

PyGenericDataFitter Tango Python Class

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PyGenericDataFitter Class Identification :

Contact : at cea.fr - olivier.tache
Class Family : Calculation
Platform : All Platforms
Bus : Not Applicable
Manufacturer : none
Manufacturer ref. :

PyGenericDataFitter Class Inheritance :

- [Tango::DeviceImpl](#)
 - PyGenericDataFitter

PyGenericDataFitter Class Description :

another data fitter in python with scipy
can fit all function specified in properties
generate dynamic attributes for variables used in the function

PyGenericDataFitter Properties :

There is no class properties

Device Properties			
Name	Description	Type	Default Value
DeviceAttributeNameX	Path to the attribute X of the device providing the X values of the spectrum.	String	none
DeviceAttributeNameY	Path to the attribute Y of the device providing the Y values of the spectrum.	String	none
FittingFunction	fitting function $a*x+b \rightarrow a*x+b$	String	$a*x+b$
FittingVariables	Variables used in the fitting function separated by ,	String	"a b"
DelayTime	Delay between two fitting process, when fitting process is continuous	float	1.0
ContinuousMode	Define if device is fitting continuously or manually after StartFit command false - manually true- continuously	boolean	False

PyGenericDataFitter Class Commands				
Name	Input type	Output type	Level	Description
State	DEV_VOID	DEV_STATE	OPERATOR	This command gets the device state (stored in its <i>device_state</i> data member) and returns it to the caller.
Status	DEV_VOID	CONST_DEV_STRING	OPERATOR	This command gets the device status (stored in its <i>device_status</i> data member) and returns it to the caller.
StartFit	DEV_VOID	DEV_VOID	OPERATOR	Method to start fit with entry values : - experimentalDataX - experimentalDataY - experimentalDataSigma If the fitting succeed the output result are in : - fittedDataX - fittedDataY - fittedFunctionParameters

Command State :

This command gets the device state (stored in its *device_state* data member) and returns it to the caller.

State Definition		
Input Argument	Tango::DEV_VOID	none.
Output Argument	Tango::DEV_STATE	State Code
DisplayLevel	OPERATOR	..
Inherited	true	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command Status :

This command gets the device status (stored in its *device_status* data member) and returns it to the caller.

Status Definition		
Input Argument	Tango::DEV_VOID	none.
Output Argument	Tango::CONST_DEV_STRING	Status description
DisplayLevel	OPERATOR	..
Inherited	true	..
Abstract	true	..
Polling Period	Not polled	..
Command allowed for	All states	..

Command StartFit :

Method to start fit with entry values :

- experimentalDataX
- experimentalDataY
- experimentalDataSigma

If the fitting succeed the output result are in :

- fittedDataX
- fittedDataY
- fittedFunctionParameters

StartFit Definition		
Input Argument	Tango::DEV_VOID	
Output Argument	Tango::DEV_VOID	
DisplayLevel	OPERATOR	..
Inherited	false	..
Abstract	false	..
Polling Period	Not polled	..
Command allowed for	All states	..

PyGenericDataFitter Class Attributes							
Name	Inherited	Abstract	Attr. type	R/W type	Data type	Level	Description
							\nName of the attribute which will be fitted by this DataFittingDevice. \n\nIt may be : \n\n(a) a fully qualified attribute

DeviceAttributeNameX	false	false	Scalar	READ	Tango::DEV_STRING	EXPERT	name . For instance : \n\n- D13-1_C07/DT/IMAGEUR.1-ECR/PROFILX\n\nnb) an alias (if defined in the TANGO Control System):\n\nPROFILX
DeviceAttributeNameY	false	false	Scalar	READ	Tango::DEV_STRING	EXPERT	\nName of the attribute which will be fitted by this DataFittingDevice. \n\nIt may be : \n\n(a) a fully qualified attribute name . For instance : \n\n- D13-1_C07/DT/IMAGEUR.1-ECR/PROFILY\n\nnb) an alias (if defined in the TANGO Control System):\n\nPROFILY
nbData	false	false	Scalar	READ	Tango::DEV_LONG	OPERATOR	
nbIterationMax	false	false	Scalar	WRITE	Tango::DEV_LONG	OPERATOR	Number of maximum iteration for the fitting algorithm.\n\nIf the algorithm doesn't go to a final solution after nbIterationMax\n\nit is stopped to avoid infinite loop.
epsilon	false	false	Scalar	WRITE	Tango::DEV_DOUBLE	OPERATOR	This value is the stopping value. When the difference \n\nbetween the values of two consecutives steps is under\n\nthis value, the algorithm stop and succeed.
nbIterations	false	false	Scalar	READ	Tango::DEV_LONG	OPERATOR	Number of iteration for the algorithm to converge
Chi_square	false	false	Scalar	READ	Tango::DEV_DOUBLE	OPERATOR	Chi-square
experimentalDataX	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	\nData copied from original X spectrum attribute
experimentalDataY	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	\nData copied from original Y spectrum attribute
fittedFunctionParameters	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	This spectrum is composed of the differents calculated \n\nparameters of the function used to fit.\n\nThe number of parameters depends on the function.\n
InitialFunctionParameters	false	false	Spectrum	READ_WRITE	Tango::DEV_DOUBLE	OPERATOR	This spectrum is composed of the differents calculated \n\nparameters of the function used to fit.\n\nThe number of parameters depends on the function.\n
							Spectrum providing the fitted data according the

fittedDataX	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	X axis. These data are calculated thanks to the fitted parameters and the resolutionX, nbPointToGenerate and startingX values.
fittedDataY	false	false	Spectrum	READ	Tango::DEV_DOUBLE	OPERATOR	Spectrum providing the fitted data according the Y axis. These data are calculated thanks to the fitted parameters and the resolutionX, nbPointToGenerate and startingX values.

There is no dynamic attribute defined.

Attribute DeviceAttributeNameX :

Name of the attribute which will be fitted by this DataFittingDevice. It may be :
 - a fully qualified attribute name . For instance : D13-1_C07/DT/IMAGEUR.1-ECR/PROFILX
 - an alias (if defined in the TANGO Control System): PROFILX

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_STRING
Display Level	EXPERT
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Attribute Name X
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute DeviceAttributeNameY :

\nName of the attribute which will be fitted by this DataFittingDevice. \n\nIt may be : \n\na) a fully qualified attribute name . For instance : \n\n- D13-1_C07/DT/IMAGEUR.1-ECR/PROFILY\n\nb) an alias (if defined in the TANGO Control System):\n\nPROFILY

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_STRING
Display Level	EXPERT
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Attribute Name Y
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute nbData :

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_LONG
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Number Of Data
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute nbIterationMax :

Number of maximum iteration for the fitting algorithm. If the algorithm doesn't go to a final solution after nbIterationMax it is stopped to avoid infinite loop.

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_LONG
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	true
Write hardware at init.	true
Write allowed for	All states

Attribute Properties	
label	Nb Iteration Max
unit	
standard unit	
display unit	
format	%d
max_value	100000
min_value	1
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute epsilon :

This value is the stopping value. When the difference between the values of two consecutive steps is under this value, the algorithm stop and succeed.

Attribute Definition	
Attribute Type	Scalar
R/W Type	WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled

Attribute Properties	
label	Epsilon
unit	
standard unit	
display unit	
format	%e
max_value	10
min_value	0.0000000000000001
max_alarm	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set

Memorized	true
Write hardware at init.	true
Write allowed for	All states

min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute nbIterations :

Number of iteration for the algorithm to converge

Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_LONG
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Nb Iterations To Converge
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	50
min_alarm	0
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute Chi_square :

Chi-square



Attribute Definition	
Attribute Type	Scalar
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Chi-square
unit	%e
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute experimentalDataX :

\nData copied from original X spectrum attribute

Attribute Definition	
Attribute Type	Spectrum (100000)
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Experimental Data X
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute experimentalDataY :

\nData copied from original Y spectrum attribute

Attribute Definition	
Attribute Type	Spectrum (100000)
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Experimental Data Y
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute fittedFunctionParameters :

This spectrum is composed of the differents calculated \nparameters of the function used to fit.\nThe number of parameters depends on the function.\n

Attribute Definition	
Attribute Type	Spectrum (10)
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set

Attribute Properties	
label	Fitted Function Parameters
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set

Read allowed for	All states
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max_warning	
min_warning	
delta_time	
delta_val	

Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute InitialFunctionParameters :

This spectrum is composed of the differents calculated \nparameters of the function used to fit.\nThe number of parameters depends on the function.\n

Attribute Definition	
Attribute Type	Spectrum (10)
R/W Type	READ_WRITE
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states
Write allowed for	All states

Attribute Properties	
label	Initial Function Parameters
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute fittedDataX :

Spectrum providing the fitted data according the X axis.\nThese datas are calculated thanks to the fitted parameters\nand the resolutionX, nbPointToGenerate and startingX \nvalues.



Attribute Definition	
Attribute Type	Spectrum (1000000)
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Fitted Data X
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

Attribute fittedDataY :

Spectrum providing the fitted data according the Y axis.\nThese datas are calculated thanks to the fitted parameters\nand the resolutionX, nbPointToGenerate and startingX \nvalues.

Attribute Definition	
Attribute Type	Spectrum (100000)
R/W Type	READ
Data Type	Tango::DEV_DOUBLE
Display Level	OPERATOR
Inherited	false
Abstract	false
Polling Period	Not polled
Memorized	Not set
Read allowed for	All states

Attribute Properties	
label	Fitted Data X
unit	
standard unit	
display unit	
format	
max_value	
min_value	
max_alarm	
min_alarm	
max_warning	
min_warning	
delta_time	
delta_val	

Attribute Event Criteria	
Periodic	Not set
Relative Change	Not set
Absolute Change	Not set
Archive Periodic	Not set
Archive Relative Change	Not set
Archive Absolute Change	Not set
Push Change event by user code	false
Push Archive event by user code	false
Push DataReady event by user code	Not set

PyGenericDataFitter Class States	
Name	Description
ALARM	The fit may is probably not good.
FAULT	Unable to at least reach one of the X, Y proxies.
STANDBY	The device is in standby state. This the normal state. The device is ready to accept requests.