Package 'sacRebleu'

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Type Package

Title Metrics for Assessing the Quality of Generated Text

Version 0.2.0

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Description Implementation of the BLEU-Score in 'C++' to evaluate the quality of generated text. The BLEU-Score, introduced by Papineni et al. (2002) <doi:10.3115/1073083.1073135>, is a metric for evaluating the quality of generated text. It is based on the n-gram overlap between the generated text and reference texts. Additionally, the package provides some smoothing methods as described in Chen and Cherry (2014) <doi:10.3115/v1/W14-3346>.

License GPL (>= 2)

SystemRequirements libclang/llvm-config

Depends R (>= 4.2.0)

Imports checkmate, Rcpp (>= 1.0.12)

LinkingTo Rcpp

URL https://github.com/LazerLambda/sacRebleu

BugReports https://github.com/LazerLambda/sacRebleu/issues

Suggests knitr, rmarkdown, testthat (>= 3.0.0), vctrs, withr

Config/testthat/edition 3

RoxygenNote 7.3.2

VignetteBuilder knitr

Encoding UTF-8

Language en-US

Config/rextendr/version 0.3.1

NeedsCompilation yes

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`bleu_corpus_ids` *Computes BLEU score (Papineni et al., 2002).*

Description

'bleu_sentence_ids' computes the BLEU score for a corpus and its respective reference sentences. The sentences must be tokenized before so they are represented as integer vectors. Akin to 'sacrebleu' ('Python'), the function allows the application of different smoothing methods. Epsilon- and add-k-smoothing are available. Epsilon-smoothing is equivalent to 'floor' smoothing in the sacreBLEU implementation. The different smoothing techniques are described in Chen et al., 2014 (https://aclanthology.org/W14-3346/).

Usage

```
bleu_corpus_ids(
  references,
  candidates,
  n = 4,
  weights = NULL,
  smoothing = NULL,
  epsilon = 0.1,
  k = 1
)
```

Arguments

`references`	A list of a list of reference sentences (‘list(list(c(1,2,...)), list(c(3,5,...)))‘).
`candidates`	A list of candidate sentences (‘list(c(1,2,...), c(3,5,...))‘).
`n`	N-gram for BLEU score (default is set to 4).
`weights`	Weights for the n-grams (default is set to 1/n for each entry).
`smoothing`	Smoothing method for BLEU score (default is set to 'standard', 'floor', 'add-k' available)
`epsilon`	Epsilon value for epsilon-smoothing (default is set to 0.1).
`k`	K value for add-k-smoothing (default is set to 1).

Value

The BLEU score for the candidate sentence.

Examples

```
cand_corpus <- list(c(1,2,3), c(1,2))
ref_corpus <- list(list(c(1,2,3), c(2,3,4)), list(c(1,2,6), c(781, 21, 9), c(7, 3)))
bleu_corpus_ids_standard <- bleu_corpus_ids(ref_corpus, cand_corpus)
bleu_corpus_ids_floor <- bleu_corpus_ids(ref_corpus, cand_corpus, smoothing="floor", epsilon=0.01)
bleu_corpus_ids_add_k <- bleu_corpus_ids(ref_corpus, cand_corpus, smoothing="add-k", k=1)
```

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bleu_sentence_ids *Computes BLEU-Score (Papineni et al., 2002).*

Description

'bleu_sentence_ids' computes the BLEU score for a single candidate sentence and a list of reference sentences. The sentences must be tokenized before so they are represented as integer vectors. Akin to 'sacrebleu' ('Python'), the function allows the application of different smoothing methods. Epsilon- and add-k-smoothing are available. Epsilon-smoothing is equivalent to 'floor' smoothing in the sacrebleu implementation. The different smoothing techniques are described in Chen et al., 2014 (https://aclanthology.org/W14-3346/).

Usage

```
bleu_sentence_ids(
  references,
  candidate,
  n = 4,
  weights = NULL,
  smoothing = NULL,
  epsilon = 0.1,
  k = 1
)
```

Arguments

references	A list of reference sentences.
candidate	A candidate sentence.
n	N-gram for BLEU score (default is set to 4).
weights	Weights for the n-grams (default is set to 1/n for each entry).
smoothing	Smoothing method for BLEU score (default is set to 'standard', 'floor', 'add-k' available)
epsilon	Epsilon value for epsilon-smoothing (default is set to 0.1).
k	K value for add-k-smoothing (default is set to 1).

Value

The BLEU score for the candidate sentence.

Examples

```
ref_corpus <- list(c(1,2,3,4))
cand_corpus <- c(1,2,3,5)
bleu_standard <- bleu_sentence_ids(ref_corpus, cand_corpus)
bleu_floor <- bleu_sentence_ids(ref_corpus, cand_corpus, smoothing="floor", epsilon=0.01)
bleu_add_k <- bleu_sentence_ids(ref_corpus, cand_corpus, smoothing="add-k", k=1)
```

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validate_arguments *Validate Arguments*

Description

Validate Arguments

Usage

```
validate_arguments(weights, smoothing, n)
```

Arguments

weights	Weight vector for 'bleu_corpus_ids' and 'bleu_sentence_ids' functions
smoothing	Smoothing method for 'bleu_corpus_ids' and 'bleu_sentence_ids' functions
n	N-gram for 'bleu_corpus_ids' and 'bleu_sentence_ids' functions

Value

A list with the validated arguments (weights and smoothing)

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validate_references *Validate References*

Description

Validate References

Usage

```
validate_references(references, target)
```

Arguments

references	A list of reference sentences.
target	A vector of target lengths.

Value

A boolean value indicating if the references are valid.

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