Changelog ToolIP 2026:

Plugins:

- plugin `Manipulation::SelectRays`: add support for image types `IMAGE_BINARY_FG`, `IMAGE_GREY_16`, `IMAGE_GREY_32`, `IMAGE_GREY_D` as well as all 8bit, 16bit, and 32bit (scalar or interleaved) pixel types
- plugin `Manipulation::Translate`: add support for image type `IMAGE_BINARY_FG`
- plugin `Data::StringToImage`: add support for nan, inf, -inf, and +inf
- plugin `Utility::AutoCrop`: add support for image types `IMAGE_BINARY_FG`
- plugin `Utility::ImageToString`: add support for image type `IMAGE_GREY_D`
- plugin `Utility::ImageToString`: add basic image info comment line to result: image size, format is "# SIZE: x y" for 2d images, and "# SIZE: x y z" for 3d images
- plugin `Utility::Script`:
  - disallow single slash "/" as temp path, replaced with current path "./"
  - change: always append slash "/" to temp path
  - change: always lowercase file suffix/extensions
  - on Linux, treat all non-zero return values as error, not only negative return values
- toolbox `Python` plugins have been completely redesigned and now use `pybind11` under the hood. Therefore many bugs and crashes, caused by interaction when running concurrently, are fixed.
- plugin `Filter::Average3dMasked`: add support for image types `IMAGE_BINARY_FG`, `IMAGE_GREY_16`, `IMAGE_GREY_32`
- plugin `Filter::Average3dMasked`: massive speed up for medium and large mask sizes, and important speed up for large 2d and 3d images
- plugin `Filter::Convolve`: allow input and filter coefficients image to be of different image types, e.g. input as `IMAGE_GREY_D` but coefficients as `IMAGE_GREY_8`
- plugin `Filter::Convolve`: add support for image types `IMAGE_BINARY_FG`, `IMAGE_GREY_16`, `IMAGE_GREY_32`, `IMAGE_GREY_D`
- plugin `Filter::Integral`: add new parameter `output_type` (optional) with possible value `IMAGE_GREY_F` (default), `IMAGE_GREY_32`, `IMAGE_GREY_D`

- plugin `Filter::Integral`: add new parameter `zeroreset`: integrated value is reset to zero when a zero value is observed in the data image along the direction, this leads to integration runs separated by background
- plugin `Filter::Laplace`: new parameter `upcast` to convert result to `IMAGE_GREY_F` if input is integer image `IMAGE_BINARY_FG`, `IMAGE_GREY_8`, `IMAGE_GREY_16`, `IMAGE_GREY_32`
- plugin `Filter::Laplace`: add support for image type `IMAGE_BINARY_FG`, because Laplacian result cannot be mapped to MONO, MONO images only work when parameter `upcast` := TRUE
- plugin `Filter::StructureTensor2D`: add difference scheme methods `CENTRAL_DIFFERENCES` and `KUMAR`
- plugin `Filter::StructureTensorEVD2D`: add difference scheme methods `CENTRAL_DIFFERENCES` and `KUMAR`
- plugin `Filter::StructureTensorEVD3D`: speed up and reduced memory footprint for large 3d images
- plugin `Arithmetic::AssertEq`: support for `NAN` handling: if `ignore_imagetype` := TRUE, then NAN is equal to NAN, if `ignore_imagetype` := FALSE, the standard behaviour that NAN is always unequal to NAN is used, as standardized by IEEE-754
- plugin `Arithmetic::AssertEq`: ensure that image types are matching when `ignore_imagetype` := FALSE
- plugin `Arithmetic::Calculator`:
  - functions `bool()` and `mono()`: add support for image types `IMAGE_BINARY_FG`, `IMAGE_GREY_16`, `IMAGE_GREY_32`
  - add image conversion operators: `IMAGE_GREY_F()`, `IMAGE_GREY_8()`, `IMAGE_GREY_16()`, `IMAGE_GREY_32()`, `IMAGE_BINARY_FG()`, ...
  - add function `long()` as alias to `int()`
- `Arithmetic` plugins `Calculator`, `RPNC` and `Math` on Windows: add support for inverse hyperbolic functions `asinh/acosh/atanh` resp. `ASINH/ACOSH/ATANH`
- plugin `Arithmetic::Negate`: add support for image types `IMAGE_BINARY_FG`, `IMAGE_GREY_16`, `IMAGE_GREY_32`
- plugin `Arithmetic::Multiply`: add support for image types `IMAGE_BINARY_FG`, allow parameter `multiply` being a boolean
- plugin `Segmentation::Labeling`: add support for image type `IMAGE_BINARY_FG`
- plugin `Segmentation::Threshold`: add a spinbox to parameter `threshold`

- plugin `Segmentation::Otsu`: fixed processing of 3d images. plugin only computed grayvalue histogram bounds for the first slice in a 3d image.
- plugin `File::SaveImage`:
  - add support for writing TARGA/TrueVision `*.tga` files
  - add support for writing `IMAGE_GREY_16` image in JPEG2000 format: JP2 and J2K files
- plugin `File::SaveAscii`: add support for image type `IMAGE_GREY_D`
- plugin `File::Load`: add support for reading image formats pfm, pam, jpeg, jp2, jk2, tga, ico, iass.gz

New Plugins:

- new toolbox `JSON`: provides plugins for reading, writing, and mapping JSON data: `ReadJSON`, `SaveJSON`, `SetJSONEntry`, `GetJSONEntry`, `JSON2ValueMap`, and `ValueMapToJSON`.
- new plugin `DataIO::SaveBBs`: extracts sub-images based on bounding-box coordinates and saves them to the user-specified path.
- new plugin `Manipulation::Emplace`: insert (part of) an image patch at a given position into the input image.
- new plugin `String::Printf`: string formatting in C's printf() syntax
- new plugin `String::FString`: string formatting in Python's F-String syntax
- new plugin `String::FindAndReplace`: sub-string replacements

Display:

- plugin `Display`:
  - add support for curve view toggle in the display toolbar for the image's gray-value histogram, including direct histogram editing. This enables quick intensity analysis and interactive adjustment directly in the display window.
  - add a `Save Image` option to the Display plugin context menu.
  - mode `Table View`: add support for row/column headers. The plugin producing a data or feature image must support this functionality. Currently only `Utility::Histogram` and some `MAVIkit` plugins set this information
  - improved tooltip support in mode `Table View`
- plugin `PlotView`: add support for image types `IMAGE_GREY_16`, `IMAGE_GREY_32`

ToolIP:

- ToolIP Parameter dialog tab order changed. the first four tabs (in order) are now `Parameters`, `Description`, `Comment`, `Mappings`.
- Debug bubble tooltip via SHIFT+CONTROL+MOUSEOVER:
  - add memory size of inputs/outputs in b/kB/MB/GB
  - add node label and running state
- Memory Reset:
  - allow for a memory reset even when (parts of) the graph are still running. Note: running nodes (and dependent ones) are not actually reset, it may stop resetting when a running node is detected. works for selected plugins which are not running
- context menu: add `Reset Memory` entries
- add demo window button to toolbar opening a window with example graphs
- add shortcut window button to toolbar opening a window with shortcut documentation

ToolImA:

- add an image normalization check button, enabled by default
- add `Recent Projects` in project menu
- the border thickness of the rectangle, ellipse, and polygon tools is now adjustable

RAGBI:

- add support for reading TARGA/TrueVision `*.tga` files and `*.tiff` files (with two Fs)

MAOIcmd:

- add more debug information in higher verbose levels: print plugin type and name (if set), and more debug information for special nodes like `Merge`, `Branch`, etc
- bug fix in debug output of plugin timing in higher verbose modes. if a plugin was running longer than one hour, the minutes part of the formatted time was off by factor 10

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ARCHIVE

Changelog ToolIP 2024:

Plugins:

- plugin `arithmetic::Calc`: add new function `argmax()`
- plugin `arithmetic::Calc`: functions `grey8()`, `grey16()`, `grey32()`, `greyf()`, and `float()` all now support GREY*8, GREY*16, GREY_32, MONO images
- plugin `arithmetic::RPNC` now supports operator `IFELSE` as alternativ spelling for `?:`
- plugin `classification::ConvexHull` now supports MONO images, also speedup runtime
- plugin `file::ReadImage` add support for reading TARGA/TrueVision *.tga files
- plugin `filter::Variance` now supports GREY*16 and GREY*32 properly
- plugin `matrix::ShuffleRows` shuffles now truely random
- plugin `labelimage::LabelToColor` fix crash when 2nd input is not an image
- plugin `segmentation::Otsu` now supports floating point typed parameter values for 'true*value' and 'false*value'
- plugin `segmentation::Otsu` speedup

New Plugins:

- new plugin `manipulation::Border`

Display:

- zooming did grab focus

ToolIP:

- loading very large graphs from file sometimes caused the scrollbars not covering the entirety of the graph
- workspace zooming via CTRL+MOUSEWHEEL*UP and CTRL+MOUSEWHEEL*DOWN
- tab navigation via keyboard shortcuts CTRL+PAGE*UP and CTRL+PAGE*DOWN
- tab moving via keyboard shortcuts CTRL+SHIFT+PAGE*UP and CTRL+SHIFT+PAGE*DOWN
- tab moving via mouse dragging
- make tabs closable again via [X] button

MAOI:

- fix crash when opening certain MARK files

ToolImA:

- fix crash caused by moving opacity slider to zero position
- fix crash on opening reannotation window on images with no mask/label
- export of MAOI MARK files with integer values for bounding boxes instead of floating point values
- add drawing shapes support for rectangles and ellipses with a single click (before, two click were needed)

Changelog ToolIP 2023:

Plugins:

- plugin `manipulation::Rotate` remove 'autocrop' behavior for 90 and 270 degrees when 'resize'=false
- plugin `manipulation::Rotate` fix crash on large input data: >2GB on Windows, >4GB on Linux/BSD
- plugins `manipulation::Serialize` and `manipulation::Deserialize` do support now all image types, not only GREY_F
- plugin `manipulation::Flip` supports now MONO image type BINARY*FG and BINARY*BG
- plugin `data::Ball` supports now MONO images
- plugin `utility::ConvertType` fix converting from non-interleaved RGB_8 images
- plugin `utility::ConvertType` supports now converting MONO image type BINARY*BG images to GREY*F, GREY*8, and BINARY*FG
- plugin `utility::SelectImage` supports now MONO images
- plugin `utility::TextSerializer` adds missing plugin description tab
- plugin `transformation::DCT` fix crash on Windows operating systems
- plugin `arithmetic::AssertEq` supports now GREY_D images
- plugin `arithmetic::AssertEq` add image type comparision into the assert decision as well
- plugin `arithmetic::Subtract` supports now MONO images
- plugin `matrix::ShuffleRow` supports now one or two inputs
- plugin `matrix::ShuffleRow` supports now all image types
- plugin `filter::Laplace` fix crash on large input data: >2GB on Windows, >4GB on Linux/BSD
- plugin `filter::Gauss` fix crash on large input data: >2GB on Windows, >4GB on Linux/BSD
- plugin `filter::CEShock` fix crash on large input data: >2GB on Windows, >4GB on Linux/BSD
- plugin `filter::IsoNonlinDiffusion` fix crash on large input data: >2GB on Windows, >4GB on Linux/BSD
- plugin `filter::StructureTensorEVD3D` fix crash on large input data: >2GB on Windows, >4GB on Linux/BSD

New Plugins:

- new plugin `color::colormap`

Display:

- fix RGB_8I image pixel value readout, issue was introduced in ToolIP2017

RAGBI:

- provide startup script 'ragbi.bat' for standalone RAGBI
- standalone RAGBI now supports commandline parameters '–version', '–help', and '–print-system-id'
- commandline option '–print-system-id' is to get hardware key needed for license creation
- if an input in the given graph TLP is named, this name is now added to the corresponding tab text
- display on items are titled in this way as well
- add tooltips to the tab titles

MAOIcmd:

- new commandline parameter '–verbose-output-slot-list' for printout of complex results. when output port contains vector- or map-typed result data, then it prints the complex content to commandline inside of the "[]"-result-syntax. this printout is off by default, only simple scalar results are printed as-is. power user feature, may be extended in future
- provide start script 'MAOIcmd.bat'

ToolIP:

- add loop counter label to repeat node and looped subgraphs, that is, subgraphs with a Repeat node: shows the current iteration on the icon of repeat-plugin resp. subgraph
- new shortcut quick help via the "?" button in the icon bar
- DescriptionTab, XmlTab, CommentTab: basic zoom support via shortcut CTRL+mousewheel, CTRL+PLUS, and CTRL+MINUS
- plugins with the ToolIP-graph '...'-button for Open/Save support now environment variables in %ENVVAR%-syntax encoded in the filename path
- new commandline parameter '–run' for auto-running TLP graphs on startup, syntax: 'toolip –run graph.tlp'
- commandline parameter '–version' prints now license information if present as well

ToolImA:

- add a user-friendly reannotation tool for modifying labels. It has the following features:
- image filter (for labels, names, show list of filtered images; filter for size)
- regular expressions for name filtering
- using key shortcuts (defined by user) for reannotation

File Formats:

- load support for 64bit double TIFF files, loaded as IMAGE*GREY*D
- correct misleading error messages when writing to read-only location

Changelog ToolIP 2022:

Plugins:

- plugin arithmetic::Calc add functions 'rgb8()', and 'assert()'
- plugin arithmetic::Calc fix memory
- plugin arithmetic::Calc, the functions 'row()' and 'col()' did hang on certain empty images.
- plugin arithmetic::Multiply supports now MONO images
- plugin handling::GraphOnLabel fixing problems with graphs containing Resize from 2d to 3d
- plugin morphology::Reconstruction fixing crash when second image is smaller than first image
- plugin manipulation::Resize now sends an error when the input images are zero-sized
- plugin manipulation::Resize: when factors are exactly 1.0 then just copy the input data. This change makes this case faster, and the image content does not get (slightly) blurred anymore
- plugin utility::StringManipulation adds new parameter 'start*with*separator' for starting the output string with or without seperator. By default, it starts with seperator.
- plugin utility::ReplaceValue fix when 2nd input lookup table is GREY*32 or GREY*F data: output was unitialized memory, the correct replacements did not occure
- plugin arithmetic::AssertEq fixes crash when input is not an image
- plugin arithmetic::AssertEq adds verbose mode: a success message that the assertion holds. It is useful, when parsing output of test suite TLP's when a TLP contains more than one assertion

- plugin segmentation::Otsu fix when parameter 'assume256':=FALSE then parameter 'factor' is ignored (that is, a factor of 1.0 is used)
- plugin data::Noise GAUSSIAN fixes invalid value INFINITY in GAUSSIAN-mode on Windows caused by any uncatched log(0)
- plugin data::Noise fixes invalid value INFINITY in EXPONENTIAL- and RAYLEIGH-mode
- plugin matrix::RANSAC fix crash when model graph returns a non-image or a null pointer
- plugin utility::Statistics fix crash on large data: >2GB on Windows, >4GB on Linux/BSD
- plugin utility::Statistics adds support for GREY16, GREY32, and MONO data
- plugin arithmetic::MathConstant adds constants for Tau

New Plugins:

- new plugin color::ColorMap which can be used for colorizing images
- new plugin sysUtils::FileExists

Display:

- add proper RGB_F image support
- in table view, for values < 10-6 use scientific notation
- new keyboard shortcuts CTRL+PAGE*UP for next slice, CTRL+PAGE*DOWN for previous slice, and CTRL+COMMA for best fitting zoom

RAGBI:

- add support for TLP graphs with no inputs and no outputs
- ESCAPE key does *not* kill the *standalone* RAGBI anymore

MAOIcmd:

- Add support for '*.ascii' in command line input/output as valid suffix handled by ReadASCII resp. SaveASCII
- Add support for writing RAW data '*.raw'
- Add support for loading MARK files '*.mark'
- Add support for loading/writing valuemap files '*.valuemap'
- Add new parameter '–version'
- Add support for ignoring an input port via '_' which extends behaviour of MAVIcmd like when calling if without any inputs: any connected path connected to an unset input port is not triggered to run.
- Add verboselevel API via parameter '–verbose-level [LEVEL]'

- Add printing of passed parameters from command line to debug output (in certain debuglevels only)
- Add simple analysis to show the top N slowest plugins
- Add to super verbose mode: plugin starting timestamp and plugin stopping timestamp

ToolIP:

- when a graph load error occures, or when a graph could only partially loaded, then now a proper error message is printed to console and to logfile
- allow loading graph filenames with uppercase suffix '*.TLP'
- when inpin or outpin are selected (yellow), the connected edges are marked more clearly
- fix broken TLP button in parameter dialog

Installer:

- add plugins from calc.dll and handling.dll into the default configuration
- fix Windows 10 issue that for TLP files the icons may be not set
- In windows double-click on TLP file opens ToolIP empty without loading the TLP file
- Add example image 'cameraman'

MAOI:

- add ask-before-close option to preferences of MAOI

ToolImA:

- starting Toolima from command line did sometimes crash
- loading image per command line
- new projects have a default label, therefore, it can be started to label the images.
- fix crash after closing toolima
- set default drawing tool to rectangular shape
- add zoom toolbar widget

File Formats:

- fix loading TLP files: leading/trailing whitespaces in string values got trimmed instead of being preserved
- fix loading TIFF files in CMYK color space could crash the application

Changelog ToolIP 2021:

Plugins:

- plugin filter::IsoNonlinDiffusion: support overly large filter sizes. be aware that edge treatment causes indices out of bounds onto the opposite edge
- plugin IO::SaveText did not show errors when trying to save into folder without permission
- plugin utility::ReplaceValue speedup for large replacement lists on 2nd input port, large speedup for GREY*8 and GREY*16 images, slight speedup for GREY_F images

New plugins:

- new toolbox handling with plugins GraphOnZone, GraphOnSlice, GraphOnLabel, GraphFromFile, ParameterLoop

Plugin changes:

- plugin arithmetic::Calc function 'grey8()' now supports image type MONO
- plugin arithmetic::Calc new function 'mono()'
- plugin arithmetic::Calc allows now parameters being readable for the calc functions to support passing of user parameters such like verbosity state
- plugin arithmetic::Calc: when a boolean parameter 'divbyzeroiserror' with value 'false' is present, then divisions to not result in an error, but the result of division by zero will be +INFINITY or -INFINITY for finite values, and NAN for nonfinite values
- plugin segmentation::Otsu has now a 2nd ouput with the actual threshold used in segmentation, that is, the Otsu value multiplied by factor

ToolIP:

- when inpin or outpin is selected, then the connected edges are marked clearly

MAOIcmd:

- the fallback formats for result image saving is changed from PNG to TIFF on 1st retry, and to IASS.GZ on 2nd retry (or on 1st try for *very large* images only)

RAGBI:

- fix crash on import of ASCII/TEXT and REK/REK.GZ files

ToolImA:

- FastReassign tool for changing the label with the left mouse click (pressing a number 0-9 on the keyboard selected the corresponding label in the label list) *added* LabelMe reader (only prototype, use with caution)
- LabelMe export/import json-files functions
- Support for the ZoneList plugin output, which is now accepted as input for the fourth input pin, when run inside ToolIp
- The main view now remembers the last transformations (zoom, rotations, scroll position, . . .) for each image
- The EditPolygonTool now supports the "Delete" key. - The PolygonTool now switches to the EditPolygonTool after a new polygon has been drawn - The LineTool now switches to the EditLineTool after a new line has been drawn
- The Ruler tool now respects transformations and the baseline is always draw horizontally in view coordinates.
- Support for loading and saving ToolIma projects as gzipped files
- The fill color (fast reassign) tool now supports copying the label id with the right mouse button and pasting it with the left button

Changelog ToolIP 2020:

Plugins:

- plugin Arithmetic::Calculator fix range outside of [0,255] and non-integers for operator== and function equal(), and rounding issue of float()
- plugin Arithmetic::Calculator operator== and operator!= for integer values outside of [-16777216,-16777216]
- plugin Arithmetic::Calculator now handles runplugin() properly when no return value from passed plugin/graph is available
- plugin Segmentation::Otsu: threshold for GREY_F and 8bit mode when no greyvalue in [0,2555555] is present returned segmention with threshold 0 instead of hard error
- plugin Data::PositionToValue did return random output grayvalues on invalid parameter 'mode'
- plugin Data::Constant clip fill grayvalue from parameter 'value' to the proper grayvalue range, such that no out-of-range value is generated
- plugin Data::Split fix memory leak when image resizing failes

- plugin Data::Split returned two unitialized result images on invalid parameter 'along' values
- plugins Morphology::FillHole, Morphology::CutHill, and Morphology::Reconstruction now fully support GREY_F images with pixelvalues > 255, negative values, and preserving the fractional part
- plugins Handling::GraphOnZone, Handling::GraphOnLabel, and partially Handling::GraphFromFile: major review of input and output data handling of the graph, catching invalid image types and sizes, and supporting 3d data as well
- plugin Data::Split large image data support >4GB
- plugin Manipulation::ComposeImage large image data support >4GB
- plugin Color::Combine large image data support >4GB
- plugin Data::Constant large image data support >4GB
- plugin Utility::ConvertType large image data support >4GB
- plugin Data::PixelValue large image data support >4GB
- plugin Manipulation::Pad large image data support >4GB
- plugins Handling::GraphOnLabel, Handling::GraphOnZone large image data support >4GB
- plugin Utility::Script fix crash on string '%i4.type'
- plugin Features::AveragePolar fix crash on radii<=0

New plugins:

- new plugin SysUtils::ReadTextFile transfered from MAVIkit
- new plugin Handling::GraphOnSlice
- new plugin Matrix::ShuffleRows

Plugin changes:

- all plugins in handling now support in parameters tab an "..."-button to the right of the graph loading entry to open the graph directly into a new ToolIP workspace
- plugins Handling::GraphOnLabel and Handling::GraphOnZone support now passing additional parameters directly to the graph to be used
- plugin Arithmetic::Calculator adds "transpose()" function and ".T" operator for matrix transposing, and "matrixmul()" function and "@" operator for matrix multiplication
- plugin Segmentation::Otsu supports now binary mask images
- plugin Data::Split supports now image type MONO
- plugin Manipulation::Pad supports now image types GREY_32 and MONO

- plugin Manipulation::Append adds new parameter 'upcast' such that the plugin can append images of differing types, e.g. GREY*8 and GREY*F

ToolIP:

- new plugin info info bubble/extended tooltip: show info when hoovering mouse cursor with keys CTRL+SHIFT pressed over a plugin symbol
- new plugin documentation info bubble/extended tooltip: show plugin documentation when hoovering mouse cursor with keys CTRL+SHIFT pressed over a plugins blue parameter-button
- solve parameter dialog truncation of floating point values at sixth decimal digit
- extend support of parameter tab control parameter 'visible*if*rpn' to all numeric value types properly

MAOIcmd:

- support loading and saving image data in GeoDict file format

RAGBI:

- support for loading image data in GeoDict file format

ToolImA:

- new tool for image annotations. This tools has a plugin mode and a stand alone mode. Some ToolImA-features are:
- image annotation with polygon, rectangle, line, ellipse and pixels
- exporting the project into the following formats: VOC, mark, LabelMe, and VGG-Image-Annotator format
- enable to loading predefined labels
- annotating 3D images-slice
- reassign labels

File Formats:

- support for TIFF files in CMYK color space added to plugin File::ReadImage, MAOIcmd, and RAGBI

Known Issues:

- plugin Gauss with sigma < 1.0 is not symmetric

Changelog ToolIP 2019:

Plugins:

- plugin Gauss: a parameter sigma below zero (out of sigma*x, sigma*y, sigma_z) is replaced by sigma=zero which means, that this direction will not be filtered
- plugin Math: fix crash when input is a value

New plugins:

- add new toolbox ValueUtils
- add new plugins ConvertValue and SetValueMapEntry into toolbox ValueUtils

Plugin changes:

- plugin Calculator function "float()" does now support images too
- plugin Display: speedup and improved large image support
- plugin Distance supports image types IMAGE*GREY*16, IMAGE*GREY*32, and IMAGE*BINARY*FG too
- plugin Average3d supports image types IMAGE*GREY*16, IMAGE*GREY*32, and IMAGE*BINARY*FG too
- plugin ZoneList supports image types IMAGE*GREY*16, IMAGE*GREY*32, and IMAGE*BINARY*FG too
- plugin Append supports image types IMAGE*BINARY*FG too
- plugin Ranking supports large image data >4GB now
- plugin Translate supports large image data >4GB now
- plugin AssertEq has new parameter 'negate_assert' for assert-not-equal
- plugin AssertEq now properly handles NAN values
- plugin ZoneList supports now large label numbers >= 2**31** < **2**32-1
- plugin ZoneList supports 3d image data

ToolIP:

- add plugin documentation preview via SHIFT+mouse-over
- a plugin error inside of a looped sub-graph does now always end the looping

MAOIcmd:

- MAOIcmd supports writing image types IMAGE*BINARY*FG and IMAGE*COMPLEX*F
- MAOIcmd supports now output placeholder (ignoring outputs) via underscore "_"

RAGBI:

- supports now images in TIFF format (2d and 3d)

Known Issues:

- plugin Gauss with sigma < 1.0 is not symmetric

Changelog ToolIP 2018:

Plugins:

- fix crash plugin Color::Separate when m*out*type is neither IMAGE*GREY*8 nor IMAGE*GREY*F
- fix plugin PCA: two instances of plugin PCA can interfere which each other when running in parallel
- fix plugin ICA: two instances of plugin ICA can interfere which each other when running in parallel
- fix plugin SVD: two instances of plugin SVD can interfere which each other when running in parallel
- fix plugin FFT: different instances of plugins using FFTW library may interfere which each other when running in parallel
- fix plugin matrix::Multiply: non-GREY_F image input result in out-of-bounds memory accesses, resulting in either semi-random result, or crash
- fix plugin SVD crash when height < width
- fix plugin EVD: NAN handling
- fix plugin ICA, exits ToolIP/MAOIcmd when input is malformed or number of iterations exceeds threshold
- fix plugin PCA: exits ToolIP/MAOIcmd when input is malformed or number of iterations exceeds threshold
- fix plugin StructureTensorEVD3D crash when size_z == 1, refine boundary
- fix plugin Calc: couldn't parse double brackets like "exp((2))"
- fix plugin Calc: fix bug involving usage of unary left operators
- fix plugin Calc: fix operators < and != with 2d image, and with 3d image when size.z==1
- fix plugin Calc: correct the parsing of string literals, string value does not include surrounding quotes

- fix crash when plugin Display has open window with a value instead of image when a subgraphs runs looped
- plugin Variance: fix large image support for plugin
- plugin ShiftHistVar fix crash when: no 2nd input, 1st and/or 2nd input is not an image
- plugin XYEntropy fix crash when: no 2nd input, 1st and/or 2nd input is not an image
- toolbox Features, plugin Median produces now correct results for GREY_8 input data images
- fix plugins SaveAscii and Image2String: float values were truncated to six digits. now all significant digits are printed.
- plugin SaveASCII: new parameters 'precision' and 'base_type' for chosing between fixed point and scientific output.
- plugin Image2String: new parameter 'precision'

New plugins:

- new plugin DCT, ~~toolbox~~ Transformation
- new ~~toolbox~~ SysUtils, DLL sysutils
- new plugin Console, ~~toolbox~~ SysUtils
- move plugin EnvVar from ~~toolbox~~ Utility to ~~toolbox~~ SysUtils
- new plugin Platform, ~~toolbox~~ SysUtils
- new plugin SaveText, ~~toolbox~~ Generic/IO

Plugin changes:

- plugins RayMinimum and RayMaximum: add support for image types GREY*16, GREY*32, and MONO_BINARY
- plugin Variance: add support for image types GREY*16, GREY*32, and MONO_BINARY
- plugin AssertEq with new parameter 'ignore_imagetype'
- plugin Calc: add new operators <=, >=, lteq(), and qteq()
- plugin Calc: new operator function pixel()
- plugin Calc now supports floating point constants in scientific e-notation
- plugin Match: add new second output for translation vector
- plugin Gauss now supports sigma lower one
- plugin RPNC fix parsing of incomplete number tokens
- plugin ColorTransform add 3d image support

- plugin EVD using TNT algorithm: speedup for small matrices
- Box plugin completely reworked by respecting the old behavior.
- fix line width behavior at the image boundaries
- fix handling of offsets and of zero lenghts
- make behaviour of parameters 'fillBox' versus 'line_width' consistent
- add consistent 3d handling
- new parameter 'box_type'
- several plugins with improved documentation
- plugin Display now supports rotation and flipping of view
- plugin Display now supports free zooming via mouse wheel
- plugin Display now supports very large images
- plugin Display with improved statusbar
- plugin Plot now closable via ESCAPE key

ToolIP:

- fix crash when ToolIP is startet without environment variable ITWMDIR being set
- add tooltips to subgraphs tabbar to clarify subgraphs path/route
- add shortcut ALT+S + icon for saving top parent graph when in subgraph workspace
- rename document by double-click on TAB title
- support for Inpin visualizers via double-click on inpins
- modify ToolIP log widget to:
- update in 200ms intervals,
- defer updates if output grows faster than update interval
- truncate large output that has been collected while deferring
- parameter dialog execute button for Run/Stop now reflects current running state
- ToolIP Search Widget: live-search while a graph is running is now possible
- single mouse click on plugins red run button stops plugin/subgraph
- crash when dropping unconnected plugin into output port

MAOIcmd and RAGBI:

- support for loading extended file formats
- in RAGBI, choose via Add -> Image -> All Files (.) -> select
- file format detection currently via filename suffix
- images in ASCII text formats like CSV: *.txt,* .csv, *.asc via Utility::ReadAscii

- 3d images in CINE filemaformat: *.cine via Utility::ReadCine
- 3d images in Fraunhofer REK format: *.rek,* .rek.gz via MAVIkit::IO::LoadREK (available if MAVIkit is present)
- 3d images in AVS header file format: *.fld via MAVIkit::IO::LoadAVS (available if MAVIkit is present)
- 3d images in VolumeGraphics file format: *.vgi,* .vgl via MAVIkit::IO::LoadVGI resp. MAVIkit::IO::LoadVGL (available if MAVIkit is present)
- 3d images in MRC/CCP4 Cryo-Microscopy/Tomography file format: *.mrc via MAVIkit::IO::LoadMRC (available if MAVIkit is present)

RAGBI:

- RAGBI on cancellation, RAGBI now properly aborts graph (and looped subgraphs), graph stops as soon as possible
- proper fileformat fallback for 3d images, and for imagetypes GREY*F and COMPLEX*F

MAOIcmd:

- improve verbose mode
- fix MAOIcmd crash when attempting to save empty (null-sized) images
- re-add image format RGB8I supported for result image saving

Changelog ToolIP 2017:

Plugins:

- fix plugin SVD when input matrix is improperly shaped. also fix crash
- fix 3d image support of plugin Expand, every second slice was warped
- fix large image support for plugin Replicate, crash on large data if result image is larger 4GB due to integer overflow
- fix large image support for plugin Diffusion, IsoNonlinDiffusion, CEShock, and ceShock_IsoNonlinDiff
- fix large image support for plugin Gauss, crash on large data if result image is larger 4GB due to integer overflow
- fix numerical issue for plugin Rotate when doing bicubic splines interpolation on GREY_8 image data
- fix plugin SelectRays input image combination GREY*8 and GREY*F image
- fix plugin SelectRays large image support
- fix plugin Multiply from toolbox Matrix: possible crashes for GREY_8 images
- fix several issues in plugin SVD: crash when height < width or number of iterations exceeds limit
- in subgraphs, plugin Value did change type parameter 'value' when 'value' was mapped to subgraph parameter which was not of type long
- plugin ReadAscii fix COMMA support

New plugins:

- plugin Average3dMasked, toolbox Filter
- plugin ReplaceNonFinite, toolbox Utility
- plugin Calculator, toolbox Arithmetic
- new Arithmetic plugins Pow, Exp, Log, Sin, Cos, Tan
- new Arithmetic plugins Ceil and Floor
- plugin ImageToString, toolbox Utility
- plugin AssertEq, toolbox Arithmetic
- plugin MathConstant, toolbox Arithmetic

Plugin changes:

- plugin SwitchAxes: new modes “XYZ”, “ZXY” and “YZX”
- plugin ScatterPlot: saving the current plot support,
- plugin Plot and ScatterPlot: new mode “save_only” for saving without displaying
- plugin Median with new method “SORTING_NETWORKS” for fast filtering for small fix sized masks
- plugin RPNC: add parameter “divbyzeroiserror” for handling division-by-zero-strategy (infinity or error)
- plugin SwitchAxes: add support for image types GREY*16, GREY*32, and MONO_BINARY
- plugin SaveAscii: add support for image types GREY*16, GREY*32, and MONO_BINARY
- plugin Serialize: add support for image types GREY*16, GREY*32, and MONO_BINARY
- plugin Sort: add support for image types GREY*16, GREY*32, and MONO_BINARY
- plugin Expand, add support for image types GREY*16, GREY*32, and MONO_BINARY
- plugin Point supports now 3d images
- plugin Median: speedup of method “NAIVE”
- plugin EVD method “TNT”: speedup for small matrices

ToolIP:

- fix crash when pressing CTRL+W several times
- fix issues with large graphs (>1000 nodes) which were executed too slow when to many merge/branch/switch nodes were present

- fix issues in subgraphs loop mode: repeat node now waits for subgraph finishing before loop-retriggering
- merge/branch/switch nodes have been triggered on copy/paste unexpectedly
- parameter change does not trigger document-change anymore (the star after the filename in tab)
- last UNDO action sets document state now to unchanged again
- add graphical feedback for of loop iteration for subgraphs: draw iteration number onto Repeat and onto SubGraph icons
- add option for auto-save before running workspace
- add command line parameter "–remove-log-window"
- add memory workload to tooltip and status-tip/status-line
- now creates backup of old TLP file before overwriting existing TLP file
- about dialog text copyable
- several improvements of RAGBI
- several Windows installer improvements, e.g. Taskbar (QuickLaunch) Shortcut ComboBox

MAOIcmd:

- print timings both in milliseconds and HH:MM:SS:sss format
- fix crash when ITWMDIR is not set
- prints now more details in verbose mode
- supports now more input formats: txt, asc, csv, cine; if MAVIkit is available, it also supports: rek, rek.gz, fld, vgi, vgl

KNOWN ISSUES - if a subgraph is opened in a floating window (instead of in a new tab), undo/redo shortcuts do not work and window handling issues can occure - loading a dll in RAGBI crashes ToolIP - ToolIP loops: loop variable gets ignored if type changes - ToolIP loops: Adding repeat node in workspace contains a repeat node send an exception and changes the position of repeat node.

KNOWN ISSUES

Changelog ToolIP 2016:

Plugins: - plugin Histogram: fix handling of last bin - plugin Histogram: fix incorrect histograms on large (3d) float images - plugin Normalize: the max and min of image would be computed on all slices for 3d image. - plugin Statistics: speedup and 3d image support - plugin Line: add "line segment" method - plugin StringManipulation: add parameter to skip empty parts of string - plugin

Otsu: provide range-independent implementation - plugin LabelToSize: 3d image support - plugins CartesianToPolar and PolarToCartesian: 3d image support, support more image types - plugin Pad: 3d image support - plugin Constant: new parameter imagetype - all Morphology plugins: support image type MONO - plugin Convolution: second input port for filter mask and major change in parameters - plugin RPNC: third input port, accessable by new token “i3” - plugin RPNC: add unary negative function by token “NEG” - plugin RPNC: new cast functions “CASTB”, “CAST8”, “CAST16”, “CAST32”, and “CASTF” - plugin RPNC: support more image types (as input and output, operator support depends on plugins) - plugin RPNC: direct plugin call support. NOTE: only one input and one output is supported currently. - plugins ReadImage and SaveImage: support JPEG2000 format - plugins ReadImage and SaveImage: support ICO format - plugins ReadImage and SaveImage: support PFM format (floating point extension to PGM format) - all I/O plugins: automatic plugin naming is now only active if I/O plugin was not explictly named by user before - plugin Display: table view: new feature showing image data as a matrix - plugin Plot: the plot window is not closed anymore, when pressing the run button in the parameters dialog

New plugins: - plugin DeleteDuplicate: image is assumed as matrix, then it acts like a make-unique operation w.r.t. rows or columns - plugin EnvVar: environment variable manipulation: reading, writing, removing environment variables - plugin Laplace: Laplacian filtering - plugin SelectPixel: select a pixel value from image B or from image C w.r.t. pixel value in image A

ToolIP GUI: - on Windows, when starting ToolIP from console, console was hidden - fix known issue: crash on Ubuntu with Unity Desktop - by default, ToolIP now asks for confirmation before quitting, this can be enabled/disabled in settings dialog - subgraphs opens in new tab by default, this can be enabled/disabled in settings dialog - add key “F2” for renaming plugins - add tooltip on warning sign for directly showing error messages - when aborting (globally or manually), the following connected plugins or subgraphs are never triggered anymore - plugin Repeat: setting global run state to STOP was ignored - plugin Repeat: it is now possible to run repeat step by step - RAGBI: add resume/pause support - RAGBI: image path is now displayed as tooltip and in the window title - RAGBI: a graph with no input ports but at least one output port can now be executed - fix Memory Watchdog: on computers with few RAM, enabling ToolIPs automatic memory cleanup lead sometimes to crashes when other programs requested more memory - parameter dialogs: add resetting parameter button - parameter dialogs: shortcut ALT+D is now ‘Reset Default Parameters’ - parameter dialogs: shortcut ALT+R for button ‘Run’ - parameter dialogs: shortcut ALT+M for button ‘Add Mapping’ - Search Box: endless scrolling enabled - Search Window: label updates are included - Search Window: plugins group name and toolbox name is included - Search Window: comment fields are added to search - Search Window: boolean parameters are added to search - Search Window: plugin runtimes are added to search window if timing is active

- several fixes, new features (e.g. generalisation to 3d image data, more image types for selected plugins, . . .)
- several more examples: sharpening by laplacian filter, line fitting with least squares method, local thresholding, sharpening by high boost filter

KNOWN ISSUES - if a subgraph is opened in a floating window (instead of in a new tab), undo/redo shortcuts do not work and window handling issues can occure - loading a dll in RAGBI crashes ToolIP - ToolIP loops: loop variable gets ignored if type changes - ToolIP loops: Adding repeat node in workspace contains a repeat node send an exception and changes the position of repeat node.

KNOWN ISSUES

Changelog ToolIP 2015: - *add* timestamps in console - *fix* all timestamps in ToolIP in the same format "yyyy-MM-dd HH:mm:ss"

- *add* Log messages for undo/redo commands
- *fix* incomplete variable names in expanded parameters if name is to long and contains certain delimiters (like a "-")
- *fix* ToolIP now stores/restores place, size, and state of plugin display over sessions
- *add* plugin search box does now also support mouse double click for inserting plugin into workspace [
- *fix* tooltip/statustip of safe mode button did not explain why it was not available (because: demo mode)
- *change* extend context menu handling and many following:
- copy/paste/cut/duplicate/delete
- undo/redo
- properties of items and of workspace
- rename item
- open subgraph in new tab/window
- fold selection into subgraph/unfold subgraph
- set run behaviour of selected plugins (normal, execute, stop)
- drop single plugin into input/output port
- extract plugin from input/output port
- *fix* add shortcut info as tooltip for all toolbar icons
- *fix* search widget was not closable by key ESCAPE
- *fix* settings dialog didnt close on key ESCAPE

- *fix* rightclick on unselected item selects it, and then opens context menu
- *fix* log plugin errors in console
- *fix* fix inconsistent run & reset graph behaviour
- *fix* crash when closing tab with an aborting plugin
- *fix* ToolIP crashs on startup when toolip.ini is corrupt
- *fix* do not trigger following nodes if new data is set via edge creation
- *add* the parameter -v/–verbose to MAOIcmd for printing duration time and number of cores to stdout
- *add* RAGBI formerly known as rungraph to the toolbar
- RunGraph is renamed to Ragbi (Run A Graph on a Batch of Images/Inputs)
- it is possibe to have more display winows (=#input ports + #output ports)
- display windows are syncronized with each other.
- the name of current image is highlighted.
- *added* copy feature: the text of the selected items is now copied to the clipboard when using the copy shortcut
- *added* shortcuts for the input edit menu (Del -> Delete item, Ctrl+Shift+Up -> move item up, Ctrl+Shift+Down -> move item down)
- *change* merged “add image input” and “add item input” buttons
- *changed* the settings widget has now its own tab
- *added* RunGraph standalone mode: RunGraph can now be executed as ToolIP plugin or alone.
- *added* Display synchronization behaviour is more customizable. (Create sync groups, sync mode, . . .)
- *add* description tab
- output filename patterns can now be set separatly for each output port.
- value handling: display, . . .
- *fix* right-clicking on background did not clear selection
- *fix* selections must stay selected after context-menu actions
- *fix* created/unfolded subgraph is not centered correctly on original position
- *fix* output pin color consistency
- *fix* TLP graph files were not removable from plugin tree sidebar

- *add* in description tab, add support for links to txt-files (for license info support)
- *fix* TLP cannot save parameter values nan/+inf/-inf
- *fix* hide command console on Windows