

# Package ‘sacRebleu’

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**Type** Package

**Title** Metrics for Assessing the Quality of Generated Text

**Version** 0.2.0

**Date** 2025-01-19

**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](https://doi.org/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](https://doi.org/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

**Author** Philipp Koch [aut, cre]

**Maintainer** Philipp Koch <[PhillKoch@protonmail.com](mailto:PhillKoch@protonmail.com)>

**Repository** CRAN

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bleu_corpus_ids	<i>Computes BLEU score (Papineni et al., 2002).</i>
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### 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 'sacre-bleu' ('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 sacre-BLEU 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).*

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## 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*

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**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*

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**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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