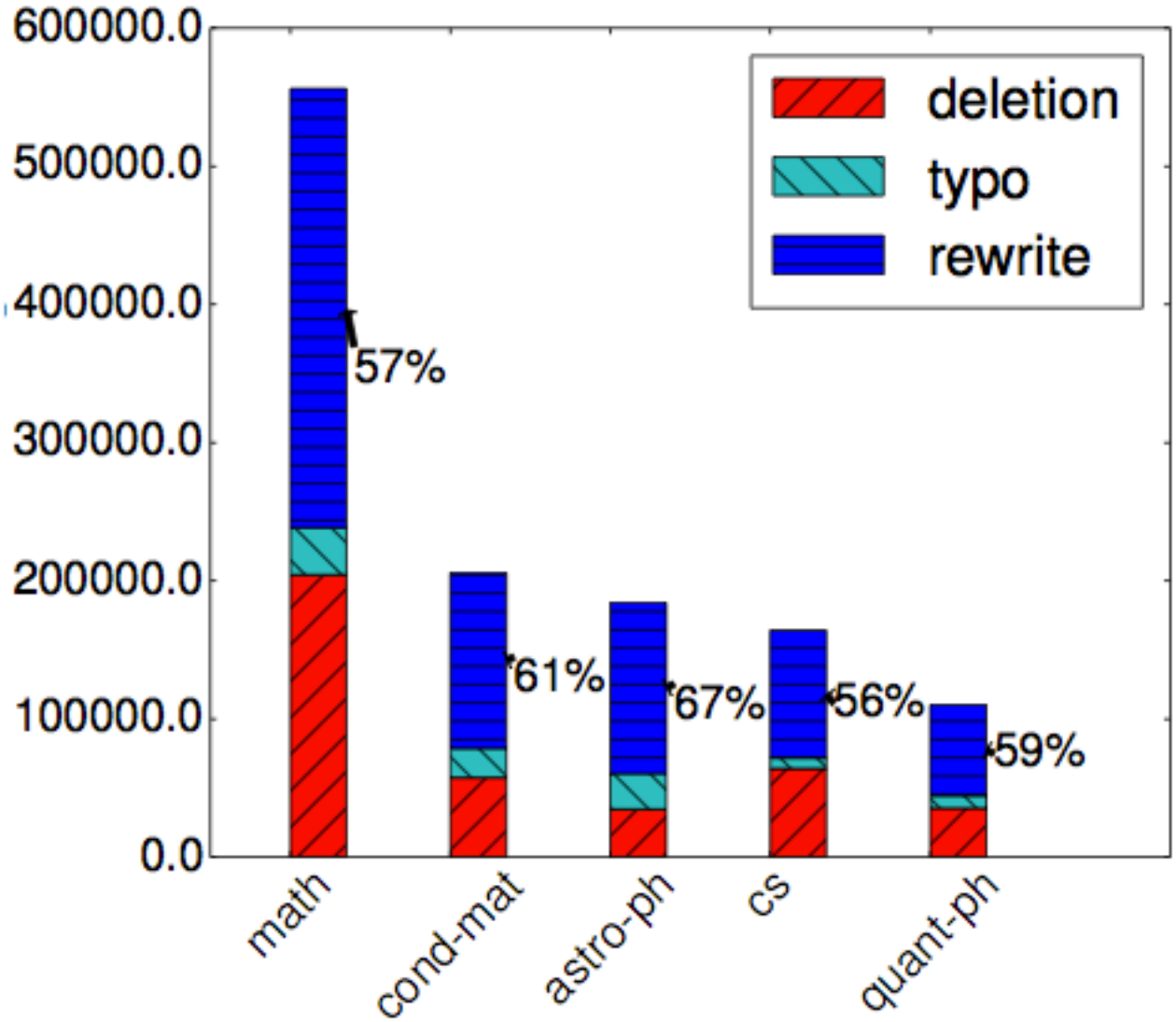
... circadian pattern and burstiness in *mobile phone communication* .

Examples of potential strength changes

they maximize the expected revenue of the seller but *induce efficiency loss* .

they maximize the expected revenue of the seller but *are inefficient* .

Top categories in making changes



A corpus of sentence-level revisions focusing on potential strength changes

- 108K pairs from abstracts or introductions
  - similarity score for the pair was larger than 0.5
- Final labeling instructions:

  stronger, weaker, no strength change, I can't tell
- Labeled 500 pairs on Amazon Mechanical Turk
  - 9 labels and *COMMENTS* each

Overall labeling results

- Among the 500 pairs, Fleiss' Kappa was 0.242, which indicates fair agreement
- 386 pairs have an absolute-majority label

  Fleiss' Kappa is 0.322, and 74.4% of pairs were strength changes

  (93 weaker, 194 stronger, 99 no change)
- Most labels agree with our intuitions, but there are also some differences

Participants are swayed by specificity

S1: ... using data from numerics and experiments .

S2: ... using data sets from numerics in the point particle limit and one experimental data set .

S2 is stronger: "S2 is more specific in its description which seems stronger."

S2 is weaker: "'one experimental data set' weakens the sentence"

Similar findings in courts [Bell and Loftus (1989)]

Participants interpret constraints/conditions not in strictly logical ways

S1: we also proved that if [MATH] is sufficiently homogeneous then ...

S2: we also proved that if [MATH] is *not totally disconnected* and sufficiently homogeneous then ...

(stronger) We have more detail/proof in S2

(stronger) the words "not totally disconnected" made the sentence sound more impressive.

Participants can have a different understanding of domain-specific terms

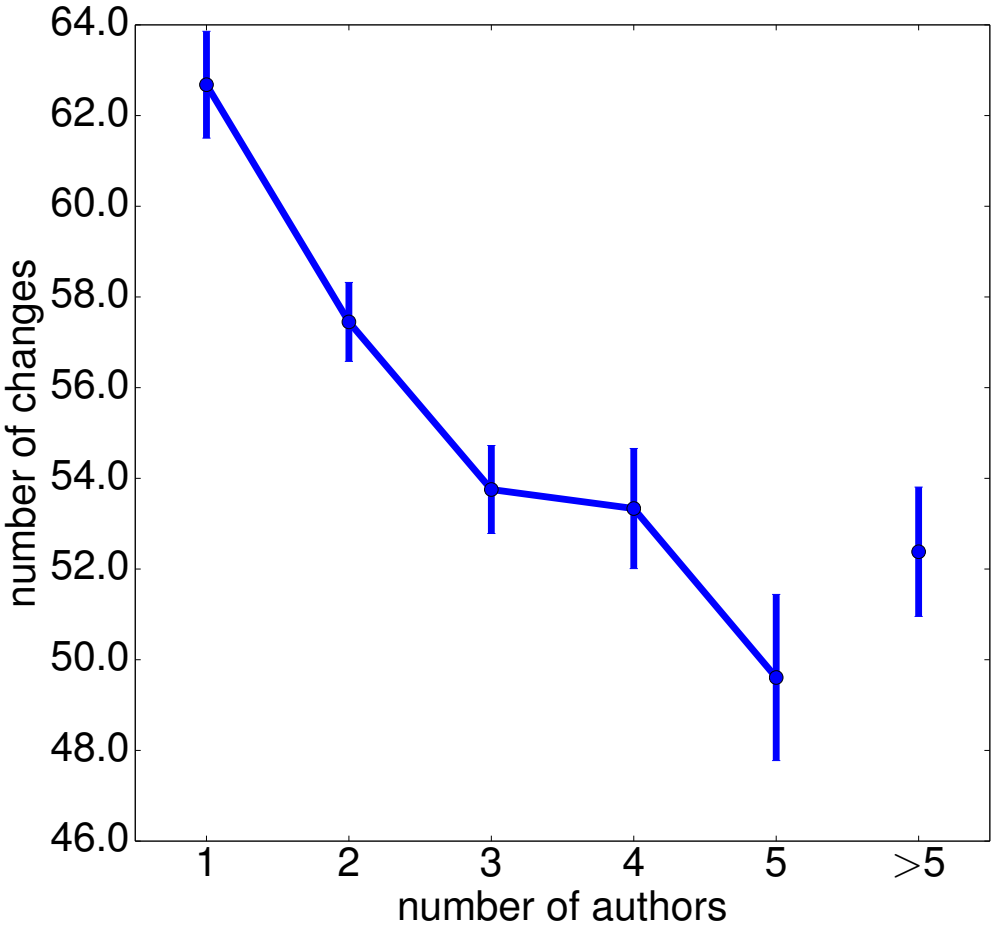
S1: in the current paper we *discover* several variants of qd algorithms for quasiseparable matrices .

S2: in the current paper we *adapt* several variants of qd algorithms to quasiseparable matrices .

S2 is stronger: "in S2 Adapt is stronger than just the word discover. adapt implies more of a proactive measure. "

This type of corpus can enable other interesting studies

The more authors, the fewer changes!



Conclusion

- A corpus of sentence-level revisions to study statement strength is available at

  http://chenhaot.com/pages/statement-strength.html
- The labels and *comments* we collected can hopefully provide insights into better ways to define and approach this problem.
- The ultimate goal of our study is to understand the effects of statement strength on the public, which can lead to various applications in public communication.