LOWESS Regression Model

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Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

Chapter 3

Class Documentation

3.1 LowessModel Class Reference

`#include <lowess_regression.hpp>`

Public Member Functions

- LowessModel (double kernel_param, double n_std)

  Construct a new Locally Weighted Scatterplot Smoothing (LOWESS) regression model object.
- void set_params (double kernel_param, double n_std)

  Set model's parameters.
- std::tuple< std::vector< double >, std::vector< double >, std::vector< double > > smooth (const std::vector< double > &x, const std::vector< double > &y)

  Compute smoothed values.

3.1.1 Constructor & Destructor Documentation

3.1.1.1 LowessModel()

```
LowessModel::LowessModel (
            double kernel_param,
            double n_std )  [inline]
```

Construct a new Locally Weighted Scatterplot Smoothing (LOWESS) regression model object.

Parameters

kernel_param	Kernel's smoothing parameter $\in (0, 1]$: fraction of all points to use for regression. The larger the smoother.
n_std	Number of standard deviations of prediction errors.

3.1.2 Member Function Documentation

3.1.2.1 set_params()

```
void LowessModel::set_params (
            double kernel_param,
            double n_std )  [inline]
```

Set model's parameters.

Parameters

kernel_param	Kernel's smoothing parameter $\in (0, 1]$: fraction of all points to use for regression. The larger the smoother.
n_std	Number of standard deviations of prediction errors.

3.1.2.2 smooth()

```
std::tuple< std::vector< double >, std::vector< double >, std::vector< double > > Lowess↩
Model::smooth (
            const std::vector< double > & x,
            const std::vector< double > & y )  [inline]
```

Compute smoothed values.

Parameters

x	Vector of independent variable.
y	Vector of dependent variable.

Returns

const std::tuple<std::vector<double>, std::vector<double>, std::vector<double>> 3-tuple of predictions $(y_{pred}, y_{pred\_low}, y_{pred\_up})$, where y_{pred} is the smoothed values, $y_{pred\_low} = y_{pred} - n_{std} \cdot \epsilon_{std}$, $y_{pred\_up} = y_{pred} + n_{std} \cdot \epsilon_{std}$.

The documentation for this class was generated from the following file:

- src/lowess_regression.hpp

Chapter 4

File Documentation

4.1 src/lowess_regression.hpp File Reference

```
#include <tuple>
#include <vector>
#include <iostream>
#include <cmath>
#include <numeric>
```

Classes

- class LowessModel

4.1.1 Detailed Description

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