Package 'TSL.logconcave'

November 23, 2023

Title Estimates the location shift in a two sample location estimation problem

Version 0.0.0.9000

Description Estimates the location shift in a two sample location shift problem
with the additional assumption that the underlying densities are log-concave.

License MIT

Imports logcondens,
rmutil

Encoding UTF-8

Roxygen list(markdown = TRUE)

RoxygenNote 7.2.3

R topics documented:

---

pooled_smoothed	*Logconcave estimator of the location-shift in the two sample model.*

Description

Suppose m univariate observations $X_1, \ldots, X_m$ are sampled from a density $g(x - \mu)$, and n univariate observations $Y_1, \ldots, Y_n$ are sampled from the density $g(x - \mu - \Delta)$, where g is an unknown log-concave density. This function computes a one step estimator to estimte Δ. This estimator relies on the smoothed log-concave MLE estimator from the package logcondens to estimate g, and is root-n consistent for Δ provided g is log-concave.

Usage

```
pooled_smoothed(dat, eta = 1e-04)
```

Arguments

dat	A list with two components: x and y, each being vector of possibly different lengths; represents the data.
eta	A fraction between 0 and 1/2. Corresponds to the truncation level of the one step estimator. The default is 0.0001.

Details

`eta`: If eta is zero, the function computes the one step estimator without any truncation. See Saha et al. (2023) for more details.

Value

A vector of length two.

- `estimate`: The estimated value of Δ.
- `FI`: The estimated Fisher information for estimating Δ.

Author(s)

Nilanjana Laha (maintainer), <nlaha@tamu.edu>.
Ridhiman Saha, <riddhimansaha@fas.harvard.edu>

References

Saha R., Dey P., Laha N. (2023). *Revisiting the two-sample location model with log-concavity assumption*. submitted.

Examples

```
x <- rlogis(100); y <- rlogis(150) + 0.1;
pooled_smoothed(list(x=x, y=y), eta = 0.0001)
```

Index