

aiCreateTiltSeries

aiCreateTiltSeries creates a tilt series from templates at different locations in space. This tool is mainly used to test geometric parameters in the Artiatomi package and doesn't aim a direct scientific use case, but it might be usefull for someone. . .

aiCreateTiltSeries needs a configuration file provided by the **-u** argument. Some options can be overwritten using command line arguments.

Options are:

CudaDeviceIDs

The deviceIDs of the GPUs to use.

Argument for command line: **-d** or **--CudaDeviceIDs**

Type: **List<int>**, a list of integer values

Option is mandatory: **true**

Input

The file to process.

Argument for command line: **-i** or **--Input**

Type: **string**

Option is mandatory: **true**

ExtraShifts

The file name for additional particle shifts.

Argument for command line: **-o** or **--ExtraShifts**

Type: **string**

Option is mandatory: **true**

LP

Low pass filter value.

Argument for command line: **-lp** or **--LP**

Type: **float**

Option is mandatory: **true**

LPS

Low pass filter sigma value.

Argument for command line: **-lps** or **--LPS**

Type: **float**

Option is mandatory: **true**

HP

High pass filter value.

Argument for command line: **-hp** or **--HP**

Type: **float**

Option is mandatory: **false**

Default value if not set: **0**

HPS

High pass filter sigma value.

Argument for command line: **-hps** or **--HPS**

Type: **float**

Option is mandatory: **false**

Default value if not set: **0**

AddTiltAngle

Amount of degrees to add to the tilt angles to rotate the reconstruction in the volume around the tilt or y-axis.

Type: **float**

Option is mandatory: **false**

Default value if not set: **0**

AddTiltXAngle

Amount of degrees to rotate the reconstruction in the volume around the X-axis.

Type: **float**

Option is mandatory: **false**

Default value if not set: **0**

CtfCorrectionType

The type of CTF correction to perform.

Type: one of [**NONE**, **PHASE_FLIP**, **WIENER_FILTER**]

Option is mandatory: **true**

Possible notations:

- **NONE**: NONE, None, none, FALSE, false, False, NO, No, no
- **PHASE_FLIP**: PHASEFLIP, PhaseFlip, phaseflip, PHASE_FLIP, Phase_Flip, phase_flip
- **WIENER_FILTER**: WIENERFILTER, WienerFilter, wienerfilter, WIENER_FILTER, Wiener_Filter, wiener_filter

CTFSliceThickness

The thickness of a CTF slice for 3D-CTF-Correction in nanometer.

Type: **float**

Option is mandatory: **true**

Only applicable if

- **CtfCorrectionType** = PHASE_FLIP or
- **CtfCorrectionType** = WIENER_FILTER

SwitchCTFDirection

Inverses the defocus offset value (experimental, do not use).

Type: **bool**

Option is mandatory: **false**

Default value if not set: **false**

Only applicable if

- **CtfCorrectionType** = PHASE_FLIP or
- **CtfCorrectionType** = WIENER_FILTER

IgnoreZShiftForCTF

Ignore possible Z-Shift of the reconstruction volume for defocus offset.

Type: **bool**

Option is mandatory: **false**

Default value if not set: **true**

Only applicable if

- **CtfCorrectionType** = PHASE_FLIP or
- **CtfCorrectionType** = WIENER_FILTER

VolumeShift

Shift the reconstruction, in unbinned pixel units.

Type: **float3**, three float values

Option is mandatory: **true**

Only applicable if **IgnoreZShiftForCTF** = true.

ProjectionNormalization

Projection normalization method to use before reconstruction.

Type: one of [MEAN, NONE, STANDARD_DEV]

Option is mandatory: **true**

Possible notations:

- **MEAN**: MEAN, Mean, mean
- **NONE**: NONE, none, None
- **STANDARD_DEV**: STD, std, StandardDeviation, STANDARD_DEV

DebugImages

Save temporary images to disk for debugging.

Type: **bool**

Option is mandatory: **false**

Default value if not set: **false**

Binning

Bin the tilt series images prior to reconstruction.

Type: **float**

Option is mandatory: **false**

Default value if not set: **1**

CompensateImageRotation

Rotate the image before applying the WBP filter so that the WBP is not interpolated.

Type: **bool**

Option is mandatory: **false**

Default value if not set: **false**

MotiveList

The motive list with alignment information for each particle.

Type: **string**

Option is mandatory: **true**

References

File base name for the references.

Type: **string**

Option is mandatory: **true**

Masks

File base name for the masks.

Type: **string**

Option is mandatory: **true**

ImageSize

Projection image size.

Type: **int2**, two integer values

Option is mandatory: **true**

TiltCount

Number of tilts to create.

Type: **int**

Option is mandatory: **true**

StartTiltAngle

Start tilt angle value

Type: **float**

Option is mandatory: **true**

TiltIncrement

Tilt angle increment

Type: **float**

Option is mandatory: **true**

Metadata

Filename for metadata to copy initial values from.

Type: **string**

Option is mandatory: **false**

Default value if not set: **"**

OutputDataType

The datatype of the new tilt series.

Argument for command line: **-dt** or **--OutputDataType**

Type: one of [**CHAR**, **FLOAT**, **SHORT**, **UCHAR**, **USHORT**]

Option is mandatory: **false**

Default value if not set: **FLOAT**

Possible notations:

- **CHAR**: CHAR, char, Char
- **FLOAT**: FLOAT, float, Float
- **SHORT**: SHORT, short, Short
- **UCHAR**: UCHAR, uchar, Uchar, UChar

- **USHORT:** USHORT, ushort, Ushort, UShort

Scale

Scale the resulting projection image by this factor before conversion to output datatype.

Type: **float**

Option is mandatory: **false**

Default value if not set: **1**

Offset

Offset to apply to the final projection image before conversion to output datatype.

Type: **float**

Option is mandatory: **false**

Default value if not set: **0**