timeseries documentation

# Welcome to timeseries’s documentation![¶](#welcome-to-timeseries-s-documentation)

## Projekt[¶](#projekt)

### chart module[¶](#module-chart)

*class* chart.Chart(*df: pandas.core.frame.DataFrame*, *title: str*, *id: int*)[¶](#chart.Chart)

Bases: object

Class contains loaded time series data in form of charts.

ax *= None*[¶](#chart.Chart.ax)

Axes of the chart.

df*: pandas.core.frame.DataFrame = None*[¶](#chart.Chart.df)

Data frame of loaded signal.

displayChart(*display: tkinter.ttk.Frame*, *moduleDisplayer*)[¶](#chart.Chart.displayChart)

Displays chart on screen.

Parameters

* **display** – GUI component where chart should be displayed.
* **moduleDisplayer** – Method called in-line, that applies patches on chart from all active time series modules.

exportChart(*filename: str*)[¶](#chart.Chart.exportChart)

Exports chart as .png file to specified destination.

Parameters

**filename** – Directory where canvas should be saved.

figure*: matplotlib.backends.backend\_tkagg.FigureCanvasTkAgg = None*[¶](#chart.Chart.figure)

Canvas of the chart.

id*: int = 0*[¶](#chart.Chart.id)

ID of the chart.

title*: str = ''*[¶](#chart.Chart.title)

Title of the chart.

### gui module[¶](#module-gui)

*class* gui.AnalyzerGui[¶](#gui.AnalyzerGui)

Bases: [gui.Gui](#gui.Gui)

Class contains window application of time series analyzer.

buildSectionChart()[¶](#gui.AnalyzerGui.buildSectionChart)

Builds section with chart that displays current data.

buildSectionOutput()[¶](#gui.AnalyzerGui.buildSectionOutput)

Builds section with output functions that display and export data.

buildSectionSettings()[¶](#gui.AnalyzerGui.buildSectionSettings)

Builds section with settings that set properties of data.

buildSections()[¶](#gui.AnalyzerGui.buildSections)

Constructs all sections of an application.

buildSubsectionDataSelection()[¶](#X81780f8f1b8b7287e67cbc191e727ba48add467)

Builds subsection of settings section that allows user to choose displayed data, which was previously loaded.

buildSubsectionExportData()[¶](#X077dcb7be82adaa8639d1b520d3715d5a35417f)

Builds subsection of output section that allows exporting logs, chart and statistics.

buildSubsectionLoadData()[¶](#gui.AnalyzerGui.buildSubsectionLoadData)

Builds subsection of settings section that loads of data from memory.

buildSubsectionLogger()[¶](#gui.AnalyzerGui.buildSubsectionLogger)

Builds subsection of output section that logs user’s actions.

buildSubsectionStatisctics()[¶](#X4832680b103d35ed54523e63fa55b6ff38ad6c2)

Builds subsection of output section that displays data of modules in tabular form.

buildSubsectionTSModules()[¶](#gui.AnalyzerGui.buildSubsectionTSModules)

Builds subsection of settings section that allows user to choose displayed time series analyzing modules.

chartId*: int = -1*[¶](#gui.AnalyzerGui.chartId)

ID of currently displayed chart

clearsectionChart()[¶](#gui.AnalyzerGui.clearsectionChart)

Method clears the view of section with chart.

deleteChart()[¶](#gui.AnalyzerGui.deleteChart)

Deletes the current viewed chart.

hubcharts*:* [*hubCharts.HubCharts*](index.html#hubCharts.HubCharts) *= <hubCharts.HubCharts object>*[¶](#gui.AnalyzerGui.hubcharts)

Functional component with methods concerning loaded data in form of charts.

hubimporters*:* [*hubImporters.HubImporters*](index.html#hubImporters.HubImporters) *= <hubImporters.HubImporters object>*[¶](#gui.AnalyzerGui.hubimporters)

Functional component with methods concerning data importers.

hubtsmodules*:* [*hubTSModules.HubTSModules*](index.html#hubTSModules.HubTSModules) *= <hubTSModules.HubTSModules object>*[¶](#gui.AnalyzerGui.hubtsmodules)

Functional component with methods concerning time series analyzing modules.

importer*:* [*importers.baseimport.ImportMethod*](index.html#importers.baseimport.ImportMethod) *= None*[¶](#gui.AnalyzerGui.importer)

Chosen by user importer function (ex. .xls import when loading microsoft excel spreadsheet).

sectionChart*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.sectionChart)

Section with chart that displays current data.

sectionOutput*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.sectionOutput)

Section with output functions that display and export data.

sectionSettings*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.sectionSettings)

Section with settings that set properties of data.

statisticstabRefresh()[¶](#gui.AnalyzerGui.statisticstabRefresh)

Removes the content of combobox and table view with all active time series modules.

subsectionDataSelection*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.subsectionDataSelection)

Subsection of settings section that allows user to choose displayed data, which was previously loaded.

subsectionDataSelection\_btndelete\_action()[¶](#X3aeaa732144b819d322cbe38b0baf9c94a03c66)

Method called when activating delete button in subsection of settings section that allows user to choose displayed data, which was previously loaded. Deletes selected data.

subsectionDataSelection\_btnupdate\_action()[¶](#Xeccbf52575d97ba0e8509368397fbe91973c798)

Method called when activating update button in subsection of settings section that allows user to choose displayed data, which was previously loaded. Updates chart displays with chosen data.

subsectionDataSelection\_chartscb\_action(*event*)[¶](#X28b6c530390b600d661e403c0c4858032a8dcbb)

Method called when updating charts combobox in subsection of settings section that allows user to choose displayed data, which was previously loaded. Updates the preview of selected data.

subsectionExportData*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.subsectionExportData)

Subsection of output section that allows exporting logs, chart and statistics.

subsectionExportData\_btnexportchart\_action()[¶](#Xa1a290b949ffc95d149197d643fc1ee1aadd32c)

Method called when activating export button in subsection of output section that allows exporting logs, chart and statistics Exports displayed chart to image format.

subsectionExportData\_btnexportlogs\_action()[¶](#X384040892f23aae0b402c4a3f5476ba11fddbd4)

Method called when activating export button in subsection of output section that allows exporting logs, chart and statistics Exports logs to text format.

subsectionExportData\_btnexportstats\_action()[¶](#X880654af0c4f6244ff2c28305c2c66c0276ca27)

Method called when activating export button in subsection of output section that allows exporting logs, chart and statistics Exports output modules data to text format.

subsectionLoadData*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.subsectionLoadData)

Subsection of settings section that loads of data from memory.

subsectionLoadData\_btnexport\_action()[¶](#Xb819d77f19d9c47cdbae213fde6398311ab8620)

Method called when activating export button in subsection of settings section that loads of data from memory. Exports data from importer to application’s memory.

subsectionLoadData\_btnimport\_action()[¶](#X46f709a2d1e091143f978cedf0ca6b8a604db3d)

Method called when activating import button in subsection of settings section that loads of data from memory. Configures chosen importer function.

subsectionLogger*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.subsectionLogger)

Subsection of output section that logs user’s actions.

subsectionStatisctics*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.subsectionStatisctics)

Subsection of output section that displays data of modules in tabular form.

subsectionStatisctics\_outputModulescb\_action(*event*)[¶](#Xd477f70ad79a1e61e7472736ee20d407becc5ad)

Method called when updating modules combobox in subsection of output section that displays data of modules in tabular form. Rebuilds a table view of analyzing module data.

subsectionTSModules*: tkinter.Frame = None*[¶](#gui.AnalyzerGui.subsectionTSModules)

Subsection of settings section that allows user to choose displayed time series analyzing modules.

subsectionTSModules\_tsmodulesentrycb\_action(*event*)[¶](#X8650d0f14b264b42e0f1dad66b77cb7d9b1bf02)

Method called when updating modules combobox in subsection of settings section that allows user to choose displayed time series analyzing modules. Rebuilds a menu with module parameters.

updateChart()[¶](#gui.AnalyzerGui.updateChart)

Updates the view of section with chart.

updateChartsCb()[¶](#gui.AnalyzerGui.updateChartsCb)

Refreshes the content of combobox with all loaded time series modules.

*class* gui.GeneratorGui[¶](#gui.GeneratorGui)

Bases: [gui.Gui](#gui.Gui)

buildSectionChart()[¶](#gui.GeneratorGui.buildSectionChart)

Builds section with chart that displays current generated data.

buildSectionSettings()[¶](#gui.GeneratorGui.buildSectionSettings)

Builds section with settings that set properties of generated data.

buildSections()[¶](#gui.GeneratorGui.buildSections)

Constructs all sections of an application.

buildSubSectionChartGenerator()[¶](#X6779bc289656a1e0ba3673f02853a6244fa2738)

Builds subsection of settings section that configures parameters of generated chart.

buildSubSectionExportData()[¶](#X8efcdb59a5a782ad700772f986409f91c85c632)

Builds subsection of settings section that allows exporting generated chart and statistics.

cpCount *= 2*[¶](#gui.GeneratorGui.cpCount)

Number of change points in generated signal.

cps *= None*[¶](#gui.GeneratorGui.cps)

Generated change point indexes.

cpspreadVar *= None*[¶](#gui.GeneratorGui.cpspreadVar)

Variance in areas between change points in generated signal.

df *= Empty DataFrame Columns: [] Index: []*[¶](#gui.GeneratorGui.df)

Data frame of generated signal.

meanVar *= None*[¶](#gui.GeneratorGui.meanVar)

Mean of all data in generated signal.

means *= None*[¶](#gui.GeneratorGui.means)

Means in area between change points, before applying noise.

samples *= 100*[¶](#gui.GeneratorGui.samples)

Number of samples (data length) in generated signal.

sectionChart*: tkinter.Frame = None*[¶](#gui.GeneratorGui.sectionChart)

Section with chart that displays current generated data.

sectionSettings*: tkinter.Frame = None*[¶](#gui.GeneratorGui.sectionSettings)

Section with settings that set properties of generated data.

spreadVar *= None*[¶](#gui.GeneratorGui.spreadVar)

Spread of mean of all data in generated signal.

spreadcpspreadVar *= None*[¶](#gui.GeneratorGui.spreadcpspreadVar)

Spread of variance in areas between change points in generated signal.

spreads *= None*[¶](#gui.GeneratorGui.spreads)

Variances in area between change points, before applying noise.

subsectionChartgenerator*: tkinter.Frame = None*[¶](#Xa84cb5f82fe064f1efb8e5f01445f69302b5980)

Subsection of settings section that configures parameters of generated chart.

subsectionExportdata*: tkinter.Frame = None*[¶](#gui.GeneratorGui.subsectionExportdata)

Subsection of settings section that allows exporting generated chart and statistics.

subsectionExportdata\_btnexport\_action()[¶](#X167db03065a35964e2b870194abfebe8eaba1e9)

Method called when activating export button in subsection of settings section that allows exporting generated chart and statistics. Exports generated data to text format and csv spreadsheet.

subsectionExportdata\_btnupdate\_action()[¶](#X5355626690c50b69ef8fd83e4e6a49557daa2d4)

Method called when activating export button in subsection of settings section that allows exporting generated chart and statistics. Exports generated data to text format and csv spreadsheet.

validate\_floatentries(*val*)[¶](#gui.GeneratorGui.validate_floatentries)

Checks if value in some text entries is positive float value.

Parameters

**val** – Value to check.

Returns

If val is positive float. Rollbacks operation if false.

*class* gui.Gui[¶](#gui.Gui)

Bases: object

Base class responsible for constructing window application.

buildGui()[¶](#gui.Gui.buildGui)

Constructs and runs root window for an application.

buildSections()[¶](#gui.Gui.buildSections)

Method meant to be overwritten. Constructs all sections of an application.

root *= None*[¶](#gui.Gui.root)

Reference to root window.

### hubCharts module[¶](#module-hubCharts)

*class* hubCharts.HubCharts[¶](#hubCharts.HubCharts)

Bases: object

Class with methods concerning loaded data in form of charts.

addChart(*df: pandas.core.frame.DataFrame*, *title: str*)[¶](#hubCharts.HubCharts.addChart)

Adds chart to list.

Parameters

* **df** – Data frame from which charty will be built.
* **sectititleon** – Title of chart.

allCharts *= []*[¶](#hubCharts.HubCharts.allCharts)

List containing loaded data.

displayChart(*chartId: int*, *section: tkinter.Frame*, *moduleDisplayer*)[¶](#hubCharts.HubCharts.displayChart)

Displays chart in specified location.

Parameters

* **chartId** – ID of chart to display.
* **section** – GUI component where chart should be displayed.
* **moduleDisplayer** – Method called in-line, that applies patches on chart from all active time series modules.

getAllChartDisplayNames()[¶](#Xa9b54f3b60f8e75a5ad5b33c59b010e0ad14e51)

Returns display names for all loaded charts.

Returns

Requested list.

getChartById(*chartId: int*) → [chart.Chart](index.html#chart.Chart)[¶](#hubCharts.HubCharts.getChartById)

Returns chart of argument’s id. Names should be unique in order to find a single instance

Parameters

**chartId** – ID of the chart.

Returns

Requested list.

getChartIdByDisplayName(*name: str*) → int[¶](#Xa178dcb047cc5711ac62a3b99a94a2af7cb94f2)

Returns id of chart with given display name.

Parameters

**name** – Display name, with format ‘{chart title} ({chart id})’.

Returns

Requested list.

id *= 0*[¶](#hubCharts.HubCharts.id)

ID that will be assigned to next generated chart.

removeChart(*chartId: int*)[¶](#hubCharts.HubCharts.removeChart)

Removes chart from list.

Parameters

**chartId** – ID of chart to remove.

### hubImporters module[¶](#module-hubImporters)

*class* hubImporters.HubImporters[¶](#hubImporters.HubImporters)

Bases: object

Class with methods concerning data importers.

addMethod(*method:* [*importers.baseimport.ImportMethod*](index.html#importers.baseimport.ImportMethod))[¶](#hubImporters.HubImporters.addMethod)

Adds file extension method to list.

Parameters

**module** – Import method to add.

allDrivers *= ()*[¶](#hubImporters.HubImporters.allDrivers)

List containing all import methods.

allMethods *= ()*[¶](#hubImporters.HubImporters.allMethods)

List containing all import method names.

getImporterByFileextension(*fileextension: str*) → [importers.baseimport.ImportMethod](index.html#importers.baseimport.ImportMethod)[¶](#X510343f014b9d8225373e5f50b2e3e5fc9e6314)

Returns import method based on operated file extension.

Parameters

**fileextension** – File extension of operated method.

Returns

Requested method.

loadImporters() → None[¶](#hubImporters.HubImporters.loadImporters)

Loads the list with all provided importers.

### hubTSModules module[¶](#module-hubTSModules)

from tkinter import \* from tkinter import ttk import numpy as np import matplotlib.patches as patches import math import colorsys import statsmodels.api as sm from pandas.core.frame import DataFrame import pandas as pd

*class* hubTSModules.HubTSModules[¶](#hubTSModules.HubTSModules)

Bases: object

Class with methods concerning loaded data in form of charts.

addModule(*module:* [*tsmodules.basemod.TSModule*](index.html#tsmodules.basemod.TSModule))[¶](#hubTSModules.HubTSModules.addModule)

Adds time series module to list.

Parameters

**module** – Time series module to add.

allModules *= []*[¶](#hubTSModules.HubTSModules.allModules)

List containing all loaded time series modules.

displayModules(*ax*, *plotdf*)[¶](#hubTSModules.HubTSModules.displayModules)

Displays all selected modules’ patches on selected plot.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

getAllActiveModuleNames()[¶](#X311bd7b7a449a34ba0b89ea36fa8c51c54d0806)

Returns all active time series module names.

Returns

Requested list.

getAllActiveModules()[¶](#Xa0223d4967499a19ce4700f3f3765f127b17bbf)

Returns all active time series modules.

Returns

Requested list.

getModuleByName(*name: str*) → [tsmodules.basemod.TSModule](index.html#tsmodules.basemod.TSModule)[¶](#X9cdd5a976cf3f922caa926ec2b3dd18fac28a04)

Returns module of argument’s name.

Parameters

**name** – Name of the module.

Returns

Requested module.

loadModules()[¶](#hubTSModules.HubTSModules.loadModules)

Loads the list with all provided modules.

### importers package[¶](#importers-package)

#### Submodules[¶](#submodules)

#### importers.baseimport module[¶](#module-importers.baseimport)

*class* importers.baseimport.ImportMethod(*extension*, *displayname*, *defaultTitle*)[¶](#importers.baseimport.ImportMethod)

Bases: object

Base class responsible for loading time series data from different files.

defaultTitle*: str = ''*[¶](#X9cdabcee2867e98b4cadeebd2f44ac62c8a8042)

Default, preffered title of dataset, which should be applied after extracting data.

directory*: str = ''*[¶](#Xfddbc3ef3f4f366f06bf506dbb187c10fae5dfd)

Directory where data is located.

displayname*: str = ''*[¶](#X200c4ad49524a247d830307126718ceac6fc1fd)

Format of import method displayed in file dialog.

extension*: str = ''*[¶](#X4186a6a94d9d40e6717df8fe27d70c19f9ce464)

Supported format of import method.

extractData() → pandas.core.frame.DataFrame[¶](#X25348833775265980f08ca3a1445cd783520075)

Method meant to be overwritten. Extracts signal from provided data.

Returns

Data frame of single, selected time series.

importSettingsGui(*section: tkinter.ttk.Frame*)[¶](#Xaa4a9e5d61133ae7265e23a5d4bc99a026b98a2)

Method meant to be overwritten. Provides GUI elements for selection of specific signal from provided data.

#### importers.csvimport module[¶](#module-importers.csvimport)

*class* importers.csvimport.CsvImportMethod(*extension*, *displayname*, *defaultTitle*)[¶](#importers.csvimport.CsvImportMethod)

Bases: [importers.baseimport.ImportMethod](#importers.baseimport.ImportMethod)

Class responsible for loading time series data from .csv files.

datax *= []*[¶](#X48b70112546dd6a6f59b077d419bd47be70bbcc)

Loaded X-axis data. Should contain indexes with constant intervals.

datay *= []*[¶](#Xa02d0b1f0eec0ab6fd147e5e9490b990996d1cb)

Loaded Y-axis data. Should data of observed phenomenon.

extractData() → pandas.core.frame.DataFrame[¶](#Xab5dbd36fdc8b8b7328fbbc2fe600c27d4b21f7)

Extracts signal from provided data.

Returns

Data frame of single, selected time series.

importSettingsGui(*section: tkinter.ttk.Frame*)[¶](#X97021c1ba96de3c078c3464efe233089e9a69f5)

Provides GUI elements for selection of specific signal from provided data.

onXYprovided()[¶](#X47233659772b8c663289eca7ec101d6ebf4c4c3)

Determines behaviour of import method’s GUI behaviour when X and Y axis data are provided.

onXchange(*event*)[¶](#X4a10f8747c4be186ebb10d2326d81759728f7b0)

Determines behaviour of import method’s GUI behaviour when X axis data is provided.

onYchange(*event*)[¶](#X5fc1f88460f7dbd8e17e0391f1121ebe328b6bd)

Determines behaviour of import method’s GUI behaviour when Y axis data is provided.

xseries *= None*[¶](#X05714bfb37c333079f4679b677fa4554c05176f)

Chosen X-axis name from chosen sheet

xseriesprovided *= False*[¶](#X4fb279eea210668411622cc9f0b6bf1b0a001a1)

Auxiliary variable, determines if user provided X-axis data.

yseries *= None*[¶](#X3e4ae3acafaab6a1fb5011aa0ab7166a8d5a789)

Chosen Y-axis name from chosen sheet.

yseriesprovided *= False*[¶](#Xccda72090a01d916f60d8e6ad8ee933c5be6233)

Auxiliary variable, determines if user provided Y-axis data.

#### importers.xlsimport module[¶](#module-importers.xlsimport)

*class* importers.xlsimport.XlsImportMethod(*extension*, *displayname*, *defaultTitle*)[¶](#importers.xlsimport.XlsImportMethod)

Bases: [importers.baseimport.ImportMethod](#importers.baseimport.ImportMethod)

Class responsible for loading time series data from .xls files.

datax *= []*[¶](#Xf12b1ef76bc3c34dbbd6550472876c221e333ad)

Loaded X-axis data. Should contain indexes with constant intervals.

datay *= []*[¶](#Xa8547755771fa7c7a79a09291cad0d6c16223d7)

Loaded Y-axis data. Should data of observed phenomenon.

extractData() → pandas.core.frame.DataFrame[¶](#X896637b0af50ffe1a553408e3654769464c7b79)

Extracts signal from provided data.

Returns

Data frame of single, selected time series.

importSettingsGui(*section: tkinter.ttk.Frame*)[¶](#Xe106966a257be5302003c60da5a3fa72bdc85b8)

Provides GUI elements for selection of specific signal from provided data.

onSheetChange(*event*)[¶](#X826e2d14a86c278f32854ad1b4914a3df0141a7)

Determines behaviour of import method’s GUI behaviour when sheet is chosen.

onXYprovided()[¶](#Xf47ac7472330a6858ed15566686a0dc7eea20ab)

Determines behaviour of import method’s GUI behaviour when X and Y axis data are provided.

onXchange(*event*)[¶](#Xa5d81dc5dc345de0f5d2b298c95b5385458e3bf)

Determines behaviour of import method’s GUI behaviour when X axis data is provided.

onYchange(*event*)[¶](#X794e0dfde8a1d7cfeecac890fcbe02e7c56593f)

Determines behaviour of import method’s GUI behaviour when Y axis data is provided.

sheet *= None*[¶](#Xd04a8674252a3482c9d181949f859027bb6d11c)

Chosen sheet name from spreadsheet.

xseries *= None*[¶](#X27fbca6371edfd074c68d6843b444c7906754ab)

Chosen X-axis name from chosen sheet

xseriesprovided *= False*[¶](#Xdcb56b32963f7da246f2f4a7e9dddaf1fa92613)

Auxiliary variable, determines if user provided X-axis data.

yseries *= None*[¶](#Xe0b7f1c2682bcd30a1e6cf7682c532ea3cefa77)

Chosen Y-axis name from chosen sheet.

yseriesprovided *= False*[¶](#X3abaaac4fa91333f2d817c2d12c223cb45ad075)

Auxiliary variable, determines if user provided Y-axis data.

#### Module contents[¶](#module-importers)

### loader module[¶](#module-loader)

loader.conf *= None*[¶](#loader.conf)

List with application configurations.

loader.dirs *= None*[¶](#loader.dirs)

List with directories.

loader.lang *= None*[¶](#loader.lang)

List with language labels.

loader.loadConfig()[¶](#loader.loadConfig)

Loads with configuration lists from config.yml file.

### logger module[¶](#module-logger)

logger.log(*text: str*)[¶](#logger.log)

Logs a message to a component.

Parameters

**text** – Text to log.

logger.win*: tkinter.Text = None*[¶](#logger.win)

Text component where logs are stored.

### tsmodules package[¶](#tsmodules-package)

#### Submodules[¶](#submodules)

#### tsmodules.autocorrelation module[¶](#module-tsmodules.autocorrelation)

*class* tsmodules.autocorrelation.AutocorrelationModule(*name*)[¶](#X927fd7bc979f93044250a09cb76e31a4b10f998)

Bases: [tsmodules.basemod.TSModule](#tsmodules.basemod.TSModule)

Class implementing autocorrelation time series module.

buildConfig(*section: tkinter.ttk.Frame*)[¶](#X1355fc382d40565850e622b3f8cdf29523a2bc2)

Provides GUI elements for time series module configuration.

Parameters

**section** – GUI component where module configuration should be displayed.

displayModule(*ax*, *plotdf*)[¶](#X973447d7e0ebbe0dcd030783225ab38311dc80c)

Processes analyzing module and displays results on chart’s axes.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

lagentryvar *= None*[¶](#X7fd69f9d4284bf4787def9b922c7d45e4340937)

The length of the lag.

validate\_digit(*val*)[¶](#X096db87cd347edce109d730122092d7084220c3)

Checks if value in some text entries is positive integer value.

Parameters

**val** – Value to check.

Returns

If val is positive int. Rollbacks operation if false.

#### tsmodules.basemod module[¶](#module-tsmodules.basemod)

*class* tsmodules.basemod.TSModule(*name*)[¶](#tsmodules.basemod.TSModule)

Bases: object

Base class for implementation of single time series module.

buildCheckbox(*section: tkinter.ttk.Frame*)[¶](#tsmodules.basemod.TSModule.buildCheckbox)

Provides GUI elements for time series module activation.

Parameters

**section** – GUI component where module activation should be displayed.

buildConfig(*section: tkinter.ttk.Frame*)[¶](#tsmodules.basemod.TSModule.buildConfig)

Method meant to be overwritten. Provides GUI elements for time series module configuration.

Parameters

**section** – GUI component where module configuration should be displayed.

buildMenu(*section: tkinter.ttk.Frame*)[¶](#tsmodules.basemod.TSModule.buildMenu)

Provides GUI elements for time series module items.

Parameters

**section** – GUI component where module items should be displayed.

displayModule(*ax*, *plotdf*)[¶](#tsmodules.basemod.TSModule.displayModule)

Method meant to be overwritten. Processes analyzing module and displays results on chart’s axes.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

isactive *= None*[¶](#tsmodules.basemod.TSModule.isactive)

Should this module be considered in time series data analysis.

name *= 'Unnamed Module'*[¶](#tsmodules.basemod.TSModule.name)

Name of time series module.

outputDataframe *= Empty DataFrame Columns: [] Index: []*[¶](#X45fdcdb12dc776030fe602707e312ba516c7fad)

Data frame with processed time series module data, that was displayed on chart’s axes, or that couldn’t be displayed with line graph.

#### tsmodules.differentation module[¶](#module-tsmodules.differentation)

*class* tsmodules.differentation.DifferentiationModule(*name*)[¶](#X672b172bcab45b08cd28bee7ac25fdbf96179a2)

Bases: [tsmodules.basemod.TSModule](#tsmodules.basemod.TSModule)

Class implementing differentiation time series module.

displayModule(*ax*, *plotdf*)[¶](#Xc3c51b31dedae6f81924640370f392eb8ea89e3)

Processes analyzing module and displays results on chart’s axes.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

#### tsmodules.originaldata module[¶](#module-tsmodules.originaldata)

*class* tsmodules.originaldata.OriginalDataDisplayModule(*name*)[¶](#Xc8af7577ff4873d4734365c097eda15e965bbf8)

Bases: [tsmodules.basemod.TSModule](#tsmodules.basemod.TSModule)

Class implementing original data display time series module.

displayModule(*ax*, *plotdf*)[¶](#Xd37f55c06157d97f7a75d915af7aee55df3e0bb)

Processes analyzing module and displays results on chart’s axes.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

#### tsmodules.rollingmean module[¶](#module-tsmodules.rollingmean)

*class* tsmodules.rollingmean.RollingMeanModule(*name*)[¶](#tsmodules.rollingmean.RollingMeanModule)

Bases: [tsmodules.basemod.TSModule](#tsmodules.basemod.TSModule)

Class implementing rolling mean time series module.

buildConfig(*section: tkinter.ttk.Frame*)[¶](#X501a9b1f6927af3606a5e975fbf0c7cd02811ca)

Provides GUI elements for time series module configuration.

Parameters

**section** – GUI component where module configuration should be displayed.

displayModule(*ax*, *plotdf*)[¶](#X6ddce112c58cd1d9832c5205a18001794933f98)

Processes analyzing module and displays results on chart’s axes.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

rollCount *= 5*[¶](#Xf424e4249bd405a869631acac130551d9480663)

Quanity of rolling value.

#### tsmodules.rollingstd module[¶](#module-tsmodules.rollingstd)

*class* tsmodules.rollingstd.RollingStdModule(*name*)[¶](#tsmodules.rollingstd.RollingStdModule)

Bases: [tsmodules.basemod.TSModule](#tsmodules.basemod.TSModule)

Class implementing rolling standard deviation time series module.

buildConfig(*section: tkinter.ttk.Frame*)[¶](#X42158418eb508b3213b72fc1795b21d672fb955)

Provides GUI elements for time series module configuration.

Parameters

**section** – GUI component where module configuration should be displayed.

displayModule(*ax*, *plotdf*)[¶](#Xde210be89f2793ea039c727c55f794112a42270)

Processes analyzing module and displays results on chart’s axes.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

rollCount *= 5*[¶](#Xadccb13b717ce8dadb792fadf321c824618e56b)

Quanity of rolling value.

#### tsmodules.rupturesmods module[¶](#module-tsmodules.rupturesmods)

*class* tsmodules.rupturesmods.BottomUpDynpModule(*name*)[¶](#Xbd8f9ab500b5f84a7fbe9d7846df03f3eedf084)

Bases: [tsmodules.rupturesmods.RupturesModule](#tsmodules.rupturesmods.RupturesModule)

Class implementing Bottom-Up algorithm that detects change points.

calculateChangePoints(*signal*) → list[¶](#X3d23cd51c0eedf4bb4b4af64c9fa4f6d0db51a9)

Calculates change point indexes.

Parameters

**signal** – Time series data.

Returns

Indexes of change points.

*class* tsmodules.rupturesmods.RupturesBinsegModule(*name*)[¶](#Xac9a618dadf833e0c15e897f8f0794b5517313b)

Bases: [tsmodules.rupturesmods.RupturesModule](#tsmodules.rupturesmods.RupturesModule)

Class implementing Binary segmentaton algorithm that detects change points.

calculateChangePoints(*signal*) → list[¶](#Xf2cd32349a2ecf0afc5353430d2cbfbff83503e)

Calculates change point indexes.

Parameters

**signal** – Time series data.

Returns

Indexes of change points.

*class* tsmodules.rupturesmods.RupturesModule(*name*)[¶](#tsmodules.rupturesmods.RupturesModule)

Bases: [tsmodules.basemod.TSModule](#tsmodules.basemod.TSModule)

Class implementing change point detection time series modules.

calculateChangePoints(*signal*) → list[¶](#X8fba9c6495b02c421d532071935ae8977105249)

Method meant to be overwritten. Calculates change point indexes.

Parameters

**signal** – Time series data.

Returns

Indexes of change points.

displayModule(*ax*, *plotdf*)[¶](#X043a69dcf35ea3b84f6c0c6d2a581bd96dafc20)

Processes analyzing module and displays results on chart’s axes.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

*class* tsmodules.rupturesmods.RupturesPeltModule(*name*)[¶](#Xd42167af9533ac603dcee6ae8410a2abaeeab72)

Bases: [tsmodules.rupturesmods.RupturesModule](#tsmodules.rupturesmods.RupturesModule)

Class implementing Pelt algorithm that detects change points.

calculateChangePoints(*signal*) → list[¶](#Xb9c9085e9873090a7db8b71986b6a11c8ac8007)

Calculates change point indexes.

Parameters

**signal** – Time series data.

Returns

Indexes of change points.

*class* tsmodules.rupturesmods.RupturesWindowModule(*name*)[¶](#Xaf5f66b71c082356567a0f290a6e91ef0eb78d0)

Bases: [tsmodules.rupturesmods.RupturesModule](#tsmodules.rupturesmods.RupturesModule)

Class implementing Window algorithm that detects change points.

calculateChangePoints(*signal*) → list[¶](#Xf7760c6a3a08427f4ceeba88494eef1d2a6c93a)

Calculates change point indexes.

Parameters

**signal** – Time series data.

Returns

Indexes of change points.

#### tsmodules.seasonaldecompose module[¶](#module-tsmodules.seasonaldecompose)

*class* tsmodules.seasonaldecompose.SeasonalDecomposeModule(*name*)[¶](#Xf5cef14745b9515b0f9c68faac82defa5dcac64)

Bases: [tsmodules.basemod.TSModule](#tsmodules.basemod.TSModule)

Class implementing seasonal decomposition of time series.

buildConfig(*section: tkinter.ttk.Frame*)[¶](#Xa1b264730b800f4d862447b120227091943f960)

Provides GUI elements for time series module configuration.

Parameters

**section** – GUI component where module configuration should be displayed.

componentslist *= ['lag', 'trend', 'resid']*[¶](#X3cdfa39e601d72236b3299a8dd371eba1825bc0)

Components of explanatory parts of time series.

componentsvarlist *= []*[¶](#X4e9120314e3e9feba5d3ddc918414fbcacdf6c1)

Selected components of explanatory parts of time series.

displayModule(*ax*, *plotdf*)[¶](#X8151cf5c4f9657ac762457e0acd7486ae9b155b)

Processes analyzing module and displays results on chart’s axes.

Parameters

* **ax** – Reference to plot’s axes.
* **plotdf** – Data frame with original signal.

lagentryvar *= None*[¶](#X2bfca80d4091f9dcc6033811112072cfa476336)

The length of the lag.

validate\_digit(*val*)[¶](#X1a9d881053bf353e67ad9b90bcf66634fa10017)

Checks if value in some text entries is positive integer value.

Parameters

**val** – Value to check.

Returns

If val is positive int. Rollbacks operation if false.

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