Package 'acss.data'

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Type Package

Title Data Only: Algorithmic Complexity of Short Strings (Computed via Coding Theorem Method)

Version 1.0

Date 2014-04-02

Depends R (>= 2.10)

Description Data only package providing the algorithmic complexity of short strings, computed using the coding theorem method. For a given set of symbols in a string, all possible or a large number of random samples of Turing machines (TM) with a given number of states (e.g., 5) and number of symbols corresponding to the number of symbols in the strings were simulated until they reached a halting state or failed to end. This package contains data on 4.5 million strings from length 1 to 12 simulated on TMs with 2, 4, 5, 6, and 9 symbols. The complexity of the string corresponds to the distribution of the halting states of the TMs.

URL http://complexitycalculator.com/methodology.html

License GPL (>= 2)

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R topics documented:

`acss.data-package` *Data Only: Algorithmic Complexity of Short Strings (Computed via Coding Theorem Method)*

Description

Data only package providing the algorithmic complexity of short strings, computed using the coding theorem method. For a given set of symbols in a string, all possible or a large number of random samples of Turing machines (TM) with a given number of states (e.g., 5) and number of symbols corresponding to the number of symbols in the strings were simulated until they reached a halting state or failed to end. This package contains data on 4.5 million strings from length 1 to 12 simulated on TMs with 2, 4, 5, 6, and 9 symbols. The complexity of the string corresponds to the distribution of the halting states of the TMs.

Details

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Type:	Package
Version:	1.0
Date:	2013-04-02
License: GPL (>= 2)	
URL:	http://complexitycalculator.com/methodology.html

This package *only* contains data. Therefore, this package is not intended to be used directly, but through functions in package **acss**.

Author(s)

The data in this package was created by Fernando Soler Toscano, Nicolas Gauvrit, and Hector Zenil. Data was ported to R by Henrik Singmann.

Maintainer: Henrik Singmann <singmann@gmail.com>

References

Delahaye, J.-P., & Zenil, H. (2012). Numerical evaluation of algorithmic complexity for short strings: A glance into the innermost structure of randomness. *Applied Mathematics and Computation*, 219(1), 63-77. doi:10.1016/j.amc.2011.10.006

Gauvrit, N., Zenil, H., Delahaye, J.-P., & Soler-Toscano, F. (2014). Algorithmic complexity for short binary strings applied to psychology: a primer. *Behavior Research Methods*. doi:10.3758/s13428-013-0416-0

Soler-Toscano, F., Zenil, H., Delahaye, J.-P., & Gauvrit, N. (2012). *Calculating Kolmogorov Complexity from the Output Frequency Distributions of Small Turing Machines*. arXiv:1211.1302 [cs.it].

See Also

package **acss** for functions accessing this data.

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acss_data *acss_data: algorithmic complexity of short strings*

Description

Contains the algorithmic complexity for short string, an approximation of the Kolmogorov Complexity of a short string using the coding theorem method. For a given set of symbols in a string, all possible or a large number of random samples of Turing machines (TM) with a given number of states and number of symbols corresponding to the number of symbols in the strings were simulated until they reached a halting state or failed to end. The complexity of the string corresponds to the distribution of the halting states of the TMs.

See http://complexitycalculator.com/methodology.html for more information or references below.

This dataset shouldn't be called directly but rather through the accessor functions in package **acss**.

Usage

```
acss_data
```

Format

A data frame with 4590267 observations on the following 5 variables.

- `K.2` acss with 2 symbols, computed on all possible Turing machines (TM) with 5 states and 2 symbols.
- `K.4` acss with 4 symbols, computed on a large number of TMs with 4 states and 4 symbols.
- `K.5` acss with 5 symbols, computed on a large number of TMs with 4 states and 5 symbols.
- `K.6` acss with 6 symbols, computed on a large number of TMs with 4 states and 6 symbols.
- `K.9` acss with 9 symbols, computed on a large number of TMs with 4 states and 9 symbols.

Author(s)

Fernando Soler Toscano, Nicolas Gauvrit, and Hector Zenil.
Ported to R by Henrik Singmann.

Source

http://complexitycalculator.com/methodology.html

References

Delahaye, J.-P., & Zenil, H. (2012). Numerical evaluation of algorithmic complexity for short strings: A glance into the innermost structure of randomness. *Applied Mathematics and Computation*, 219(1), 63-77. doi:10.1016/j.amc.2011.10.006

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