The rinform Wrapper

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Vignettes are long form documentation commonly included in packages. Because they are part of the distribution of the package, they need to be as compact as possible. The `html_vignette` output type provides a custom style sheet (and tweaks some options) to ensure that the resulting html is as small as possible. The `html_vignette` format:

- Never uses retina figures
- Has a smaller default figure size
- Uses a custom CSS stylesheet instead of the default Twitter Bootstrap style

1 Getting Started

2 Error Handling

3 Empirical Distributions

3.1 Distribution Type

3.2 Allocation/Deallocation

3.3 Accessors/Mutators

3.4 Probabilities

4 Shannon Information Measures

4.1 Entropy

4.2 Mutual Information

4.3 Conditional Entropy

4.4 Conditional Mutual Information

4.5 Relative Entropy

4.6 Cross Entropy

5 Time Series Measures

5.1 Notation

5.2 Implementation Details

5.3 Active Information

Active information (AI) was introduced in (Lizier, Prokopenko, and Zomaya 2012) to quantify information storage in distributed computations. Active information is defined in terms of a temporally local variant

$$a_{X,i}(k) = \log_2 \frac{p(x_i^{(k)}, x_{i+1})}{p(x_i^{(k)})p(x_{i+1})},$$

where the probabilities are constructed empirically from the *entire* time series. From the local variant, the temporally global active information is defined as

$$A_X(k) = \langle a_{X,i}(k) \rangle_i = \sum_{x_i^{(k)}, x_{i+1}} p(x_i^{(k)}, x_{i+1}) \log_2 \frac{p(x_i^{(k)}, x_{i+1})}{p(x_i^{(k)}) p(x_{i+1})}.$$

Strictly speaking, the local and average active information are defined as

$$a_{X,i} = \lim_{k \to \infty} a_{X,i}(k) \qquad \text{and} \qquad A_X = \lim_{k \to \infty} A_X(k),$$

but we do not provide limiting functionality in this library (GitHub issues).

```
double inform_active_info(int const *series, size_t n, size_t m,
        int b, size_t k, inform_error *err);
```

Note the various macros within the `vignette` section of the metadata block above. These are required in order to instruct R how to build the vignette. Note that you should change the `title` field and the

`\VignetteIndexEntry` to match the title of your vignette.

7.2 Styles

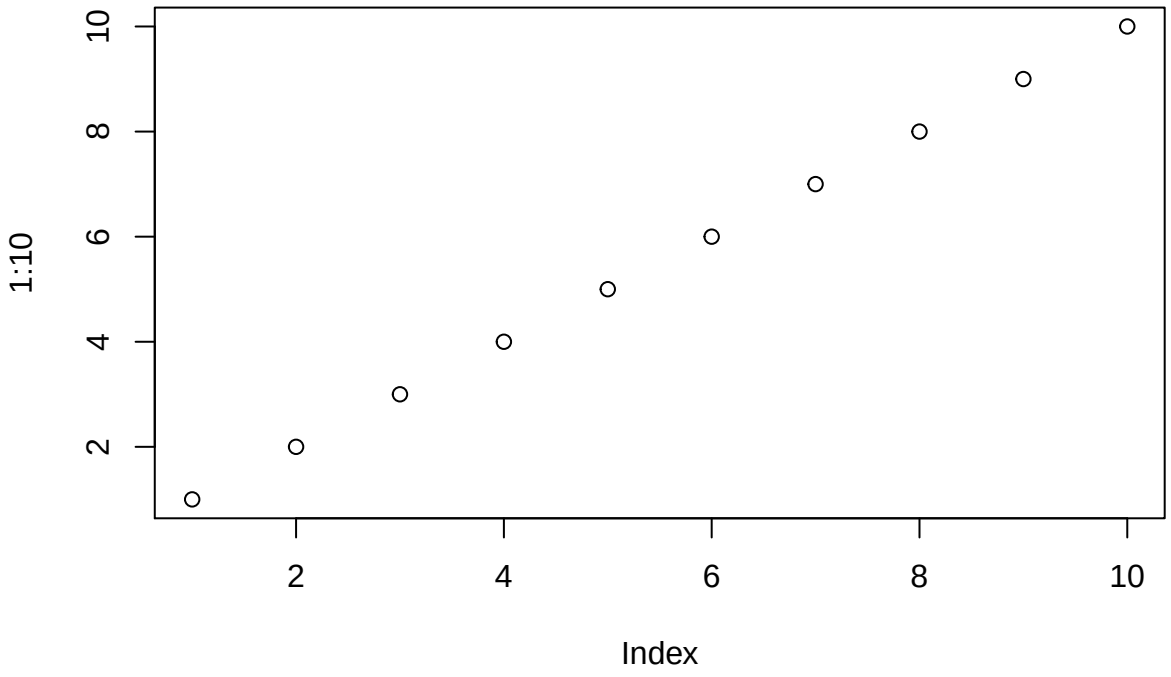
The `html_vignette` template includes a basic CSS theme. To override this theme you can specify your own CSS in the document metadata as follows:

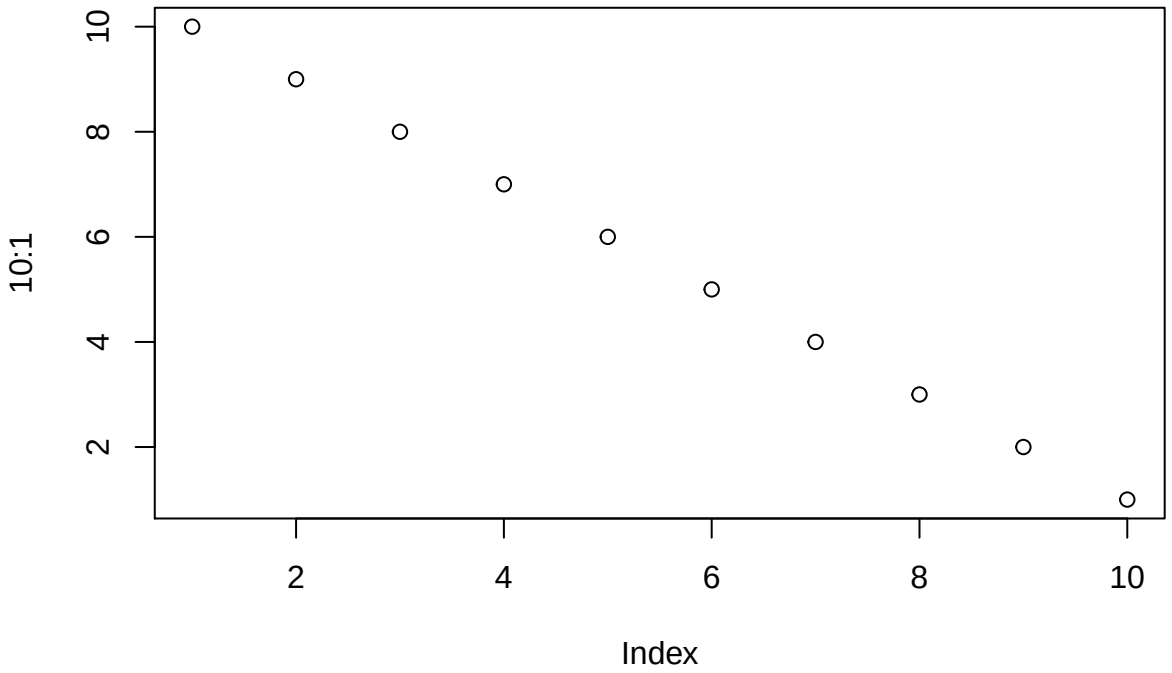
```
output:
  rmarkdown::html_vignette:
    css: mystyles.css
```

7.3 Figures

The figure sizes have been customised so that you can easily put two images side-by-side.

```
plot(1:10)
plot(10:1)
```





You can enable figure captions by `fig_caption: yes` in YAML:

```
output:
  rmarkdown::html_vignette:
    fig_caption: yes
```

Then you can use the chunk option `fig.cap = "Your figure caption."` in **knitr**.

7.4 More Examples

You can write math expressions, e.g. $Y = X\beta + \epsilon$, footnotes[1], and tables, e.g. using `knitr::kable()`.

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4

Also a quote using `>`:

> "He who gives up [code] safety for [code] speed deserves neither." (via)

[1] A footnote here.

References

Lizier, Joseph T., Mikhail Prokopenko, and Albert Y. Zomaya. 2012. "Local Measures of Information Storage in Complex Distributed Computation." *Information Sciences* 208 (Supplement C):39–54. https://doi.org/https://doi.org/10.1016/j.ins.2012.04.016.