Using MT-ComparEval

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What is MT-ComparEval?

- web-based tool for MT developers, who can
- check progress of a system over time
  or compare several MT systems
- focus on analyzing system differences
- integrate MT-ComparEval into their workflow
  (import translations: disk/git/REST-API)

Try it now!

- **http://wmt.ufal.cz**

  all WMT 2014–2016 systems

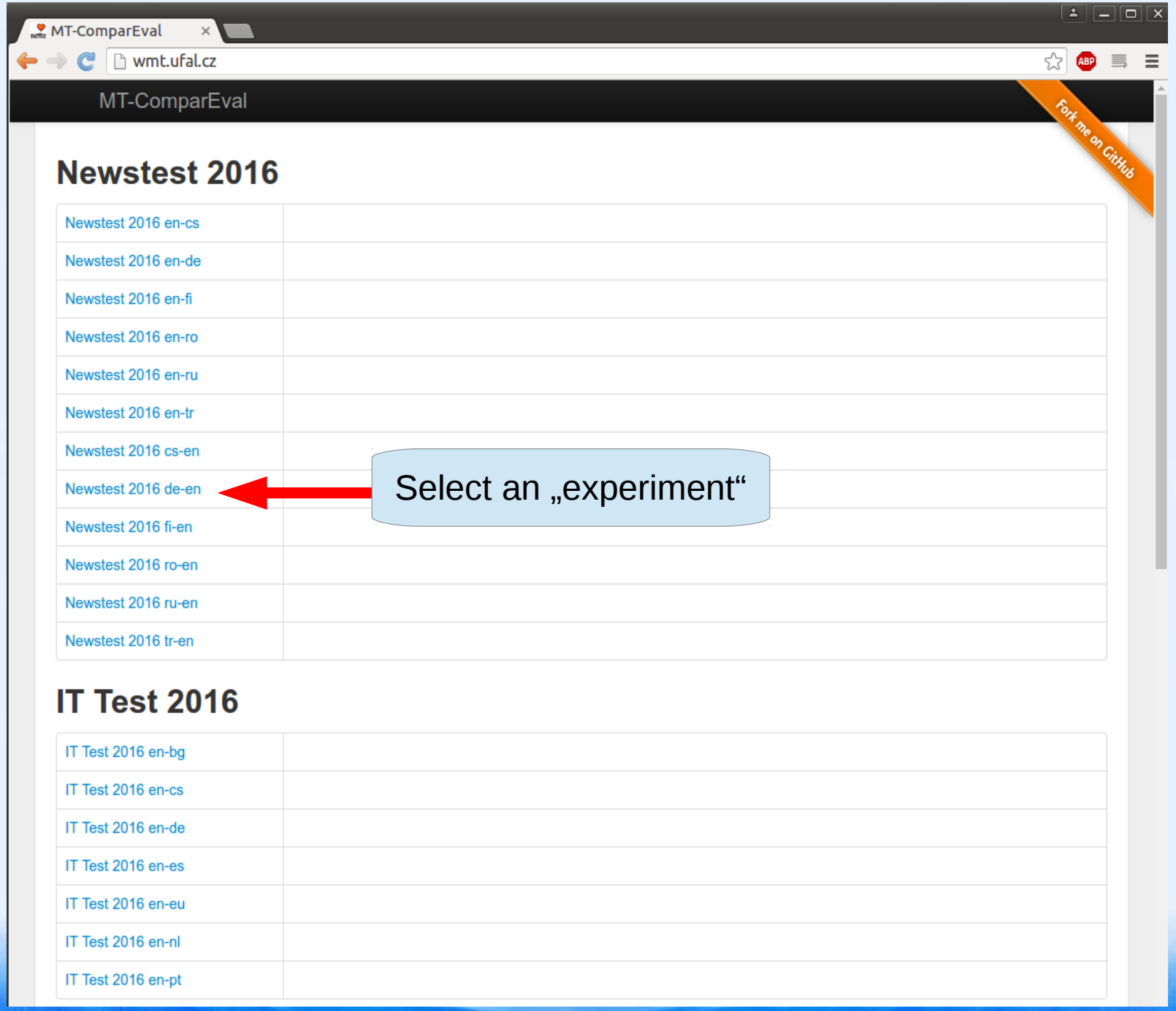
- **http://mt-compareval.ufal.cz**

  upload and inspect your translations

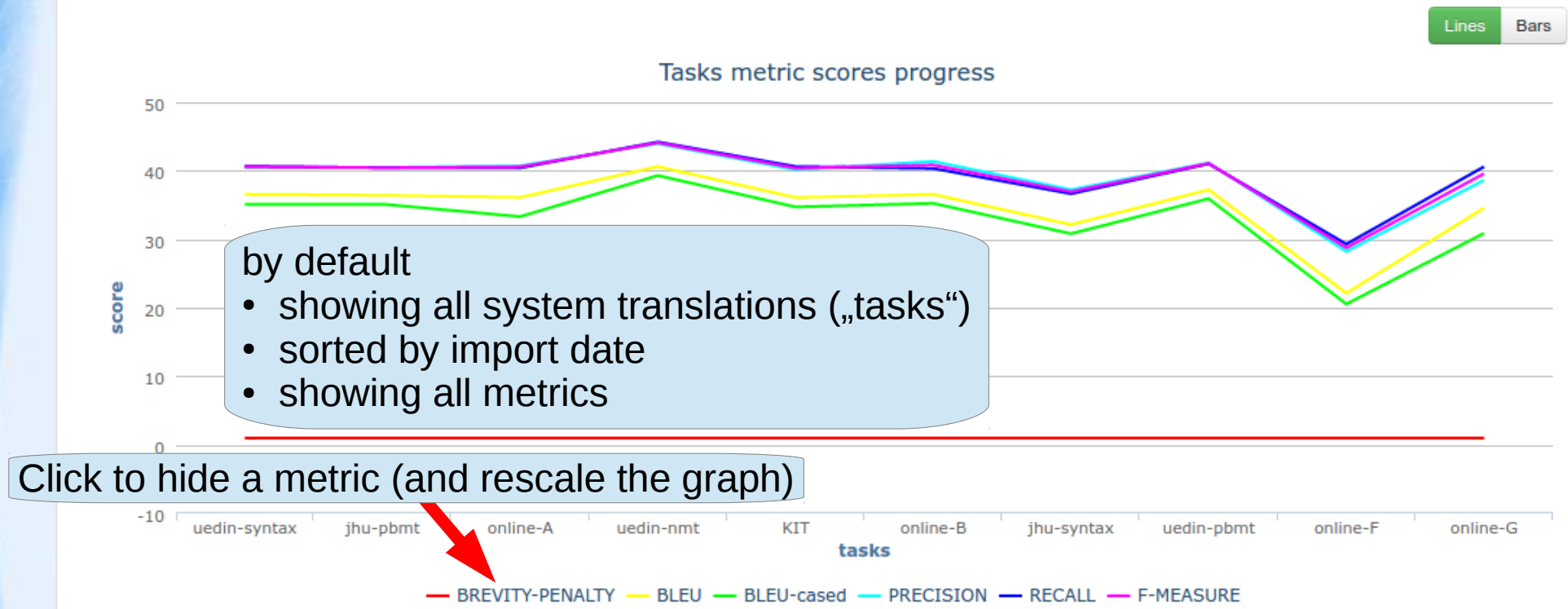
- **https://github.com/choko/MT-ComparEval**

  install it (and report issues or contribute)

wmt.ufal.cz


MT-ComparEval
wmt.ufal.cz
MT-ComparEval
Fork me on GitHub
Newstest 2016
Newstest 2016 en-cs
Newstest 2016 en-de
Newstest 2016 en-fi
Newstest 2016 en-ro
Newstest 2016 en-ru
Newstest 2016 en-tr
Newstest 2016 cs-en
Newstest 2016 de-en
Newstest 2016 fi-en
Newstest 2016 ro-en
Newstest 2016 ru-en
Newstest 2016 tr-en
Select an „experiment“
IT Test 2016
IT Test 2016 en-bg
IT Test 2016 en-cs
IT Test 2016 en-de
IT Test 2016 en-es
IT Test 2016 en-eu
IT Test 2016 en-nl
IT Test 2016 en-pt

Newstest 2016 de-en



by default
- showing all system translations („tasks“)
- sorted by import date
- showing all metrics

Click to hide a metric (and rescale the graph)

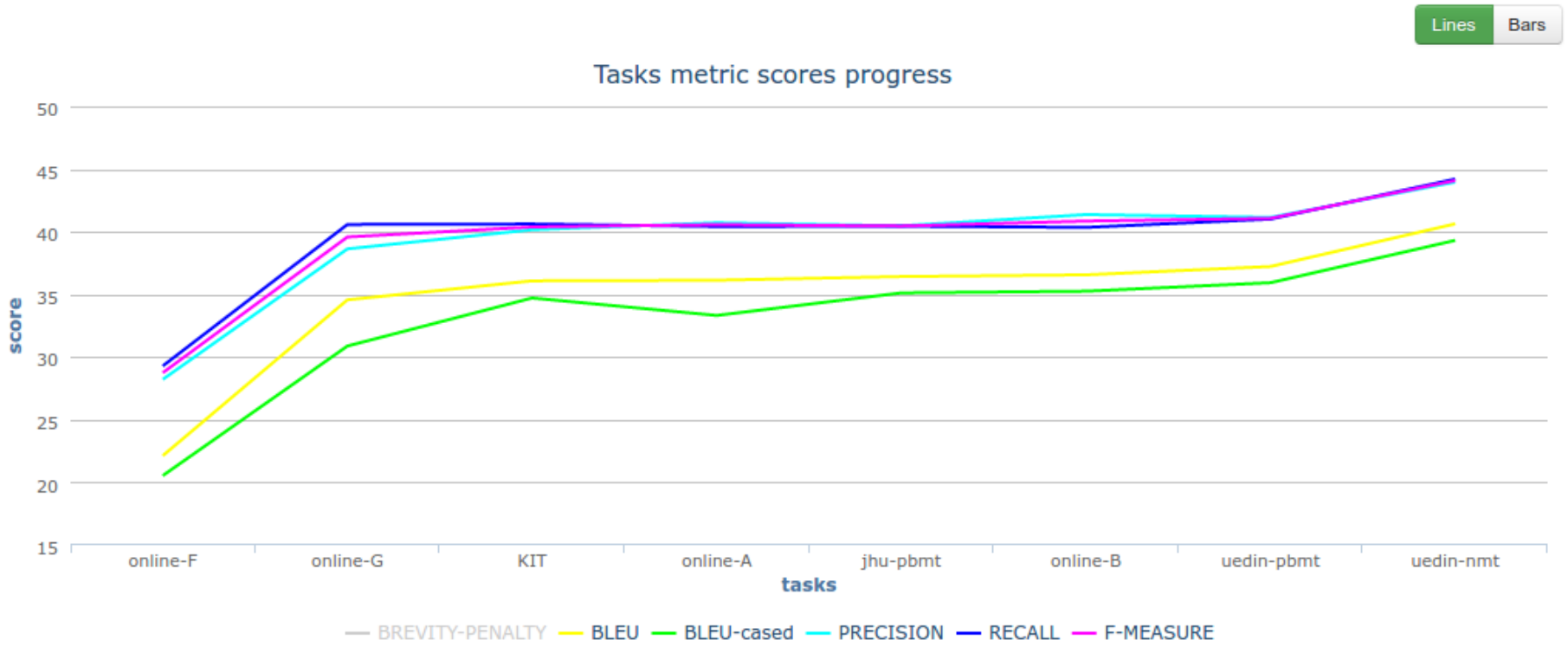
compare

Click to sort by BLEU

Click to hide a system

name	description	BREVITY-PENALTY	BLEU	BLEU-cased	PRECISION	RECALL	F-MEASURE	
uedin-syntax		1	36.57	35.09	40.53	40.67	40.6	hide
jhu-pbmt		1	36.43	35.13	40.47	40.45	40.46	hide
online-A		0.99	36.13	33.32	40.72	40.42	40.57	hide
uedin-nmt		1	40.63	39.32	43.96	44.21	44.08	hide
KIT		1	36.09	34.72	40.16	40.62	40.39	hide
online-B		0.98	36.57	35.26	41.37	40.35	40.85	hide

Newstest 2016 de-en



compare

name	description	BLEU ↑	BLEU-cased	PRECISION	RECALL	F-MEASURE	
online-F	1	22.13	20.55	28.22	29.29	28.75	hide
online-G	1	34.57	30.89	38.64	40.59	39.59	hide
KIT	1	36.09	34.72	40.16	40.62	40.39	hide
online-A	0.99	36.13	33.32	40.72	40.42	40.57	hide
jhu-pbmt	1	36.43	35.13	40.47	40.45	40.46	hide
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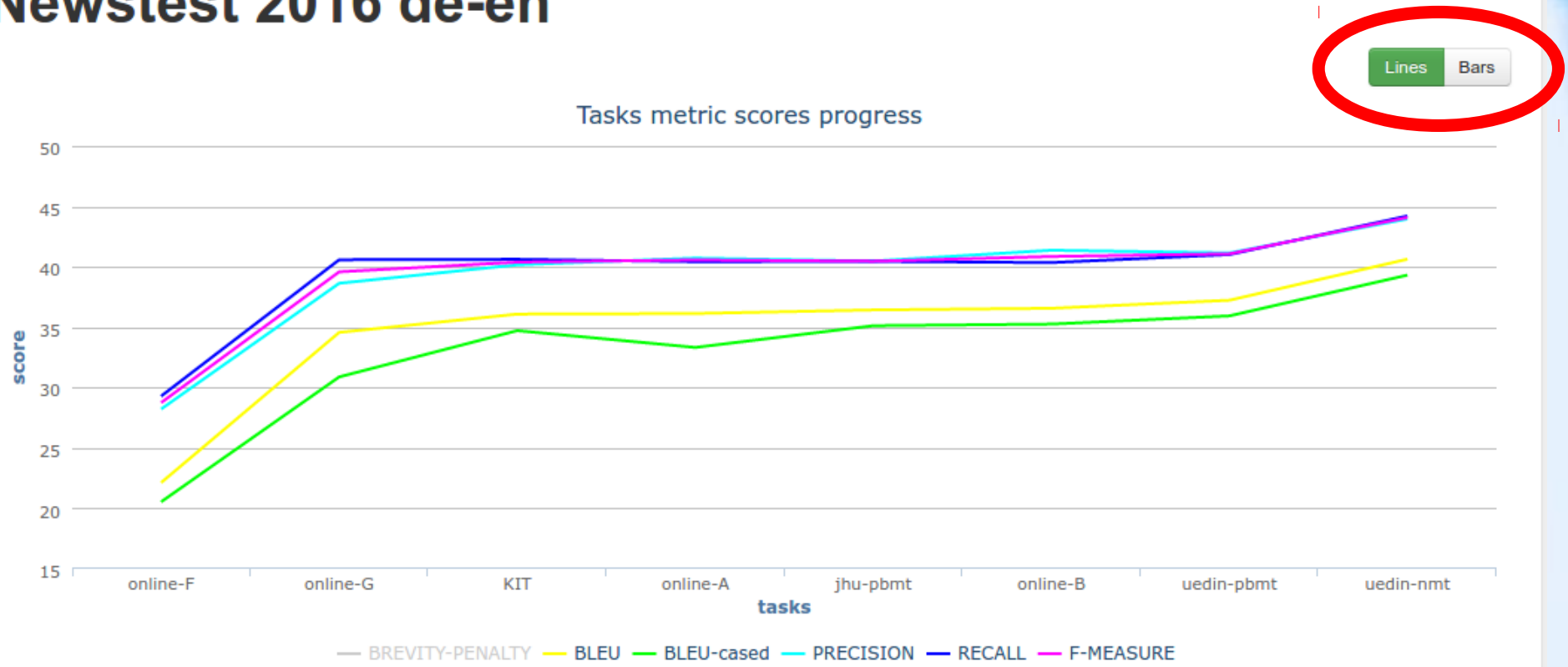
uedin-pbmt	1	37.23	35.94	41.15	41.02	41.08	hide

Newstest 2016 de-en



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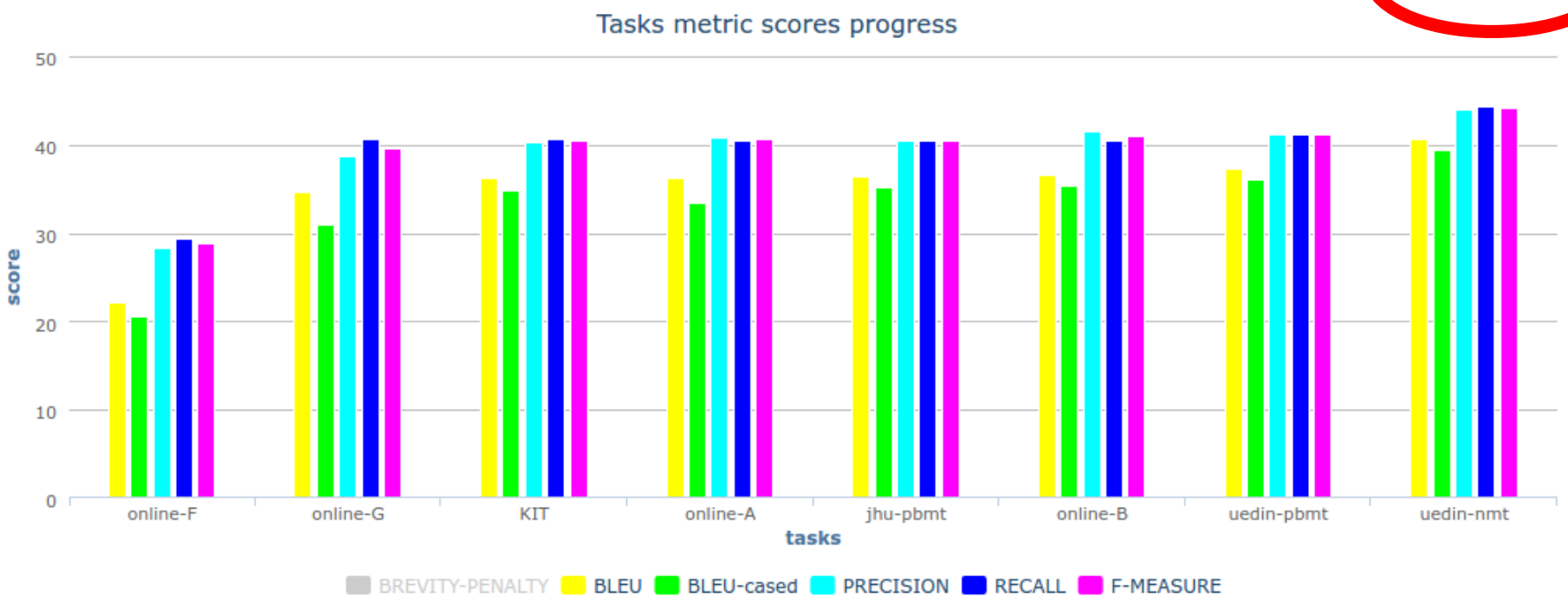
jhu-pbmt	1	36.43	35.13	40.47	40.45	40.46	hide
online-B	0.98	36.57	35.26	41.37	40.35	40.85	hide
uedin-pbmt	1	37.23	35.94	41.15	41.02	41.08	hide

Newstest 2016 de-en

Lines Bars



compare

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online-G	1	34.57	30.89	38.64	40.59	39.59	hide
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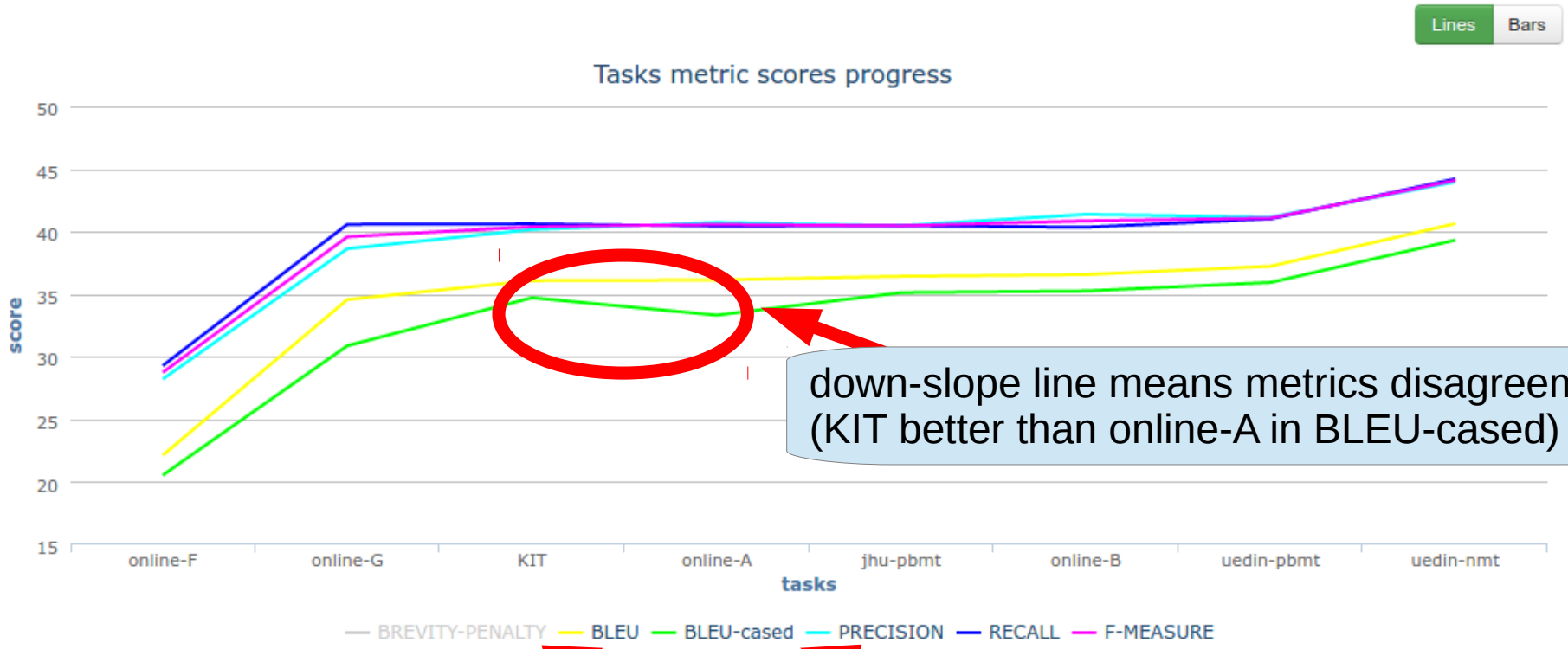
online-A	0.99	36.13	33.32	40.72	40.42	40.57	hide
jhu-pbmt	1	36.43	35.13	40.47	40.45	40.46	hide
online-B	0.98	36.57	35.26	41.37	40.35	40.85	hide
uedin-pbmt	1	37.23	35.94	41.15	41.02	41.08	hide

MT-CompareEval

Newstest 2016 de-en



down-slope line means metrics disagreement (KIT better than online-A in BLEU-cased)

BLEU (case insensitive) vs. BLEU-cased

compare

name	description	BLEU ↑	BLEU-cased	PRECISION	RECALL	F-MEASURE	
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online-B	0.98	36.57	35.26	41.37	40.35	40.85	hide
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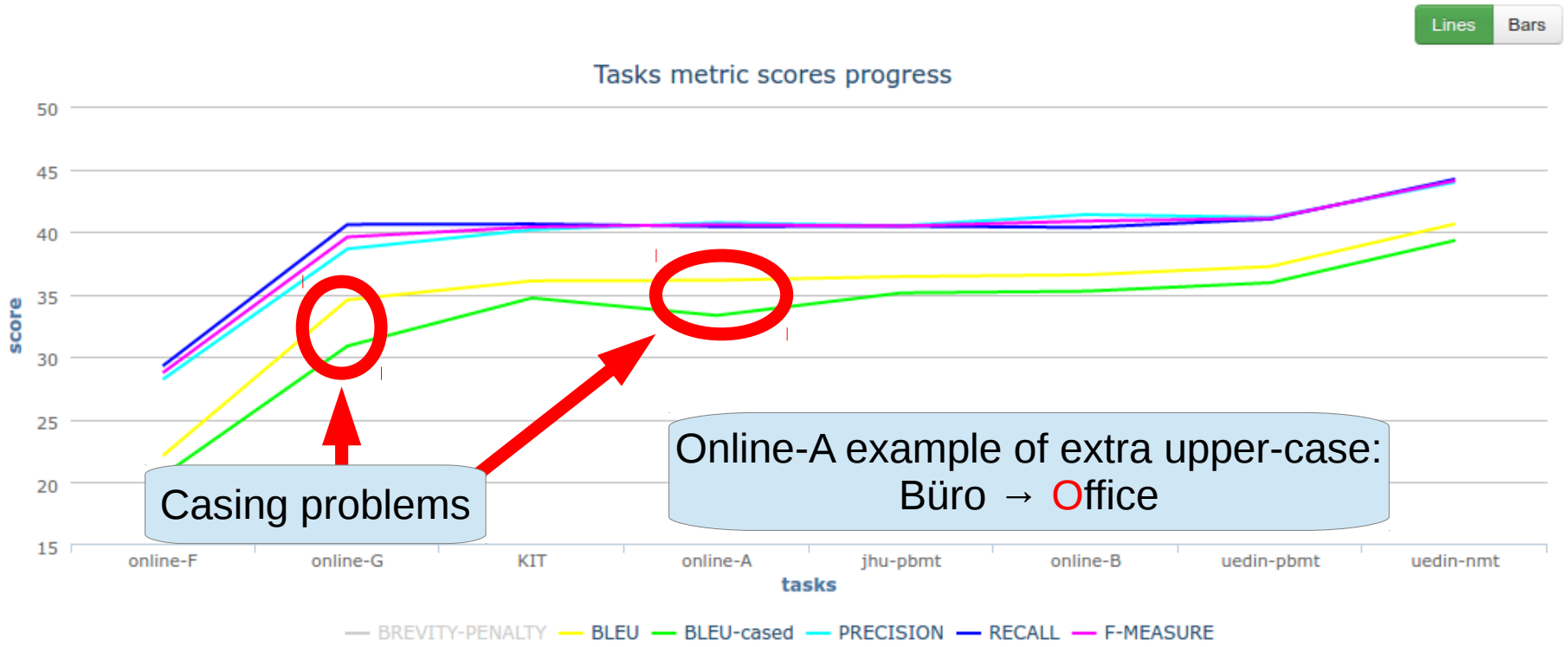
Newstest 2016 de-en



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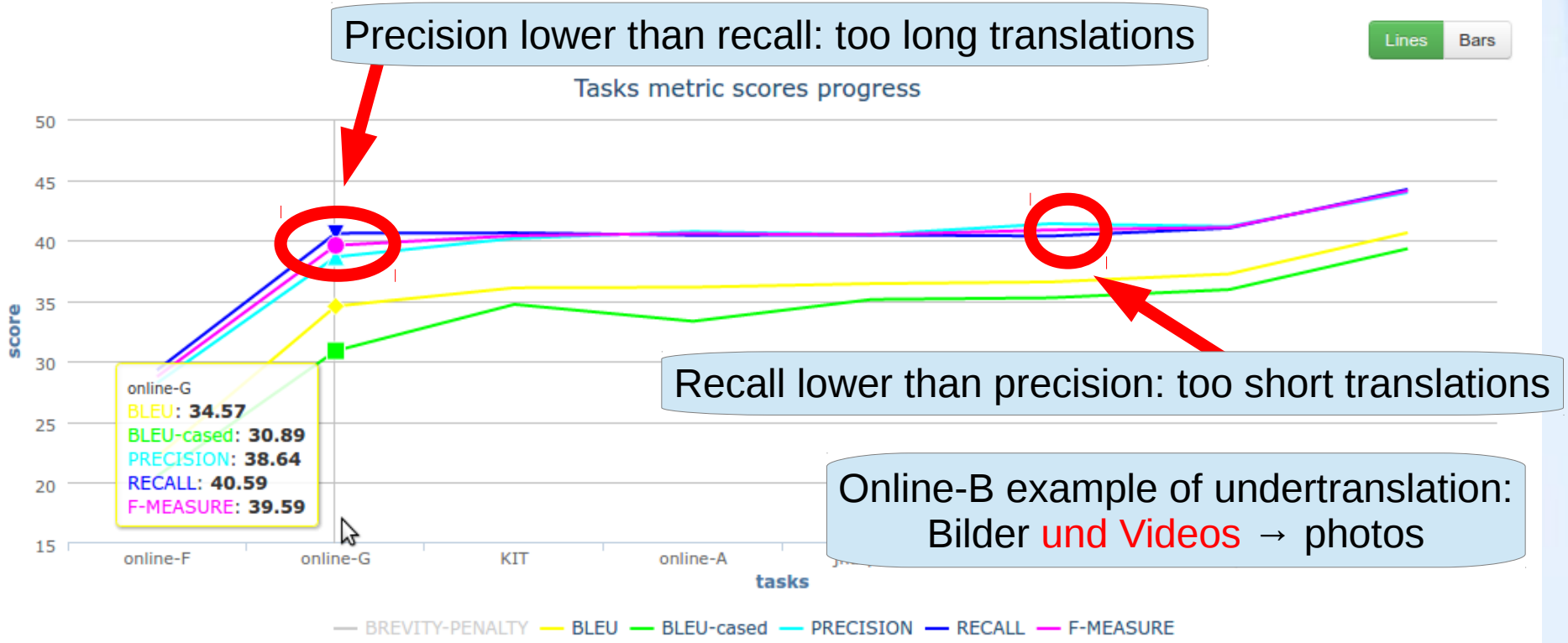
uedin-pbmt	1	37.23	35.94	41.15	41.02	41.08	hide

MT-CompareEval

Newstest 2016 de-en

Precision lower than recall: too long translations



Recall lower than precision: too short translations

Online-B example of undertranslation:
Bilder und Videos → photos

compare

name	description	BLEU ↑	BLEU-cased	PRECISION	RECALL	F-MEASURE	
online-F	1	22.13	20.55	28.22	29.29	28.75	hide
online-G	1	34.57	30.89	38.64	40.59	39.59	hide
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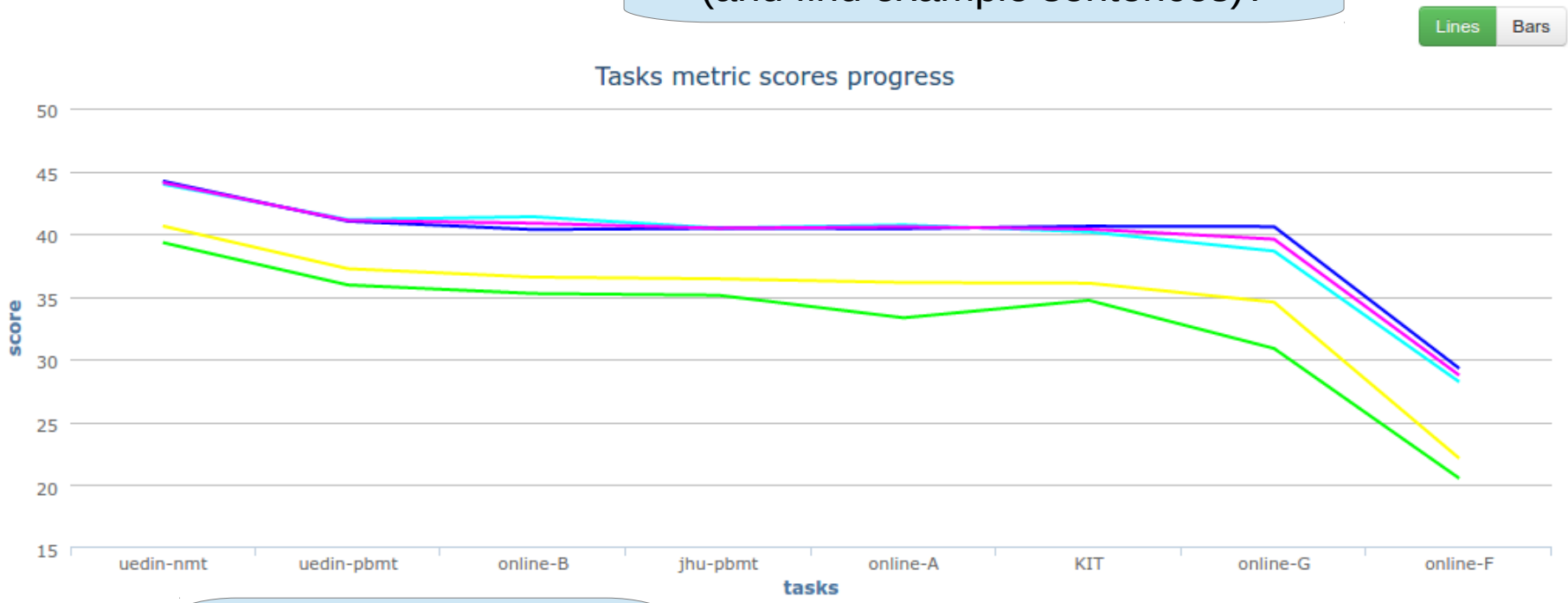
online-B	0.98	36.57	35.26	41.37	40.35	40.85	hide
uedin-pbmt	1	37.23	35.94	41.15	41.02	41.08	hide

Newstest 2016 de-en

How to see the differences
(and find example sentences)?



Select the two systems
and click “compare“.

compare

name	description	BLEU ↓	BLEU-cased	PRECISION	RECALL	F-MEASURE	
uedin-nmt	1	40.63	39.32	43.96	44.21	44.08	hide
uedin-pbmt	1	37.23	35.94	41.15	41.02	41.08	hide
online-B	0.98	36.57	35.26	41.37	40.35	40.85	hide
jhu-pbmt	1	36.43	35.13	40.47	40.45	40.46	hide
online-A	0.99	36.13	33.32	40.72	40.42	40.57	hide
KIT	1	36.09	34.72	40.16	40.62	40.39	hide
online-G	1	34.57	30.89	38.64	40.59	39.59	hide

MT-ComparEval Newstest 2016 de-en

online-B | jhu-pbmt | BLEU

Sentences | Statistics | Confirmed n-grams | Unconfirmed n-grams

You can quickly compare with another system

Sentences

Options

N-grams higlighting options

- [x] Highlight confirmed n-grams
- [x] Highlight improving n-grams
- [x] Highlight worsening n-grams

Diff higlighting options

- [ ] Show diff with reference
- (•) Show diff for online-B
- ( ) Show diff for jhu-pbmt
- [ ] Show diff with each other

Sentences visibility options

- [x] Show source
- [x] Show reference
- [x] Show online-B
- [x] Show jhu-pbmt
- [x] Show sentence level metrics

Source	Konkrete Zahlen nannte sie nicht und verwies auf Gespräche am Mittwoch in Berlin .
Reference	She gave no specific figures and referred to talks in Berlin on Wednesday .
online-B	Concrete numbers they did not name , citing talks on Wednesday in Berlin .
jhu-pbmt	She gave no specific figures and referred to talks in Berlin on Wednesday .

	BREVITY-PENALTY	BLEU	BLEU-cased	PRECISION	RECALL	F-MEASURE
online-B	1	8.89	8.89	14.56	14.56	14.56
jhu-pbmt	1	100	100	100	100	100
Diff	0.0000	-91.1100	-91.1100	-85.4400	-85.4400	-85.4400

Source	Das Quartiersbüro ist geöffnet Montag , Mittwoch und Freitag von 9 bis 14 Uhr , Dienstag und Donnerstag von 16 bis 18 Uhr und samstags von 10 Uhr bis 12 Uhr .

MT-ComparEval Newstest 2016 de-en

online-B | jhu-pbmt | BLEU

Sentences | Statistics | Confirmed n-grams | Unconfirmed n-grams

4 panes

the selected metric

Sentences

Options

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- [x] Highlight confirmed n-grams
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- [x] Highlight worsening n-grams

Diff higlighting options

- [ ] Show diff with reference
- (•) Show diff for online-B
- ( ) Show diff for jhu-pbmt

Sentences visibility options

- [x] Show source
- [x] Show reference
- [x] Show online-B

Sentences sorted according to the difference in the selected metric.
Top: sentences where JHU-PBMT outperforms Online-B the most.
Very useful also for regression testing (new version vs. baseline).

Reverse ordering
Top: OnlineB wins

Source	Konkrete Zahlen nannte sie nicht und verwies auf Gespräche am Mittwoch in Berlin .
Reference	She gave no specific figures and referred to talks in Berlin on Wednesday .
online-B	Concrete numbers they did not name , citing talks on Wednesday in Berlin .
jhu-pbmt	She gave no specific figures and referred to talks in Berlin on Wednesday .

	BREVITY-PENALTY	BLEU	BLEU-cased	PRECISION	RECALL	F-MEASURE
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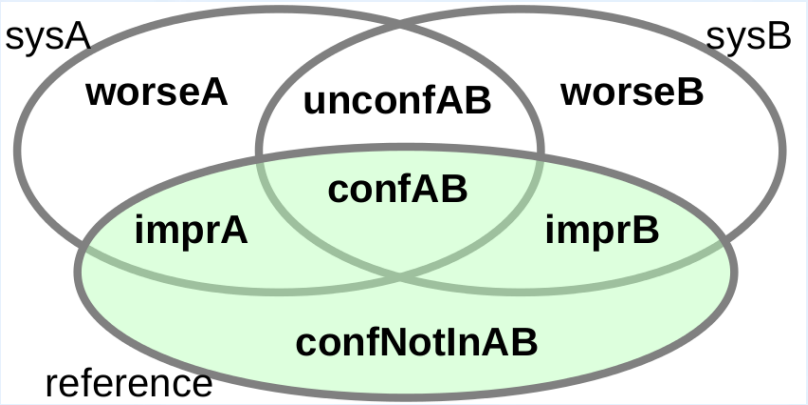
jhu-pbmt	1	100	100	100	100	100
Diff	0.0000	-91.1100	-91.1100	-85.4400	-85.4400	-85.4400

Source	Das Quartiersbüro ist geöffnet Montag , Mittwoch und Freitag von 9 bis 14 Uhr , Dienstag und Donnerstag von 16 bis 18 Uhr und samstags von 10 Uhr bis 12 Uhr .

Color highlighting

Source	Wie hoch sind die Kosten ?
Reference	What are the costs ?
online-B	How high are the costs ?
jhu-pbmt	What are the costs ?



- **confirmed n-gram** = occurres in the reference (light yellow and blue highlight)
- **improving n-gram** = confirmed n-gram occurring in only one of the systems (dark yellow and blue highlight)
- **worsening n-gram** = unconfirmed, occuring in only one of the systems (red highlighting)
- **diff** (LCS underlined in green)

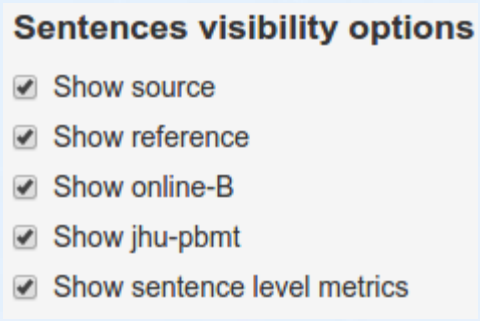
Sentence pane tricks

Source	Sie schicken uns Ihre Bilder und Videos oder eine SMS an 61124.
online-B	Send us your photos or SMS to 61124th
jhu-pbmt	Send us your pictures and videos , or an SMS to 61124.

Source	Fischer ist Spezialist für Herzschrittmacher und Defibrillatoren .
online-B	Fischer is a specialist for pacemakers and defibrillators .
jhu-pbmt	Fischer is a specialist in cardiac pacemakers and defibrillators .

Source	Konrad wollte einen Container am Stephansplatz als Büro aufstellen .
online-B	Konrad wanted to set up a container at Stephansplatz offices .
jhu-pbmt	Konrad wanted to set up a container on Stephansplatz as an office .

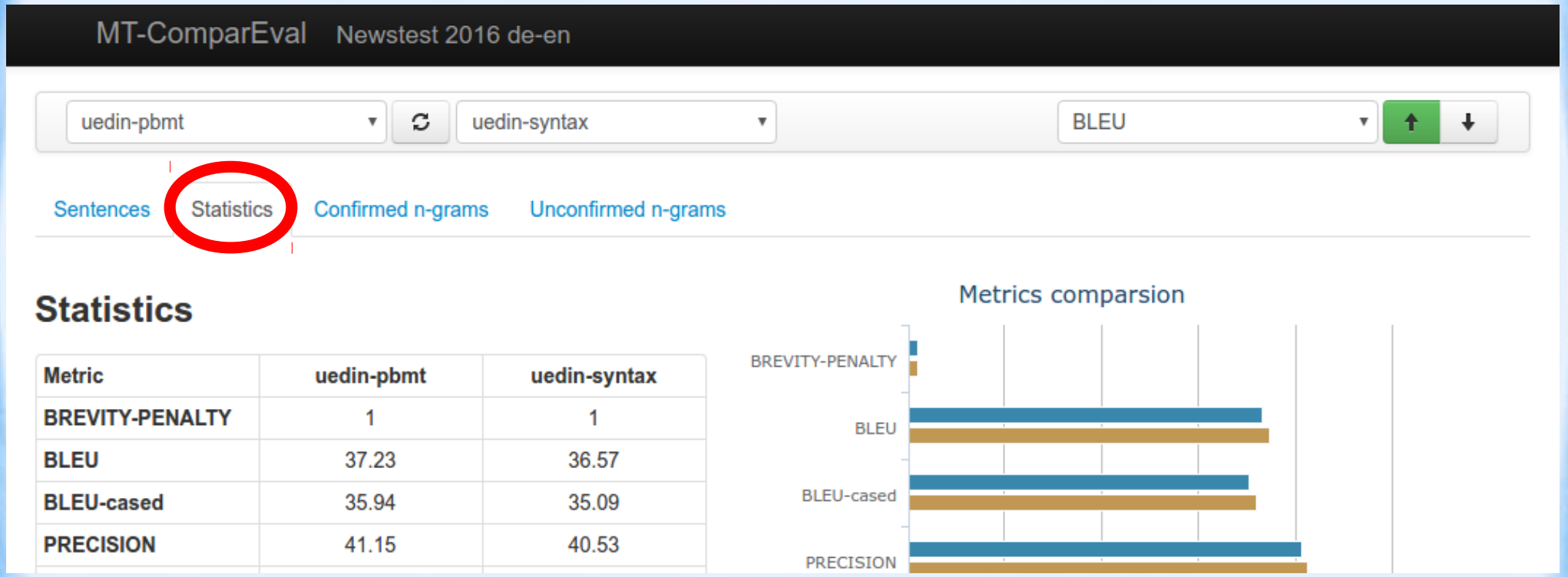
Source	Wie hoch sind die Kosten ?
online-B	How high are the costs ?
jhu-pbmt	What are the costs ?



Looking for nice example sentences?

- Look for short sentences (for slides).
- Search for blue-highlighted content words with no equivalent in the other system's translation.
- Or use Hjerson-omissions metric (off by default).
- Show just the reference and search for blue.
- More sentences are loaded as you scroll down.

Statistics pane



Metric	uedin-pbmt	uedin-syntax
BREVITY-PENALTY	1	1
BLEU	37.23	36.57
BLEU-cased	35.94	35.09
PRECISION	41.15	40.53

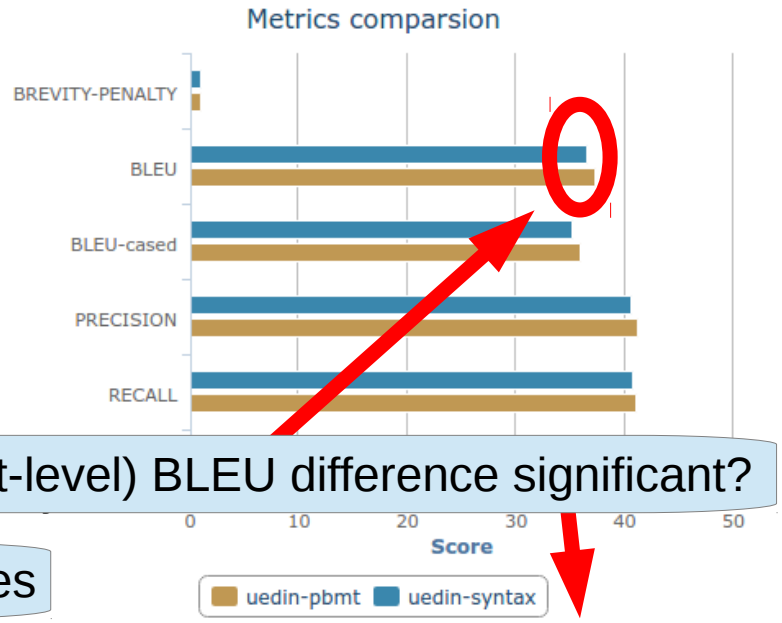
MT-ComparEval Newstest 2016 de-en

uedin-pbmt | uedin-syntax | BLEU

Sentences | Statistics | Confirmed n-grams | Unconfirmed n-grams

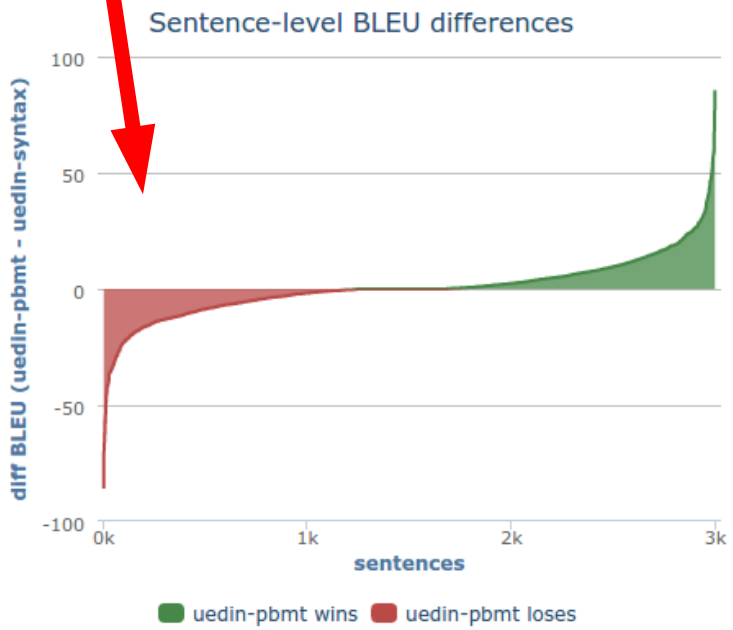
Statistics

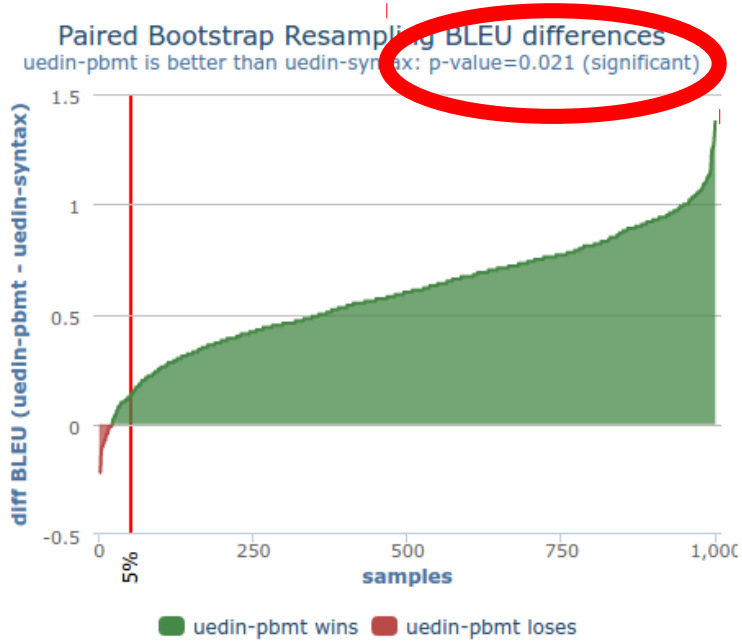
Metric	uedin-pbmt	uedin-syntax
BREVITY-PENALTY	1	1
BLEU	37.23	36.57
BLEU-cased	35.94	35.09
PRECISION	41.15	40.53
RECALL	41.02	40.67
F-MEASURE	41.08	40.6



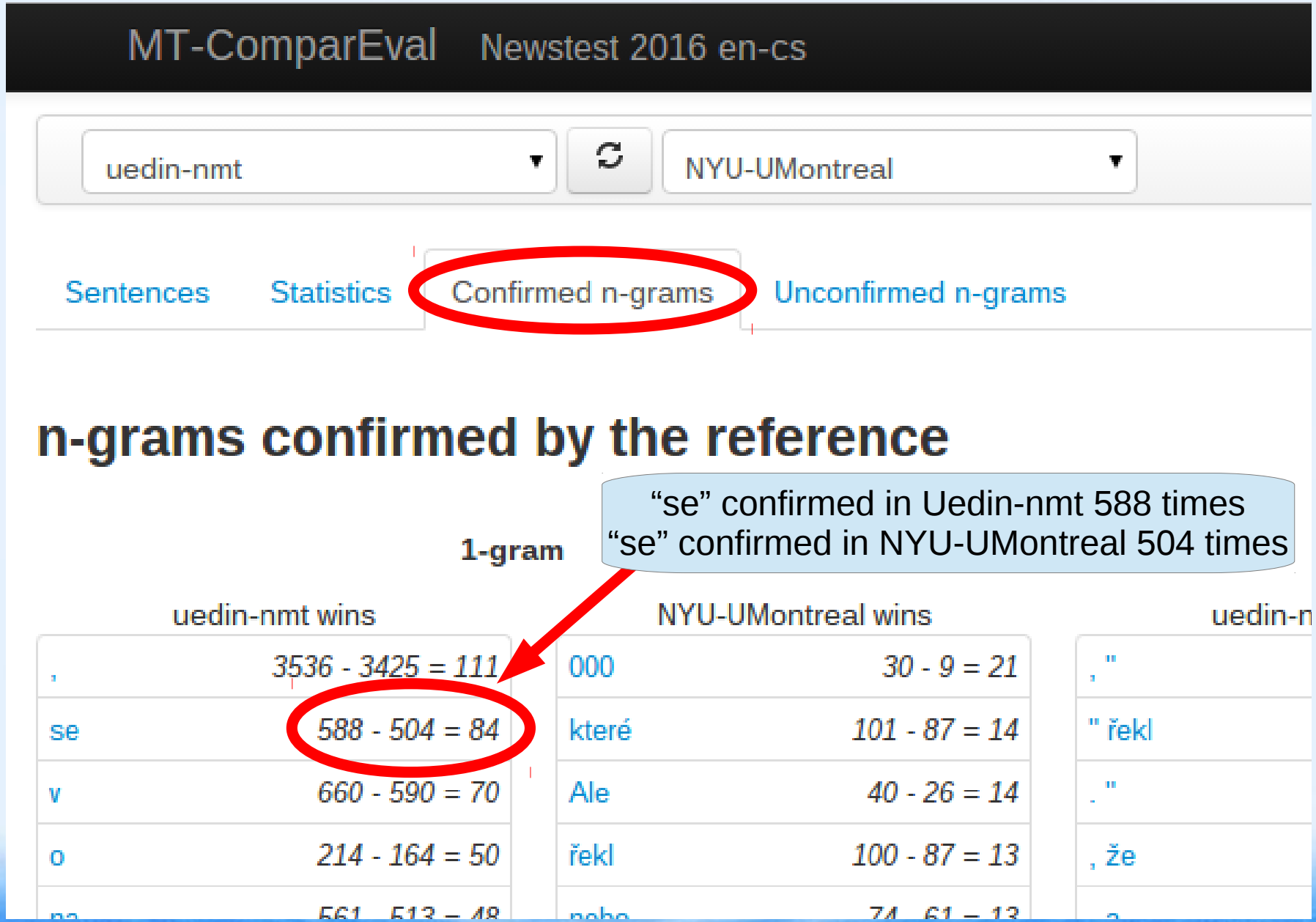
Is the (document-level) BLEU difference significant?

Distribution of sentence-level BLEU differences

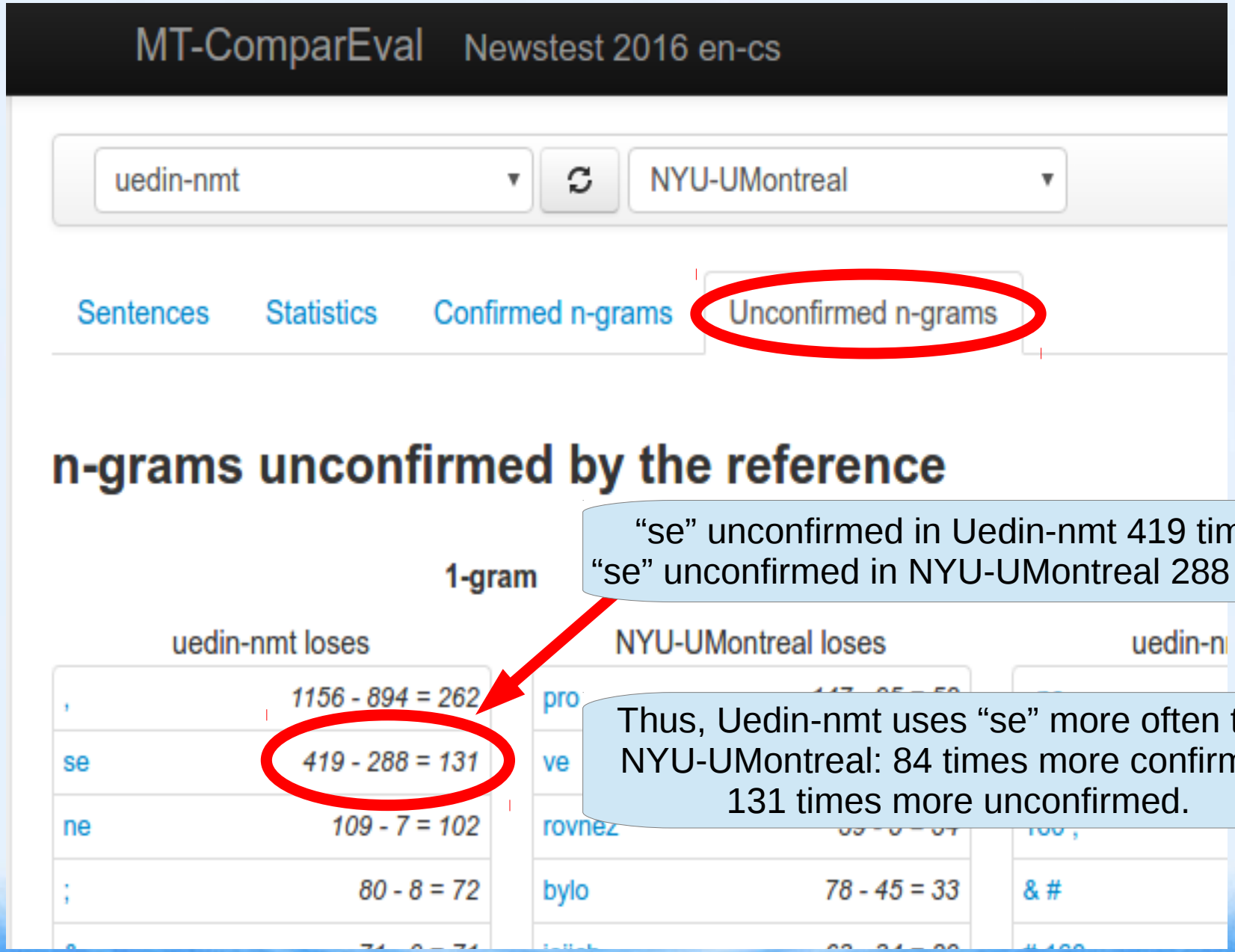




Confirmed n-grams pane



Unconfirmed n-grams pane



MT-ComparEval Newstest 2016 en-cs

uedin-nmt | NYU-UMontreal | BLEU

Sentences | Statistics | Confirmed n-grams | Unconfirmed n-grams

n-grams unconfirmed by the reference

Encoding problems

1-gram

uedin-nmt loses		NYU-UMontreal loses	
,	1156 - 894 = 262	pro	147 - 95 = 52
se	419 - 288 = 131	ve	128 - 91 = 37
ne	109 - 7 = 102	rovněž	39 - 5 = 34
;	80 - 8 = 72	bylo	78 - 45 = 33
&	71 - 0 = 71	jejich	63 - 34 = 29
#	69 - 0 = 69	.	96 - 71 = 25
160	69 - 0 = 69	byla	74 - 51 = 23
o	165 - 98 = 67	být	66 - 43 = 23
v	336 - 284 = 52	řekl	115 - 95 = 20
že	241 - 189 = 52	rok	24 - 4 = 20

2-gram

uedin-nmt loses		NYU-UMontreal loses	
, ne	101 - 2 = 99	" ,	210 - 31 = 179
ne ,	101 - 3 = 98	, řekl	131 - 25 = 106
160 ;	69 - 0 = 69	" .	82 - 48 = 34
& #	69 - 0 = 69	, řekla	20 - 1 = 19
# 160	69 - 0 = 69	, které	91 - 76 = 15
, že	242 - 189 = 53	, protože	22 - 10 = 12
, a	76 - 29 = 47	, říká	23 - 11 = 12
" řekl	42 - 0 = 42	říkal ,	16 - 4 = 12
, který	117 - 95 = 22	říkají ,	15 - 4 = 11
000 &	22 - 0 = 22	předtím ,	12 - 1 = 11

MT-ComparEval Newstest 2016 en-cs

uedin-nmt | NYU-UMontreal | BLEU

Sentences | Statistics | Confirmed n-grams | Unconfirmed n-grams

n-grams unconfirmed by the reference

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2-gram

uedin-nmt loses		NYU-UMontreal loses	
, ne	101 - 2 = 99	" ,	210 - 31 = 179
ne ,	101 - 3 = 98	, řekl	131 - 25 = 106
160 ;	69 - 0 = 69	" .	82 - 48 = 34
& #			20 - 1 = 19
# 160			91 - 76 = 15
, že			22 - 10 = 12
, a	76 - 29 = 47	, říká	23 - 11 = 12
" řekl	42 - 0 = 42	říkal ,	16 - 4 = 12
, který	117 - 95 = 22	říkají ,	15 - 4 = 11
000 &	22 - 0 = 22	předtím ,	12 - 1 = 11

98 vs. 0
What is this?
Let's click on the ngram.

3-gram

uedin-nmt loses		NYU-UMontreal loses	
, ne ,	100 - 1 = 99	" , řekl	100 - 1 = 99
ne , ne	98 - 0 = 98	" , řekla	13 - 0 = 13
& # 160	69 - 0 = 69	říkal , že	16 - 4 = 12
# 160 ;	69 - 0 = 69	říkají , že	14 - 3 = 11
, " řekl	42 - 0 = 42	v České republice	12 - 1 = 11
000 & #	22 - 0 = 22	" , říká	11 - 0 = 11
, že se	49 - 28 = 21	říkala , že	12 - 2 = 10
, a to	25 - 4 = 21	, která byla	13 - 4 = 9
; 000 &	21 - 0 = 21	" , prohlásil	9 - 0 = 9
160 ; 000	21 - 0 = 21	říká , že	22 - 14 = 8

4-gram

uedin-nmt loses		NYU-UMontreal loses	
, ne , ne	98 - 0 = 98	" , řekl .	7 - 0 = 7
ne , ne ,	98 - 0 = 98	, že je to	18 - 14 = 4
& # 160 ;	69 - 0 = 69	, řekl Navrátil .	4 - 0 = 4
000 & # 160	22 - 0 = 22	" , řekl Wenger	4 - 0 = 4
; 000 & #	21 - 0 = 21	, řekl Wenger .	4 - 0 = 4
# 160 ; 000	21 - 0 = 21	" , řekl Navrátil	4 - 0 = 4
160 ; 000 &	21 - 0 = 21	, že to byla	4 - 0 = 4
; & # 160	18 - 0 = 18	v Československé armády by	4 - 0 = 4
# 160 ; &	18 - 0 = 18	" , řekla .	4 - 0 = 4
160 ; & #	18 - 0 = 18		

We see the Sentence pane with a filter for sentences containing n-gram “ne, ne,” which is unconfirmed only in Uedin-nmt (ie. worsening).

You are displaying sentences with worsening n-gram **, ne , ne**. Show all senteces

Source	A two - out walk to right fielder J . D . Martinez brought up Victor Martinez , who singled up the middle for the first run of the game .
Reference	Dva odchody pro pravého polaře J . D . Martineze vynesly Victora Martineze , který jako první oběhl všechny mety .
uedin-nmt	Ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne , ne ,
NYU-UMontreal	Martinez vychoval Victora Martineze , který zpíval uprostřed prvního běhu hry .

There is just one such translation. It contains 100 tokens “ne” (no).

Uedin-nmt is the overall winner of WMT16 (including en→cs).

Apparently, there are still ways how to improve it.