Package 'SLOS'

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Type Package

Title ICU Length of Stay Prediction and Efficiency Evaluation

Version 1.0.0

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Description Provides tools for predicting ICU length of stay and assessing ICU efficiency.
It is based on the methodologies proposed by Peres et al. (2022, 2023), which utilize data-driven approaches for modeling and validation, offering insights into ICU performance and patient outcomes. References: Peres et al. (2022)<https://pubmed.ncbi.nlm.nih.gov/35988701/>, Peres et al. (2023)<https://pubmed.ncbi.nlm.nih.gov/37922007/>.
More information: <https://github.com/igor-peres/ICU-Length-of-Stay-Prediction>.

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Encoding UTF-8

Imports httr, MLmetrics, ems, dplyr, ggplot2, magrittr, caretEnsemble, ranger

Suggests testthat

RoxygenNote 7.3.2

NeedsCompilation no

Depends R (>= 3.5.0)

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Repository CRAN

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load_SLOSModel *Load the SLOS model*

Description

This function loads the pre-trained model from the package.It's available on GitHub

Usage

```
load_SLOSModel()
```

Value

The SLOS model

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predict_and_evaluate *Predict using the SLOS model*

Description

This function makes predictions using the pre-trained SLOS model and evaluates it based on RMSE, MAE, and R2 values.

Usage

```
predict_and_evaluate(data)
```

Arguments

data   A data frame or matrix of new data for prediction.

Value

A list containing the predictions made on the input data, a data frame combining the observed values and predictions side by side, and the RMSE, MAE, and R2.

Examples

```
# Load example data
data(SampledData)

# Make predictions and evaluate
results <- predict_and_evaluate(sampled_data)

# View results
print(results$RMSE)
print(results$MAE)
print(results$R2)
```

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sampled_data *Sampled Data*

Description

An anonymized dataset with 1000 entries used for testing the SLOS prediction model.

Usage

```
data(SampledData)
```

Format

An object of class `"data.frame"`

SLOS *SLOS function*

Description

This function is the core of the SLOS package. It generates the prediction for each unit, a funnel plot for the SLOS analysis and a plot comparing observed vs predicted SLOS. To access the funnel plot, run ems::plot(result$funnel_plot).

Usage

```
SLOS(data)
```

Arguments

data   Data frame or matrix containing testing data

Value

Displays the funnel plot, returns the comparing plot as a ggplot object and the SLOS table.

Examples

```
# Load example data
data(SampledData)

# Call the SLOS function on your data
result <- SLOS(sampled_data)

# Access the comparison plot
result$plot_SLOS_obv_prev
```

```
# Access the predictions for each unit
result$df_unit_slos

# The funnel plot will be displayed automatically, and you can access it again by calling
plot(result$funnel_plot)
```

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