Package ‘ModEstM’

October 12, 2022

Type Package

Title Mode Estimation, Even in the Multimodal Case

Version 0.0.1

Description Function ModEstM() is the only one of this package, it estimates the modes of an empirical univariate distribution. It relies on the stats::density() function, even for input control. Due to very good performance of the density estimation, computation time is not an issue. The multiple modes are handled using dplyr::group_by(). For conditions and rates of convergences, see Eddy (1980) <doi:10.1214/aos/1176345080>.

Depends R (>= 4.1)

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Encoding UTF-8

RoxygenNote 7.1.2

Imports dplyr, rlang, stats

NeedsCompilation no

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R topics documented:

ModEstM ................................................................. 2

Index 3
**ModEstM**

Computes the modes, i.e. the local maxima of the density function for a given empirical distribution

**Description**

Computes the modes, i.e. the local maxima of the density function for a given empirical distribution

**Usage**

`ModEstM(x, ...)`

**Arguments**

- `x` : the random values
- `...` : other parameters, passed to `density`. The main use of this feature is to increase "adjust" in order to suppress spurious local density maxima.

**Value**

A list of the modes, in decreasing order of the corresponding density. It allows to suppress the less significant modes, if necessary.

**Examples**

```r
require(dplyr)

x1 <- c(rbeta(1000, 23, 4))
x2 <- c(rbeta(1000, 23, 4), rbeta(1000, 4, 16))

Distribs <-
  rbind(data.frame(case = 1, XX = x1), data.frame(case = 2, XX = x2))

Adjust <- 1

Modes <- Distribs |>
  group_by(case) |>
  summarise(mode = ModEstM(XX, adjust = Adjust))

ChosenCase <- 2

values <- Distribs |>
  filter(case == ChosenCase) |>
  pull(XX)

plot(density(values, adjust = Adjust))
abline(v = Modes |> filter(case == ChosenCase) |> pull(mode) |> unlist())
```
Index

ModEstM, 2