Package 'tisai'

January 22, 2026

Title AI enabled time series and spacial statistics

Version 0.0.1

Author Xu Liu [aut,cre]

Maintainer Xu Liu <liu.xu@sufe.edu.cn>

Description Datasets used in the book ``AI enabled time series and spacial statistics"

License GPL (>=2)

Encoding UTF-8

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.2

Depends R (>= 3.5.0)

Imports Matrix, glmnet

LazyData true

Contents

`gtemp.month` *Global Temperature Monthly Data*

Description

Global temperature monthly data from the book "AI enabled time series and spacial statistics"

Usage

```
data(gtemp.month)
```

Format

A data frame with 12 rows (months) and 49 columns (years from 1975 to 2023). Each cell contains the average temperature for that month and year.

Details

Global temperature monthly data

This dataset contains global temperature monthly data from the book "AI enabled time series and spacial statistics".

The gtemp.month dataset provides monthly global temperature data from 1975 to 2023. Rows represent months (1-12) and columns represent years. This dataset is often used in climate change analysis and time series modeling.

Source

Package 'astsa' available at https://nickpoison.github.io/

Examples

```
data(gtemp.month)

# Transpose the data for plotting
gtemp_t <- t(gtemp.month)

# Plot the temperature data for January
plot(rownames(gtemp_t), gtemp_t[, 1], type = "l",
     main = "January Global Temperature",
     xlab = "Year", ylab = "Temperature",
     col = "blue")

# Calculate summary statistics for each month
apply(gtemp.month, 1, summary)
```

Hare *Hare Population Data*

Description

Hare population data from the book "AI enabled time series and spacial statistics"

Usage

```
data(Hare)
```

Format

A time series object with the following characteristics:

- Time period: 1845 - 1935
- Frequency: Annual
- Values: Hare population counts

Details

Hare population data

This dataset contains hare population data from the book "AI enabled time series and spacial statistics".

The Hare dataset provides annual population counts of hares from 1845 to 1935. This dataset is often used in time series analysis and population dynamics studies.

Source

Package 'astsa' available at https://nickpoison.github.io/

Examples

```
data(Hare)

# Plot the hare population data
plot(Hare, main = "Hare Population Data",
     xlab = "Year", ylab = "Population",
     col = "blue")

# Calculate summary statistics
summary(Hare)
```

---

lap *Local Area Pollution (LAP) Data*

Description

LAP data from the book "AI enabled time series and spacial statistics"

Usage

```
data(lap)
```

Format

A multivariate time series (mts) object with the following characteristics:

- Time period: 1970 - 1980
- Frequency: Weekly (52 observations per year)
- Number of variables: 11
- Variables:
  - tmort: Total mortality
  - rmort: Respiratory mortality
  - cmort: Cardiovascular mortality
  - tempr: Temperature
  - rh: Relative humidity
  - co: Carbon monoxide
  - so2: Sulfur dioxide

- no2: Nitrogen dioxide
- hycarb: Hydrocarbons
- o3: Ozone
- part: Particulate matter

Details

LAP data

This dataset contains LAP (Local Area Pollution) data from the book "AI enabled time series and spacial statistics".

The lap dataset provides weekly measurements of various pollution and health indicators from 1970 to 1980. This dataset is often used in environmental health studies and time series analysis of pollution effects.

Source

Package 'astsa' available at https://nickpoison.github.io/

Examples

```
data(lap)

# Plot the first variable (total mortality)
plot(lap[, 1], main = "Total Mortality",
     xlab = "Time", ylab = "Mortality Rate",
     col = "red")

# Calculate correlation between temperature and ozone
cor(lap[, "tempr"], lap[, "o3"], use = "complete.obs")

# Plot multiple variables
plot(lap[, c("tempr", "o3", "co")],
     main = "Temperature, Ozone, and Carbon Monoxide")
```

Lynx *Lynx Population Data*

Description

Lynx population data from the book "AI enabled time series and spacial statistics"

Usage

```
data(Lynx)
```

Format

A time series object with the following characteristics:

- Time period: 1845 - 1935
- Frequency: Annual
- Values: Lynx population counts

Details

Lynx population data

This dataset contains lynx population data from the book "AI enabled time series and spacial statistics".

The Lynx dataset provides annual population counts of lynx from 1845 to 1935. This dataset is often used in time series analysis and predator-prey relationship studies.

Source

Package 'astsa' available at https://nickpoison.github.io/

Examples

```
data(Lynx)

# Plot the lynx population data
plot(Lynx, main = "Lynx Population Data",
     xlab = "Year", ylab = "Population",
     col = "red")

# Calculate summary statistics
summary(Lynx)
```

Index