Package ‘FiSh’

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Title Fisher-Shannon Method
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Description Proposes non-parametric estimates of the Fisher information measure and the
         Shannon entropy power. The state-of-the-art studies related to the Fisher-Shannon
         measures, with new analytical formulas for positive unimodal skewed distributions
         are presented in Guignard et al. <arXiv:1912.02452>. A ‘python’ version of this
         work is available on ‘github’ and ‘PyPi’ (‘FiShPy’).
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FiSh-package

**FiSh: Fisher-Shannon Method**

**Description**

Proposes non-parametric estimates of the Fisher information measure and the Shannon entropy power. The state-of-the-art studies related to the Fisher-Shannon measures, with new analytical formulas for positive unimodal skewed distributions are presented in Guignard et al. [arXiv:1912.02452]. A 'python' version of this work is available on 'github' and 'PyPi' ('FiShPy').

**Details**

This R code was developed and used for the following paper:


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**References**


**See Also**

Useful links:

* [https://FiShInfo.github.io/](https://FiShInfo.github.io/)
**nsrk**

*Normal scale rule for kernel density estimation*

**Description**

Bandwidth selector for non-parametric estimation. Estimates the optimal AMISE bandwidth using the Normal Scale Rule with Gaussian kernel.

**Usage**

```r
nsrk(x, log_trsf=FALSE)
```

**Arguments**

- `x`: Univariate data.
- `log_trsf`: Logical flag: if TRUE the data are log-transformed (usually used for skewed positive data). By default `log_trsf = FALSE`.

**Value**

The bandwidth value.

**References**


**Examples**

```r
x <- rnorm(1000)
h <- nsrk(x)
```

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**SEP_FIM**

*Fisher-Shannon method*

**Description**

Non-parametric estimates of the Shannon Entropy Power (SEP), the Fisher Information Measure (FIM) and the Fisher-Shannon Complexity (FSC), using kernel density estimators with Gaussian kernel.

**Usage**

```r
SEP_FIM(x, h, log_trsf=FALSE, resol=1000, tol = .Machine$double.eps)
```


**Arguments**

- **x**: Univariate data.
- **h**: Value of the bandwidth for the density estimate
- **log_trsf**: Logical flag: if TRUE the data are log-transformed (used for skewed data), in this case the data should be positive. By default, log_trsf = FALSE.
- **resol**: Number of equally-spaced points, over which function approximations are computed and integrated.
- **tol**: A tolerance to avoid dividing by zero values.

**Value**

A table with one row containing:

- SEP Shannon Entropy Power.
- FIM Fisher Information Measure.
- FSC Fisher-Shannon Complexity

**References**


**Examples**

library(KernSmooth)

x <- rnorm(1000)
h <- dpik(x)

SEP_FIM(x, h)
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