Changelog ToolIP 2024:

Plugins:
- plugin arithmetic::Calc: add new function argmax()
- plugin arithmetic::Calc: functions grey8(), grey16(), grey32(), greyl(), and float() all now support GREY_8, GREY_16, GREY_32, MONO images
- plugin arithmetic::RPNC now supports operator IFELSE as alternative 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 truly 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)

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ARCHIVE

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 separator. By default, it starts with separator.

• plugin utility::ReplaceValue fix when 2nd input lookup table is GREY_32 or GREY_F data: output was uninitialized memory, the correct replacements did not occur

• 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 uncaught 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 occurs, 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 ‘divbyzeroinerror’ 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 output 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 ToolIm 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 segmentation 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 fails
- plugin Data::Split returned two uninitialized 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 transferred 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 plugin’s 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 tool has a plugin mode and a standalone 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 \( \geq 231 < 2^{32}-1 \)
- 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 choosing 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 lengths
• 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 file format: *.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 too 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

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• 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 occur
• 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, accessible 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 explicitly 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 occur
• 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 too 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 crashes 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 possible to have more display windows (=#input ports + #output ports)
• display windows are synchronized 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 separately 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