Outline

100% Independent UD Annotation for Tweets

100% Independent UD Annotation for Tweets

MoNoise treebank (van der Goot and van Noord, 2018)

- 632 weets, 10,015 words
- Train on EWT (domain-adaptation)
- 1 annotator
- Paper: effect of normalization

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Tweebank 2.0 (Liu et al, 2018)

- 3550 tweets, 111,214 words
- Train on tweets (+EWT)
- 18 annotators
- Paper: Build ensemble, and make this more efficient

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Both contain data from Owoputi et al. (2013)!

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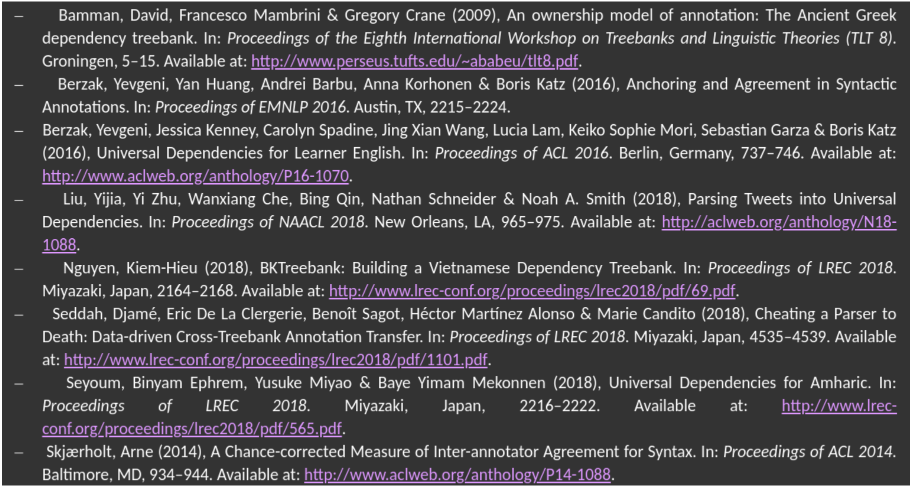
Did this happen before?

100% Independent UD Annotation for Tweets

Did this happen before?



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Thanks to Amir Zeldes and the corpora-list

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For tweets (inter-annotator agreement in 1 paper):

POS	96.6%
unlabeled dependencies	88.8%
labeled dependencies	84.3%

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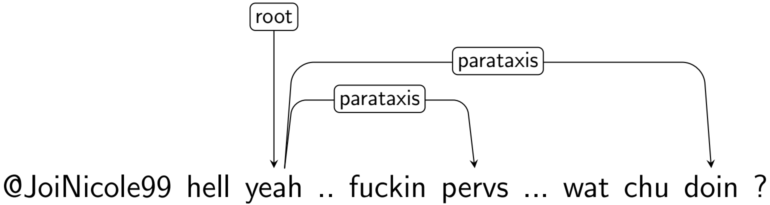
Different guidelines (me):



@JoiNicole99 hell yeah .. fuckin pervs ... wat chu doin ?

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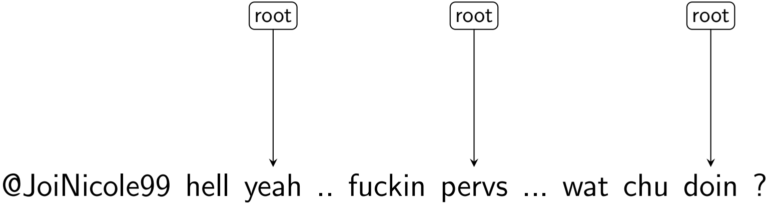
Different guidelines (them):

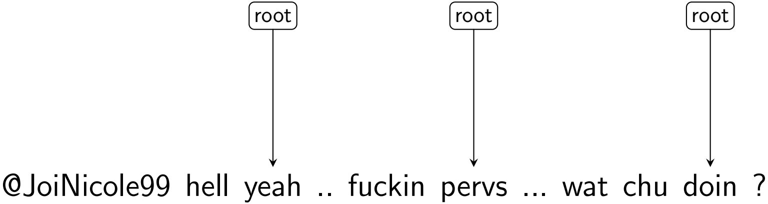


root root root

@JoiNicole99 hell yeah .. fuckin pervs ... wat chu doin ?

100% Independent UD Annotation for Tweets

Different guidelines (them):



@JoiNicole99 hell yeah .. fuckin pervs ... wat chu doin ?

Easy to converge (rule-based)

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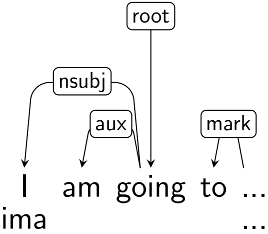
Different guidelines (me):



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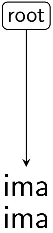
Different guidelines (them):



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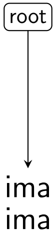
Different guidelines (them):



Bit harder to converge (not done yet)

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Other things:

- I leave phrasal abbreviations as is (they acronyms)

100% Independent UD Annotation for Tweets

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- emoticon & emoji: `SYMB`, `appos`

100% Independent UD Annotation for Tweets

Other things:

- I leave phrasal abbreviations as is (they acronyms)
- emoticon & emoji: `SYMB, appos`
- urls: `X, appos` versus `X, list`

100% Independent UD Annotation for Tweets

Other things:

- I leave phrasal abbreviations as is (they acronyms)
- emoticon & emoji: `SYMB, appos`
- urls: `X, appos` versus `X, list`
- username mentions: `PROPN, vocative`

100% Independent UD Annotation for Tweets

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- RT: `X, discourse`

100% Independent UD Annotation for Tweets

Other things:

- I leave phrasal abbreviations as is (they acronyms)
- emoticon & emoji: `SYMB, appos`
- urls: `X, appos` versus `X, list`
- username mentions: `PROPN, vocative`
- RT: `X, discourse`
- Annotate accordingly when above things are used in syntactic context

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first try:

- ID match
- 126 found

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second try:

- character edit distance
- Ignore whitespace, username and allow for 20% variation
- 142 found

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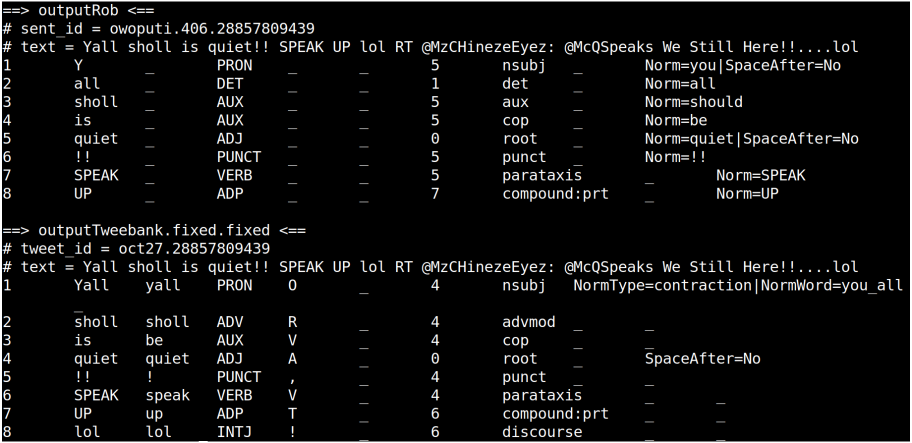
why 20% variation?

```
rt@userwho'seversmokedbeforetheytookatestatschool?/*raise
rt@userwho'seversmokedbeforetheytookatestatschool?/*raise
```

```
imhome:)
imhome:-)
```

```
\@user601blueroommay19thfemsfreeanddrinkfreetil11:30$5all
\@iamyungsmilezblueroommay19thfemsfreeanddrinkfreetil11:3
```

100% Independent UD Annotation for Tweets



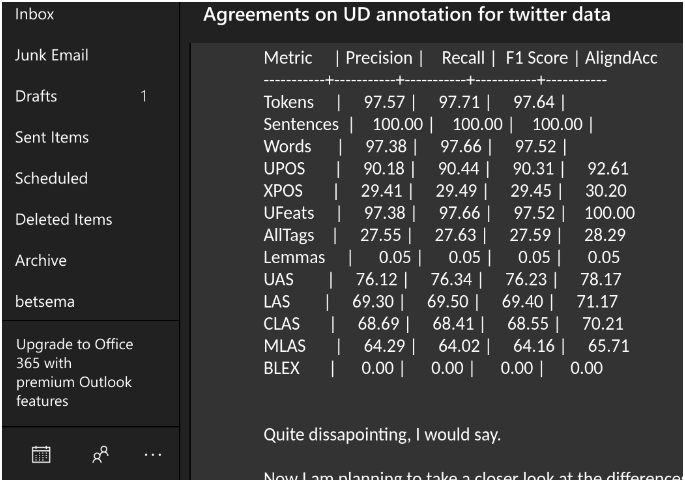
```
==> outputRob <==
# sent_id = owoputi.406.28857809439
# text = Yall sholl is quiet!! SPEAK UP lol RT @MzCHinezeEyez: @McQSpeaks We Still Here!!....lol
1       Y       _       PRON    _       _       5       nsubj   _       Norm=you|SpaceAfter=No
2       all     _       DET     _       _       1       det     _       Norm=all
3       sholl   _       AUX     _       _       5       aux     _       Norm=should
4       is      _       AUX     _       _       5       cop     _       Norm=be
5       quiet   _       ADJ     _       _       0       root    _       Norm=quiet|SpaceAfter=No
6       !!      _       PUNCT   _       _       5       punct   _       Norm=!!
7       SPEAK   _       VERB    _       _       5       parataxis       _       Norm=SPEAK
8       UP      _       ADP     _       _       7       compound:prt    _       Norm=UP

==> outputTweebank.fixed.fixed <==
# tweet_id = oct27.28857809439
# text = Yall sholl is quiet!! SPEAK UP lol RT @MzCHinezeEyez: @McQSpeaks We Still Here!!....lol
1       Yall    yall    PRON    O       _       4       nsubj   NormType=contraction|NormWord=you_all
        _
2       sholl   sholl   ADV     R       _       4       advmod  _       _
3       is      be      AUX     V       _       4       cop     _       _
4       quiet   quiet   ADJ     A       _       0       root    _       SpaceAfter=No
5       !!      !       PUNCT   ,       _       4       punct   _       _
6       SPEAK   speak   VERB    V       _       4       parataxis       _       _
7       UP      up      ADP     T       _       6       compound:prt    _       _
8       lol     lol     INTJ    !       _       6       discourse       _       _
```

100% Independent UD Annotation for Tweets

First test, `conll18_ud_eval.py`:

```
Metric     | Precision |    Recall |  F1 Score | AligndAc
-----------+-----------+-----------+-----------+----------
Tokens     |     97.57 |     97.71 |     97.64 |
Sentences  |    100.00 |    100.00 |    100.00 |
Words      |     97.38 |     97.66 |     97.52 |
UPOS       |     90.18 |     90.44 |     90.31 |     92.6
UAS        |     76.12 |     76.34 |     76.23 |     78.1
LAS        |     69.30 |     69.50 |     69.40 |     71.1
CLAS       |     68.69 |     68.41 |     68.55 |     70.2
```

100% Independent UD Annotation for Tweets



Agreements on UD annotation for twitter data

```
Metric     | Precision |    Recall |  F1 Score | AligndAcc
-----------+-----------+-----------+-----------+-----------
Tokens     |     97.57 |     97.71 |     97.64 |
Sentences  |    100.00 |    100.00 |    100.00 |
Words      |     97.38 |     97.66 |     97.52 |
UPOS       |     90.18 |     90.44 |     90.31 |     92.61
XPOS       |     29.41 |     29.49 |     29.45 |     30.20
UFeats     |     97.38 |     97.66 |     97.52 |    100.00
AllTags    |     27.55 |     27.63 |     27.59 |     28.29
Lemmas     |      0.05 |      0.05 |      0.05 |      0.05
UAS        |     76.12 |     76.34 |     76.23 |     78.17
LAS        |     69.30 |     69.50 |     69.40 |     71.17
CLAS       |     68.69 |     68.41 |     68.55 |     70.21
MLAS       |     64.29 |     64.02 |     64.16 |     65.71
BLEX       |      0.00 |      0.00 |      0.00 |      0.00
```

Quite dissapointing, I would say.

Now I am planning to take a closer look at the differences

100% Independent UD Annotation for Tweets

Answer:

Thanks for the experiments. The number seemed OK to me ..

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Answer:

Thanks for the experiments. The number seemed OK to me ..

Conclusion: we do not agree...

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`eval.pl` by Yuval Krymolowski

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```
p270396@vesta1:udNew$ perl eval.pl -g outputTweebank.fixe
Word/pos mismatch, line 1:
 gold: # tweet_id = oct27.28857809439
 sys : # sent_id = owoputi.406.28857809439
Word/pos mismatch, line 3:
 gold: 1    Yall    yall    PRON    O   _   4   nsubj   N
 sys : 1    Y   _   PRON    _   _   5   nsubj   _   Norm=
Word/pos mismatch, line 4:
 gold: 2    sholl   sholl   ADV R   _   4   advmod  _   _
 sys : 2    all _   DET _   _   1   det _   Norm=all
Word/pos mismatch, line 5:
 gold: 3    is  be  AUX V   _   4   cop _   _
 sys : 3    sholl   _   AUX _   _   5   aux _   Norm=shou
Word/pos mismatch, line 6:
 gold: 4    quiet   quiet   ADJ A   _   0   root    _   S
 sys : 4    is  _   AUX _   _   5   cop _   Norm=be
```

100% Independent UD Annotation for Tweets

For now:

- Filtered, only tweets with same tokenization
- 114 tweets left

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```
5 focus words where most of the errors occur:

         | any   | head | dep   | both
---------+------+------+------+------
lol / _  |    4 |    4 |    1 |    1
it / _   |    4 |    1 |    4 |    1
RT / _   |    4 |    4 |    0 |    0
that / _ |    4 |    1 |    3 |    0
me / _   |    4 |    3 |    4 |    3
---------+------+------+------+------
```

100% Independent UD Annotation for Tweets

1. head one word after the correct head (after the focus word), correct dependency : 11 times
2. dependency "root" instead of "parataxis" : 11 times
3. head one word before the correct head (after the focus word), correct dependency : 11 times
4. dependency "aux" instead of "cop" : 5 times
5. dependency "discourse" instead of "parataxis" : 5 times
6. dependency "advcl" instead of "parataxis" : 5 times

100% Independent UD Annotation for Tweets

Incoming labels I used where they did not:

parataxis	46
discourse	24
root	22
obj	18
nsubj	16
xcomp	12
advcl	9
compound	9
obl	9
advmod	8

100% Independent UD Annotation for Tweets

Incoming labels they used where I did not:

vocative	23
discourse	22
root	22
advcl	20
advmod	17
nsubj	17
obl	15
compound	13
ccomp	12
aux	9

100% Independent UD Annotation for Tweets

(Preliminary) conclusion: Most mistakes made for:

- vocative
- discourse
- root
- parataxis

100% Independent UD Annotation for Tweets

(Preliminary) conclusion: Most mistakes made for:

- vocative
- discourse
- root
- parataxis
- LAS might sketch a too negative image

100% Independent UD Annotation for Tweets

Next:

- Get parser performance for both (train on EWT)
- MaltEval
- More manual analysis
- Merge styles
- ...

Outline

Effect of Normalization Categories on Parsing

Effect of Normalization Categories on Parsing

Thesis:

- Evaluating normalization per category
- Effect of normalization on parsing

Effect of Normalization Categories on Parsing

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- Effect of normalization on parsing
- Logical follow up: evaluating effect normalization categories for parsing

Effect of Normalization Categories on Parsing

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- Effect of normalization on parsing
- Logical follow up: Evaluating effect normalization categories for parsing

Effect of Normalization Categories on Parsing

Tyler Baldwin, Yunyao Li. 2015. An In-depth Analysis of the Effect of Text Normalization in Social Media. In *Proceedings of NAACL*.

Effect of Normalization Categories on Parsing

So why do it again?

Effect of Normalization Categories on Parsing

Their taxonomy:

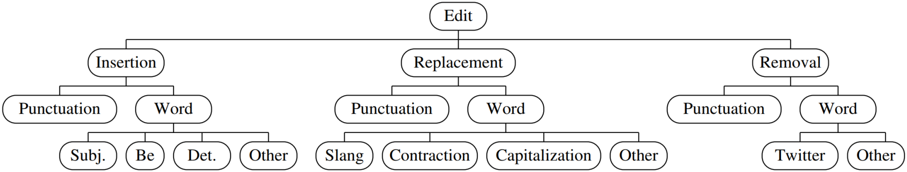


Figure 1: Taxonomy of normalization edits

Effect of Normalization Categories on Parsing

Their taxonomy:

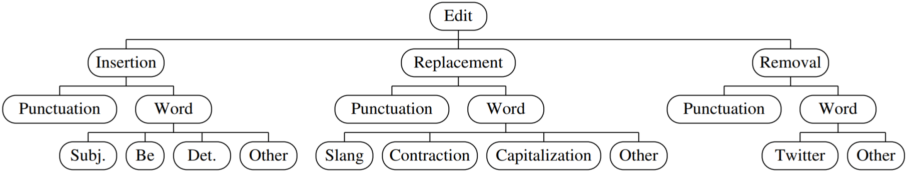


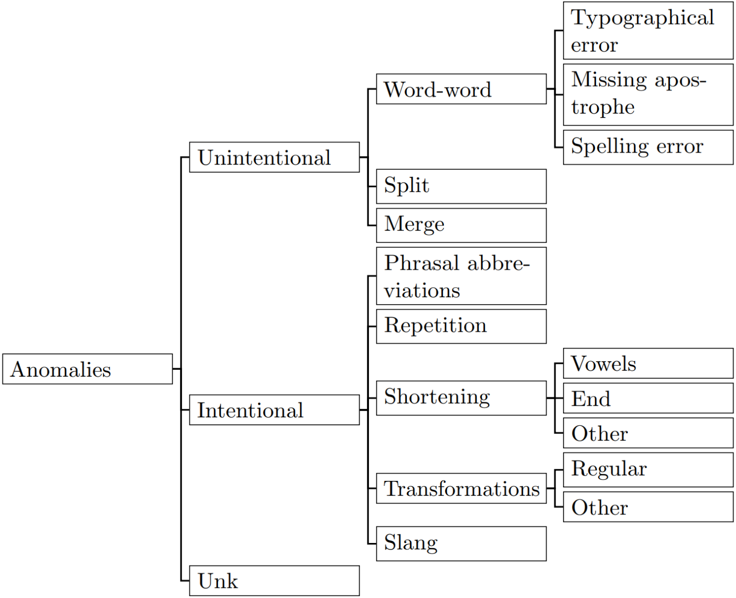
Figure 1: Taxonomy of normalization edits

For automated normalization, the scope is often different!

Effect of Normalization Categories on Parsing

Rob van der Goot, Rik van Noord and Gertjan van Noord. 2018. A Taxonomy for In-depth Evaluation of Normalization for User Generated Content. In *Proceedings of LREC*

Effect of Normalization Categories on Parsing



Effect of Normalization Categories on Parsing

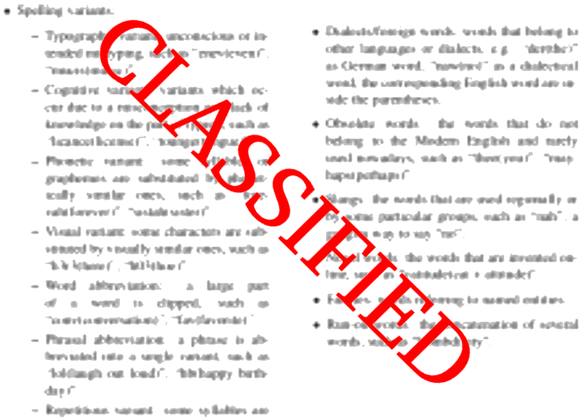
But how do you classify ‘lollllll’?

Effect of Normalization Categories on Parsing

$$\kappa = 0.807$$

Effect of Normalization Categories on Parsing

EMNLP 2018 submission:



- Spelling variants:
  - Typographic variants: unconscious or intended mistyping, such as "[illegible]", "[illegible]".
  - Cognitive variants: variants which occur due to a misconception or lack of knowledge on the part of typers, such as "[illegible]", "[illegible]".
  - Phonetic variant: some syllables or graphemes are substituted by phonetically similar ones, such as "[illegible](forever)", "[illegible](sister)".
  - Visual variant: some characters are substituted by visually similar ones, such as "[illegible](there)", "[illegible](there)".
  - Word abbreviation: a large part of a word is clipped, such as "[illegible](conversation)", "fav(favorite)".
  - Phrasal abbreviation: a phrase is abbreviated into a single variant, such as "lol(laugh out loud)", "hb(happy birthday)".
  - Repetitious variant: some syllables are
- Dialects/foreign words: words that belong to other languages or dialects, e.g. "der(the)" as German word, "[illegible]" as a dialectal word, the corresponding English word are inside the parentheses.
- Obsolete words: the words that do not belong to the Modern English and rarely used nowadays, such as "thou(you)", "[illegible](perhaps)".
- Slangs: the words that are used regionally or by some particular groups, such as "nah", a [illegible] way to say "no".
- Novel words: the words that are invented online, such as "[illegible](cat + attitude)".
- Entities: words referring to named entities.
- Run-on words: the concatenation of several words, such as "[illegible]".

CLASSIFIED

Effect of Normalization Categories on Parsing

But I annotated lexnorm2015 with categories, and Owoputi and Lexnorm with UD...

Effect of Normalization Categories on Parsing

But I annotated lexnorm2015 with categories, and Owoputi and Lexnorm with UD...

So I added category annotation to Owoputi treebank

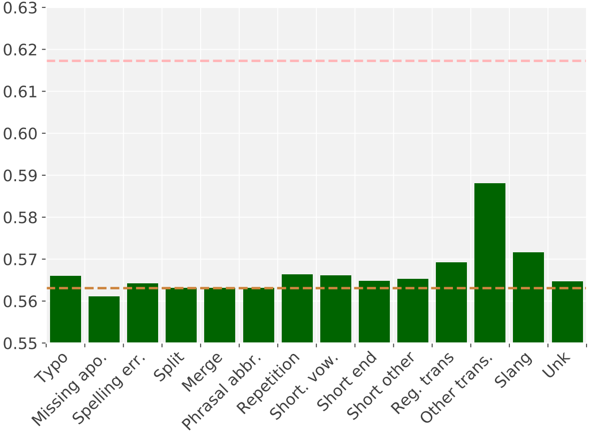
Effect of Normalization Categories on Parsing

Setup:

- UUParser 2.0
- Use gold normalization only for specific categories:
  - in isolation
  - ablation

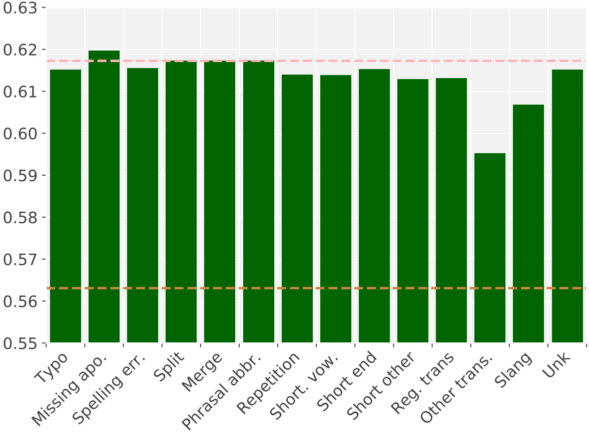
Effect of Normalization Categories on Parsing

Results: (isolation)



Effect of Normalization Categories on Parsing

Results: (ablation)



Effect of Normalization Categories on Parsing

Next:

- Use automatic normalization
- Test for other tasks?
- ...

Outline

Master theses

- Distant supervision for normalization (* 2)
- Automatic prediction of taxonomy categories
- The effect of lexical normalization on POS tagging for Dutch

Master theses

Distant supervision for normalization:

- Ian Matroos: 14:45
- Kelly Dekker: +Human evaluation

Master theses

Automatic prediction of taxonomy categories (Wessel Reijngoud):

- in corpus
- cross-corpus
- cross-language

Master theses

Why?

- Compare corpora (languages?)
- Evaluate normalization models in more detail for multiple languages

Master theses

The effect of lexical normalization on POS tagging for Dutch (youri schuur):

- van der Goot et al. (2017). English. BiLSTM with pre-trained embeds: small gain
- Schulz et al. (2016). Dutch. Treetagger: huge gain

Master theses

The effect of lexical normalization on POS tagging for Dutch (youri schuur):

- van der Goot et al. (2017). English. BiLSTM with pre-trained embeds: small gain
- Schulz et al. (2016). Dutch. Treetagger: huge gain
- Is this an effect of language? or setup?

Master theses

Additional benefits:

- First work to annotate tokenization and normalization as separate layer
- Correct capitalization
- Publicly available evaluation set for Dutch UGC normalization and POS tagging
- Improve MoNoise for Dutch
- Can be used for all the other master theses

Master theses

Thanks, Questions? (you may leave the easy ones for tomorrow)