

# Journal of Statistical Software

MMMMMM YYYY, Volume VV, Issue II.

doi: 10.18637/jss.v000.i00

## rnn: RNN, GRU, and LSTM in native R

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#### Abstract

The abstract of the article. The abstract of the article.

Keywords: Recurrent Neural Network, Gated Recurrent Unit, Long Short-Term Memory, R.

## 1. About package rnn in R

The special JSS style commands related to software and mathematical formulas are written as follows in LyX: R or R for the names of programming languages, **rnn** or **rnn** for software packages, and **some code** or **some code** for code; E for expectations, VAR for variances, COV for covariances, and P for probabilities.

Writing several lines of code:

```
library(rnn)
```

These are all the exported functions:

and now including the non-exported:

```
ls(getNamespace("rnn"), all.names=TRUE)
## [1] ".__NAMESPACE__."
                               ".__S3MethodsTable__." ".packageName"
## [4] "b2i"
                               "backprop_gru"
                                                      "backprop_lstm"
## [7] "backprop_r"
                               "backprop_rnn"
                                                      "bin2int"
## [10] "clean_lstm"
                               "clean_r"
                                                      "clean_rnn"
                                                      "i2b"
## [13] "epoch_annealing"
                               "epoch_print"
## [16] "init_gru"
                               "init_lstm"
                                                      "init_r"
## [19] "init_rnn"
                               "int2bin"
                                                      "loss_L1"
## [22] "predict_gru"
                               "predict_lstm"
                                                      "predict_rnn"
## [25] "predictr"
                               "run.finance_demo"
                                                      "run.rnn_demo"
## [28] "trainr"
                               "update_adagrad"
                                                       "update_r"
## [31] "update_sgd"
```

## 2. Internals

We can show the code of a function as such (note that we can just remove them and add their definitions to the example code):

```
int2bin

## function(integer, length=8) {

## t(sapply(integer, i2b, length=length))

## }

## <environment: namespace:rnn>
```

## Acknowledgments

We gratefully acknowledge support from ...

## A. This is the first appendix section

#### A.1. A subsection

A subsubsection

some text

http://www.jstatsoft.org/

http://www.foastat.org/

Submitted: yyyy-mm-dd

Accepted: yyyy-mm-dd

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