

# Package ‘lightAUC’

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**Type** Package

**Title** Fast AUC Computation

**Version** 0.1.3

**Maintainer** Christos Adam <econp266@econ.soc.uoc.gr>

**Description** Fast calculation of Area Under Curve (AUC) metric of a Receiver Operating Characteristic (ROC) curve, using the algorithm of Fawcett (2006) <[doi:10.1016/j.patrec.2005.10.010](https://doi.org/10.1016/j.patrec.2005.10.010)>. Therefore it is appropriate for large-scale AUC metric calculations.

**License** GPL-3

**Imports** Rcpp (>= 1.0.13), RcppParallel (>= 5.1.9)

**LinkingTo** Rcpp, RcppArmadillo, RcppParallel

**Encoding** UTF-8

**SystemRequirements** GNU make

**Suggests** Rfast, Rfast2, knitr, rmarkdown, testthat (>= 3.0.0)

**VignetteBuilder** knitr, rmarkdown

**Config/testthat/edition** 3

**URL** <https://github.com/cadam00/lightAUC>,  
<https://cadam00.github.io/lightAUC/>

**BugReports** <https://github.com/cadam00/lightAUC/issues>

**NeedsCompilation** yes

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**Repository** CRAN

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`lightAUC`*Fast AUC computation*

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**Description**

Fast and memory efficient AUC computation.

**Usage**

```
lightAUC(probs, actuals, parallel = FALSE, cores = 2)
```

**Arguments**

<code>probs</code>	numeric vector containing probability from the model, where closer to 1 is for the positive class and closer to 0 is for the negative class.
<code>actuals</code>	integer, numeric or logical vector with the actual data, where 1 is for the positive class and 0 for the negative class.
<code>parallel</code>	logical indicating if multithreading should be used. The default is no multithreading ( <code>parallel = FALSE</code> ).
<code>cores</code>	integer indicating the number of threads to be used when <code>parallel = TRUE</code> . The default is <code>cores=2</code> , meaning that 2 cores are used.

**Details**

Binary AUC computation according to Fawcett (2006) [doi:10.1016/j.patrec.2005.10.010](https://doi.org/10.1016/j.patrec.2005.10.010).

**Value**

numeric value representing the AUC metric.

**References**

Fawcett, T. (2006). An introduction to ROC analysis. *Pattern Recognition Letters*, **27**(8), 861–874. [doi:10.1016/j.patrec.2005.10.010](https://doi.org/10.1016/j.patrec.2005.10.010)

**Examples**

```
probs <- c(1, 0.4, 0.8)
actuals <- c(0, 0, 1)
lightAUC(probs, actuals)

probs <- c(1, 0.4, 0.8)
actuals <- c(FALSE, FALSE, TRUE)
lightAUC(probs, actuals)

probs <- c(1, 0.4, 0.8)
actuals <- c(0, 0, 1)
lightAUC(probs, actuals, parallel = TRUE, cores = 2L)
```

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