



Image Processing Toolbox – v2.1 Release notes.

5 June 2010

- **New Functions**

- PSF2OTF - Convert point-spread function to optical transfer function.
- OTF2PSF - Convert optical transfer function to point-spread function.
- EdgeTaper - Smooth discontinuity along image edges.
- Label2RGB - Convert labels image to RGB image.
- RGB2Ind - Convert RGB image to indexed image.
- CPCorr - Uses cross-correlation to tune control points.
- CP2TForm - Construct a geometrical transformation from control point pairs.
- CornerMetric - Compute corner features from image.
- Im2Graph – Build a graph based on neighboring pixels.
- MinCut – Compute a minimum cut in a graph. Useful for image segmentation and other computer vision tasks.

- **New Features**

- Overall performance improvement.
- ImRead can now use Windows® Imaging Component (WIC) to read various image formats, including raw formats. This feature may require installing a proper WIC codec.

- **Fixed bugs**

- ImPyramid – now works properly when ration $\neq 2$.



Image Processing Toolbox – v2.0 Release notes.

1. New Functions

- `AdaptHistEq` - Apply contrast-limited adaptive histogram equalization.
- `Analyze75Info` - Read Analyze 7.5 file header.
- `Analyze75Read` - Read Analyze 7.5 file format.
- `ApplyCForm` - Apply color transformation.
- `CheckerBoard` - Checkerboard test image.
- `Conndef` - Build connectivity array.
- `DicomInfo` - Read metadata from a DICOM file.
- `DicomRead` - Read a DICOM file.
- `DicomWrite` - Write a DICOM file.
- `Entropy` - Computes the entropy of a graylevel image.
- `FanBeam` - Fan-beam transform.
- `FlipTForm` - Invert a TForm struct.
- `GetHeight` - Return the structuring element height.
- `GetNHood` - Return the structuring element neighborhood.
- `GetSequence` - Return the decomposition of a structuring element.
- `Gray2Ind` - Graylevel image to indexed image conversion.
- `ICCRead` - Read ICC profile.
- `iFanBeam` - Inverse fan-beam transform.
- `Im2BW` - Graylevel image to binary image conversion.
- `ImAbsDiff` - Compute the absolute difference of two images or image and scalar.
- `ImAdd` - Add two images, or add image with a scalar.
- `ImAdjust` - Adjust graylevel or color image values.
- `ImComplement` - Compute the complement of an image.
- `ImDivide` - Divide one image by another image or by scalar.
- `ImLinComb` - Compute linear combination of images.
- `ImMultiply` - Multiply one image by another image or by scalar.
- `ImPyramid` - Image down and up sample.
- `ImSubtract` - Subtract two images, or subtract scalar from image.
- `ImTransform` - 2-dimensional geometric transformation (affine, perspective,...).



- Ind2Gray - Indexed image to graylevel image conversion.
- IsFlat - returns 'true' for a flat structuring element.
- Lab2Double - Encode CIE-Lab to double.
- Lab2Single - Encode CIE-Lab to double.
- Lab2Uint16 - Encode CIE-Lab to uint16.
- Lab2Uint8 - Encode CIE-Lab to uint8.
- MakeCForm - Create color transformation struct.
- MakeResampler - Create a resampler structure.
- MakeTForm - Create a TForm structure.
- Mat2Gray - Matrix to graylevel image conversion.
- Mean2 - Computes the mean pixel value of an image.
- Phantom - Create a phantom head image.
- Reflect - Reflect a morphological structuring element.
- RegionProps - Measure various properties of image regions.
- RoiColor - Select ROI using graylevel values.
- Std2 - Computes the standard deviation of a graylevel image.
- Strel - Create a morphological structure element.
- StretchLim - Compute limit for contrast enhancement.
- TFormArray - N-dimensional geometric transformation.
- TFormFwd - Apply forward spatial transformation to coordinates.
- TFormInv - Apply inverse spatial transformation to coordinates.
- Translate - Translate a morphological structuring element.
- Watershed - Image segmentation using watershed.
- Watershed2 - Image (2d) segmentation using watershed transform.

2. New Features

- Inverse gamma function now gives the correct result
- Improve accuracy in iRadon/Radon transform.
- Morphological operations (ImErode/ImDilate/ImOpen/ImClose/ImTopHat,ImBotHat) now work in double precision.
- Morphological operations now work on N-D data array ,N-d connectivity.
- Morphological operations supports non-flat structuring element.
- BwPerim Works in N-d.
- Color transformations support for double precision.
- Color transformations now support “white point” user input.
- Color transformations now support color map input.



- DCT2/iDCT2 now support double and complex input.
- Hough transform output is now floating point.
- OrdFilter2 has 'zeros' padding as default.
- OrdFilter and Median filter performance improvements.
- BwMorph – number of iteration can be inf, iteration stop after saturate.
- FixFilter - Borders are now in 'replicated' mode. UINT8 result with 'highpass' is INT16
- ImFilter works on any dimensional images, Kernels, double precision.
- ImFilter – support for {'full', 'same'} and also {'conv', 'corr'} options.
- BwDist – Support for N-d distance transform, (Euclidean is only up to 3d).
- BwULTErode – Support for N-d (Euclidean is only up to 3d).
- ImResize – can accept now scale parameter instead of output size.
- DctMtx – Output is 'double' instead of 'single'.
- BwSelect – Support for 2 outputs syntax.
- ImErode/ImDilate – support for 'full' option.
- Im2UInt8, Im2UInt16, Im2Single, Im2Double support 'Indexed' option.
- ImHist – support for second output argument.
- iRadon – now supports 'spline' interpolation.

3. Fixed bugs

- When Matlab fail to allocate memory the user now get meaningful message and not "unknown exception".
- Hough transform corrected (before, some points where ignored).
- BwMorph('spur') now gives identical result to Matlab.
- FloodFill documentation fixed – flood value before connectivity.
- DeconvWnr – fixed a bug when ICorr is 1d.