

## Arithmetic Operators

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
ConstantAddiction	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ConstantSubtraction	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ConstantMultiplication	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ConstantDivision	✓	✓	✓	✗	✓ / ✓	✗ / ✗
BaseELogarithm	✓	✓	✓	✗	✓ / ✓	✗ / ✗
Base2Logarithm	✓	✓	✓	✗	✓ / ✓	✗ / ✗
Base10Logarithm	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ExponentialBaseE	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ExponentialBase2	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ExponentialBase10	✓	✓	✓	✗	✓ / ✓	✗ / ✗
PowerOfExponent	✓	✓	✓	✗	✓ / ✓	✗ / ✗
SquareRoot	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ImageAddiction	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ImageSubtraction	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ImageMultiplication	✓	✓	✓	✗	✓ / ✓	✗ / ✗
GreyImageDivision	✓	✓	✓	✗	✓ / ✓	✗ / ✗

## Bitwise Operators

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
RightShift	✓	✗	✗	✗	✗ / ✗	✗ / ✗

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
LeftShift	✓	✗	✗	✗	✗ / ✗	✗ / ✗
LeftShiftByTwo	✓	✗	✗	✗	✗ / ✗	✗ / ✗
LogicalShiftLeft	✓	✗	✗	✗	✗ / ✗	✗ / ✗
LogicalShiftRight	✓	✗	✗	✗	✗ / ✗	✗ / ✗
LeftCircularShift	✓	✗	✗	✗	✗ / ✗	✗ / ✗
RightCircularShift	✓	✗	✗	✗	✗ / ✗	✗ / ✗
RightRotateThoughCarry	✓	✗	✗	✗	✗ / ✗	✗ / ✗
LeftRotateThoughCarry	✓	✗	✗	✗	✗ / ✗	✗ / ✗

## Blob Analysis

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Area	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Perimeter	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Centroid	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Compactness	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Convexity	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Eccentricity	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Elongation	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Energy	✓	✓	✗	✗	✗ / ✗	✗ / ✗
EulerNumber	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Orientation	✓	✓	✗	✗	✗ / ✗	✗ / ✗
PrincipalAxis	✓	✓	✗	✗	✗ / ✗	✗ / ✗

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Rectangularity	✓	✓	✗	✗	✗ / ✗	✗ / ✗
AreaDisorderFactor	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Contour	✓	✓	✗	✗	✗ / ✗	✗ / ✗
FourierCoefficientsExtractor	✓	✓	✗	✗	✗ / ✗	✗ / ✗
GeometricMomentsExtractor	✓	✓	✗	✗	✗ / ✗	✗ / ✗
CentralGeometricMomentsExtractor	✓	✓	✗	✗	✗ / ✗	✗ / ✗
HuMomentInvariantsExtractor	✓	✓	✗	✗	✗ / ✗	✗ / ✗
LegendreMomentsExtractor	✓	✓	✗	✗	✗ / ✗	✗ / ✗
ZernikeMomentsExtractor	✓	✓	✗	✗	✗ / ✗	✗ / ✗
PseudoZernikeMomentsExtractor	✓	✓	✗	✗	✗ / ✗	✗ / ✗

## Blob Detection

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
LaplacianOfGaussian3x3_01 (LoG)	✓	✓	✓	✗	✓ / ✓	✗ / -
LaplacianOfGaussian3x3_02 (LoG)	✓	✓	✓	✗	✓ / ✓	✗ / -
LaplacianOfGaussian3x3_03 (LoG)	✓	✓	✓	✗	✓ / ✓	✗ / -
LaplacianOfGaussian5x5_Sigma_1_4 (LoG)	✓	✓	✓	✗	✓ / ✓	✗ / -

## Color Conversion

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertYUV420pToYUV410p	✓	✗	✗	✗	✓ / ✗
convertYUV420pToGrey8	✓	✗	✗	✗	✓ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertYUV420pToYUV411p	✓	✓	✗	✗	✓ / ✗
convertYUV420pToYUV422p	✓	✓	✗	✗	✓ / ✗
convertYUV420pToYUV444p	✓	✓	✗	✗	✓ / ✗
convertYUV420pToUYVY	✓	✓	✗	✗	✓ / ✗
convertYUV420pToUYU2	✓	✓	✗	✗	✓ / ✗
convertYUV420pToRGB1555	✓	✓	✗	✗	✓ / ✗
convertYUV420pToBGR1555	✓	✓	✗	✗	✓ / ✗
convertYUV420pToRGB565	✓	✓	✗	✗	✓ / ✗
convertYUV420pToBGR565	✓	✓	✗	✗	✓ / ✗
convertYUV420pToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertYUV420pToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertYUV420pToABGR8888	✓	✓	✗	✗	✓ / ✗
convertYUV420pToARGB8888	✓	✓	✗	✗	✓ / ✗
convertYUV420pToRGB888	✓	✓	✗	✗	✓ / ✗
convertYUV420pToBGR888	✓	✓	✗	✗	✓ / ✗
convertYUV410pToYUV420p	✓	✓	✗	✗	✓ / ✗
convertYUV410pToGrey8	✓	✓	✗	✗	✓ / ✗
convertYUV410pToYUV411p	✓	✓	✗	✗	✓ / ✗
convertYUV410pToYUV422p	✓	✓	✗	✗	✓ / ✗
convertYUV410pToYUV444p	✓	✓	✗	✗	✓ / ✗
convertYUV410pToUYVY	✓	✓	✗	✗	✓ / ✗
convertYUV410pToUYU2	✓	✓	✗	✗	✓ / ✗
convertYUV410pToRGB1555	✓	✓	✗	✗	✓ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertYUV410pToBGR1555	✓	✓	✗	✗	✓ / ✗
convertYUV410pToRGB565	✓	✓	✗	✗	✓ / ✗
convertYUV410pToBGR565	✓	✓	✗	✗	✓ / ✗
convertYUV410pToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertYUV410pToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertYUV410pToABGR8888	✓	✓	✗	✗	✓ / ✗
convertYUV410pToARGB8888	✓	✓	✗	✗	✓ / ✗
convertYUV410pToRGB888	✓	✓	✗	✗	✓ / ✗
convertYUV410pToBGR888	✓	✓	✗	✗	✓ / ✗
convertGrey8ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertGrey8ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertGrey8ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertGrey8ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertGrey8ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertGrey8ToUYVY	✓	✓	✗	✗	✓ / ✗
convertGrey8ToUY2	✓	✓	✗	✗	✓ / ✗
convertGrey8ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertGrey8ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertGrey8ToRGB565	✓	✓	✗	✗	✓ / ✗
convertGrey8ToBGR565	✓	✓	✗	✗	✓ / ✗
convertGrey8ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertGrey8ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertGrey8ToABGR8888	✓	✓	✗	✗	✓ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertGrey8ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertGrey8ToRGB888	✓	✓	✗	✗	✓ / ✗
convertGrey8ToBGR888	✓	✓	✗	✗	✓ / ✗
convertYUV411pToYUV420p	✓	✓	✗	✗	✓ / ✗
convertYUV411pToYUV410p	✓	✓	✗	✗	✓ / ✗
convertYUV411pToGrey8	✓	✓	✗	✗	✓ / ✗
convertYUV411pToYUV422p	✓	✓	✗	✗	✓ / ✗
convertYUV411pToYUV444p	✓	✓	✗	✗	✓ / ✗
convertYUV411pToUYVY	✓	✓	✗	✗	✓ / ✗
convertYUV411pToYUY2	✓	✓	✗	✗	✓ / ✗
convertYUV411pToRGB1555	✓	✓	✗	✗	✓ / ✗
convertYUV411pToBGR1555	✓	✓	✗	✗	✓ / ✗
convertYUV411pToRGB565	✓	✓	✗	✗	✓ / ✗
convertYUV411pToBGR565	✓	✓	✗	✗	✓ / ✗
convertYUV411pToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertYUV411pToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertYUV411pToABGR8888	✓	✓	✗	✗	✓ / ✗
convertYUV411pToARGB8888	✓	✓	✗	✗	✓ / ✗
convertYUV411pToRGB888	✓	✓	✗	✗	✓ / ✗
convertYUV411pToBGR888	✓	✓	✗	✗	✓ / ✗
convertYUV422pToYUV420p	✓	✓	✗	✗	✓ / ✗
convertYUV422pToYUV410p	✓	✓	✗	✗	✓ / ✗
convertYUV422pToGrey8	✓	✓	✗	✗	✓ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertYUV422pToYUV411p	✓	✓	✗	✗	✓ / ✗
convertYUV422pToYUV444p	✓	✓	✗	✗	✓ / ✗
convertYUV422pToUYVY	✓	✓	✗	✗	✓ / ✗
convertYUV422pToUYU2	✓	✓	✗	✗	✓ / ✗
convertYUV422pToRGB1555	✓	✓	✗	✗	✓ / ✗
convertYUV422pToBGR1555	✓	✓	✗	✗	✓ / ✗
convertYUV422pToRGB565	✓	✓	✗	✗	✓ / ✗
convertYUV422pToBGR565	✓	✓	✗	✗	✓ / ✗
convertYUV422pToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertYUV422pToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertYUV422pToABGR8888	✓	✓	✗	✗	✓ / ✗
convertYUV422pToARGB8888	✓	✓	✗	✗	✓ / ✗
convertYUV422pToRGB888	✓	✓	✗	✗	✓ / ✗
convertYUV422pToBGR888	✓	✓	✗	✗	✓ / ✗
convertYUV444pToYUV420p	✓	✓	✗	✗	✓ / ✗
convertYUV444pToYUV410p	✓	✓	✗	✗	✓ / ✗
convertYUV444pToGrey8	✓	✓	✗	✗	✓ / ✗
convertYUV444pToYUV411p	✓	✓	✗	✗	✓ / ✗
convertYUV444pToYUV422p	✓	✓	✗	✗	✓ / ✗
convertYUV444pToUYVY	✓	✓	✗	✗	✓ / ✗
convertYUV444pToUYU2	✓	✓	✗	✗	✓ / ✗
convertYUV444pToRGB1555	✓	✓	✗	✗	✓ / ✗
convertYUV444pToBGR1555	✓	✓	✗	✗	✓ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertYUV444pToRGB565	✓	✓	✗	✗	✓ / ✗
convertYUV444pToBGR565	✓	✓	✗	✗	✓ / ✗
convertYUV444pToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertYUV444pToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertYUV444pToABGR8888	✓	✓	✗	✗	✓ / ✗
convertYUV444pToARGB8888	✓	✓	✗	✗	✓ / ✗
convertYUV444pToRGB888	✓	✓	✗	✗	✓ / ✗
convertYUV444pToBGR888	✓	✓	✗	✗	✓ / ✗
convertUYVYToYUV420p	✓	✓	✗	✗	✓ / ✗
convertUYVYToYUV410p	✓	✓	✗	✗	✓ / ✗
convertUYVYToGrey8	✓	✓	✗	✗	✓ / ✗
convertUYVYToYUV411p	✓	✓	✗	✗	✓ / ✗
convertUYVYToYUV422p	✓	✓	✗	✗	✓ / ✗
convertUYVYToYUV444p	✓	✓	✗	✗	✓ / ✗
convertUYVYToYUY2	✓	✓	✗	✗	✓ / ✗
convertUYVYToRGB1555	✓	✓	✗	✗	✓ / ✗
convertUYVYToBGR1555	✓	✓	✗	✗	✓ / ✗
convertUYVYToRGB565	✓	✓	✗	✗	✓ / ✗
convertUYVYToBGR565	✓	✓	✗	✗	✓ / ✗
convertUYVYToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertUYVYToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertUYVYToABGR8888	✓	✓	✗	✗	✓ / ✗
convertUYVYToARGB8888	✓	✓	✗	✗	✓ / ✗



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Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertUYVYToRGB888	✓	✓	✗	✗	✓ / ✗
convertUYVYToBGR888	✓	✓	✗	✗	✓ / ✗
convertYUY2ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertYUY2ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertYUY2ToGrey8	✓	✓	✗	✗	✓ / ✗
convertYUY2ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertYUY2ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertYUY2ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertYUY2ToUYVY	✓	✓	✗	✗	✓ / ✗
convertYUY2ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertYUY2ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertYUY2ToRGB565	✓	✓	✗	✗	✓ / ✗
convertYUY2ToBGR565	✓	✓	✗	✗	✓ / ✗
convertYUY2ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertYUY2ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertYUY2ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertYUY2ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertYUY2ToRGB888	✓	✓	✗	✗	✓ / ✗
convertYUY2ToBGR888	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToGrey8	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToYUV411p	✓	✓	✗	✗	✓ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertRGB1555ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToUYVY	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToYUY2	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToRGB565	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToBGR565	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToRGB888	✓	✓	✗	✗	✓ / ✗
convertRGB1555ToBGR888	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToGrey8	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToUYVY	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToYUY2	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToRGB565	✓	✓	✗	✗	✓ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertBGR1555ToBGR565	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToRGB888	✓	✓	✗	✗	✓ / ✗
convertBGR1555ToBGR888	✓	✓	✗	✗	✓ / ✗
convertRGB565ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertRGB565ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertRGB565ToGrey8	✓	✓	✗	✗	✓ / ✗
convertRGB565ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertRGB565ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertRGB565ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertRGB565ToUYVY	✓	✓	✗	✗	✓ / ✗
convertRGB565ToYUY2	✓	✓	✗	✗	✓ / ✗
convertRGB565ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertRGB565ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertRGB565ToBGR565	✓	✓	✗	✗	✓ / ✗
convertRGB565ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertRGB565ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertRGB565ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertRGB565ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertRGB565ToRGB888	✓	✓	✗	✗	✓ / ✗

# covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertRGB565ToBGR888	✓	✓	✗	✗	✓ / ✗
convertBGR565ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertBGR565ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertBGR565ToGrey8	✓	✓	✗	✗	✓ / ✗
convertBGR565ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertBGR565ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertBGR565ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertBGR565ToUYVY	✓	✓	✗	✗	✓ / ✗
convertBGR565ToYUY2	✓	✓	✗	✗	✓ / ✗
convertBGR565ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertBGR565ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertRGR565ToRGB565	✓	✓	✗	✗	✓ / ✗
convertBGR565ToRGBAA8888	✓	✓	✗	✗	✓ / ✗
convertBGR565ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertBGR565ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertBGR565ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertBGR565ToRGB888	✓	✓	✗	✗	✓ / ✗
convertBGR565ToBGR888	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToGrey8	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToYUV422p	✓	✓	✗	✗	✓ / ✗

# covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertRGBA8888ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToUYVY	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToYUY2	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToRGB565	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToBGR565	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToRGB888	✓	✓	✗	✗	✓ / ✗
convertRGBA8888ToBGR888	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToGrey8	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToUYVY	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToYUY2	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToRGB565	✓	✓	✗	✗	✓ / ✗

# covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertBGRA8888ToBGR565	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToRGB888	✓	✓	✗	✗	✓ / ✗
convertBGRA8888ToBGR888	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToGrey8	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToUYVY	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToYUY2	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToRGB565	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToBGR565	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToRGB888	✓	✓	✗	✗	✓ / ✗
convertABGR8888ToBGR888	✓	✓	✗	✗	✓ / ✗

# covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertARGB8888ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToGrey8	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToUYVY	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToYUY2	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToRGB565	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToBGR565	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToRGB888	✓	✓	✗	✗	✓ / ✗
convertARGB8888ToBGR888	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToGrey8	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToYUV444p	✓	✓	✗	✗	✓ / ✗

# covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertRGB8888ToUYVY	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToYUY2	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToRGB565	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToBGR565	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertRGB8888ToBGR8888	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToYUV420p	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToYUV410p	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToGrey8	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToYUV411p	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToYUV422p	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToYUV444p	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToUYVY	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToYUY2	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToRGB1555	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToBGR1555	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToRGB565	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToBGR565	✓	✓	✗	✗	✓ / ✗



Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
convertBGR8888ToRGBA8888	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToBGRA8888	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToABGR8888	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToARGB8888	✓	✓	✗	✗	✓ / ✗
convertBGR8888ToRGB888	✓	✓	✗	✗	✓ / ✗

## Color Spaces

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
colorSpaceConversionYUVebuToRGBebu	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBebuToYUVebu	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBebuToY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionYIQntscToRGBntsc	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBntscToYIQntsc	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBntscToY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionYIQsmptecToRGBsmptec	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBsmptecToYIQsmptec	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBsmptecToY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionYCbCritubt601ToRGB	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToYCbCritubt601	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBitubt601ToY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionYCbCritubt709ToRGB	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToYCbCritubt709	✓	✗	✗	✗	✓ / ✗

# covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
colorSpaceConversionRGBtubt709ToY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionYPbPrsmpte240mToRGB	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToYPbPrsmpte240m	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBsmpte240ToY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionKodakPhotoYCCToRGB	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToKodakPhotoYCC	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBkptToY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGB709ToRGBebu	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBntscToRGBebu	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBebuToRGBntsc	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBntscToRGB709	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGB709ToRGBntsc	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBsmptecToRGBebu	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBebuToRGBsmptec	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBsmptecToRGB709	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGB709ToRGBsmptec	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBsmpte240mToRGBebu	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBebuToRGBsmpte240m	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBsmpte240mToRGB709	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGB709ToRGBsmpte240m	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToHSV	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionHSVToRGB	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionGreyToRGB32	✓	✗	✗	✗	✓ / ✗

## covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Color Space / InPlace
colorSpaceConversionRGB16ToRGB32	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGB32ToRGB16	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToRGB32	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToRGB16	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToGrey	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionGreyToRGB	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGB16ToRGB	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGB32ToRGB	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGB16ToRGB32lut();	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToRGBY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToYES	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToYUV	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToXYZ	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToLab	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionXYZToUvwprime	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToLuv	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToxyY	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToYCrCb	✓	✗	✗	✗	✓ / ✗
colorSpaceConversionRGBToWr	✓	✗	✗	✗	✓ / ✗

## Corner Detection

## covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
MoravecCornerDetector	✓	✓	✗	✗	✓ / -	✗ / -
BeaudetCornerDetector	✓	✓	✗	✗	✓ / -	✗ / -
KitchenRosenfeldCornerDetector	✓	✓	✗	✗	✓ / -	✗ / -
HarrisCornerDetector	✓	✓	✗	✗	✓ / -	✗ / -
ShiTomasiCornerDetector	✓	✓	✗	✗	✓ / -	✗ / -
FoerstnerCornerDetector	✓	✓	✗	✗	✓ / -	✗ / -
NobleIntensityInvariantCornerDetector	✓	✓	✗	✗	✓ / -	✗ / -
RohrCornerDetector	✓	✓	✗	✗	✓ / -	✗ / -
DreschlerNagelCornerDetector	✓	✓	✗	✗	✗ / -	✗ / -
SUSANCornerDetector	✓	✓	✗	✗	✗ / -	✗ / -

## Demosaicing

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
NearestNeighborDemosaicing	✓	✓	✗	✗	✗ / ✗	✗ / ✗
BilinearDemosaicing	✓	✓	✗	✗	✗ / ✗	✗ / ✗
HQLinearDemosaicing	✓	✓	✗	✗	✗ / ✗	✗ / ✗
DownsampleDemosaicing	✓	✓	✗	✗	✗ / ✗	✗ / ✗
SimpleDemosaicing	✓	✓	✗	✗	✗ / ✗	✗ / ✗
VNGDemosaicing	✓	✓	✗	✗	✗ / ✗	✗ / ✗
AHDDemosaicing	✓	✓	✗	✗	✗ / ✗	✗ / ✗

## Derivative Operators

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
DerivativeXY	✓	✓		X	✓ / -	X / -
GradientDirection	✓	✓		X	✓ / -	X / -
GradientMagnitude	✓	✓		X	✓ / -	X / -
GradientX	✓	✓		X	✓ / ✓	X / -
GradientY	✓	✓		X	✓ / ✓	X / -
Gradient	✓	✓	✓	X	✓ / -	X / -
SobelGradientX	✓	✓		X	✓ / ✓	X / -
SobelGradientY	✓	✓		X	✓ / ✓	X / -
SobelGradient	✓	✓	✓	X	✓ / -	X / -
ScharrGradientX	✓	✓		X	✓ / ✓	X / -
ScharrGradientY	✓	✓		X	✓ / ✓	X / -
ScharrGradient	✓	✓	✓	X	✓ / -	X / -

### Distance Transform (DT)

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
DistanceTransform	✓	✓	✓	X	✓ / ✓	X / -
Chamfer_5_7_11	✓	✓	✓	X	✓ / ✓	X / -
Chamfer_3_4	✓	✓	✓	X	✓ / ✓	X / -
CityBlock	✓	✓	✓	X	✓ / ✓	X / -
ChessBoard	✓	✓	✓	X	✓ / ✓	X / -

### Edge Detectors

## covisoft sdk 1.0

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
QuickEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
HomogeneityEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
DifferenceEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
VarianceEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
RobertsEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
JohnsonsEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
SobelEdgeDetector	✓	✓	✗	✗	✓ / ✓	✗ / -
PrewittSmoothedGradientEdgeDetector	✓	✓	✗	✗	✓ / ✓	✗ / -
FreiChenEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
KirschEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
PrewittEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
Robinson3LevelEdgeDetector	✓	✓	✓	✗	✓ / ✓	✗ / -
Robinson5LevelEdgeDetector	✓	✓	✗	✗	✓ / ✓	✗ / -
CannyEdgeDetector	✓	✓	✗	✗	✓ / ✓	✗ / -

## Enhancement

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
ContrastStretching01	✓	✓	✓	✗	✓ / ✓	✗ / -
ContrastStretching02	✓	✓	✓	✗	✓ / ✓	✗ / -
HistogramEqualization	✓	✓	✓	✗	✓ / ✓	✗ / -
SharpenWithMask	✓	✓	✓	✗	✓ / ✓	✗ / -
BitPlaneSlicing	✓	✓	✓	✗	✓ / ✓	✗ / -

## Frequency Transforms

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
FourierFastTransform (FFT)	✓	✓	✗	✗	✓ / ✗	✗ / ✗
InverseFourierFastTransform (IFFT)	✓	✓	✗	✗	✓ / ✗	✗ / ✗
DiscreteCosineTransform	✓	✓	✗	✗	✓ / -	✗ / -
InverseDiscreteCosineTransform	✓	✓	✗	✗	✓ / -	✗ / -
DiscreteSineTransform	✓	✓	✗	✗	✓ / -	✗ / -

## Geometric Operators

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
HorizontalFlip	✓	✓	✓	✗	✓ / ✓	✗ / -
VerticalFlip	✓	✓	✓	✗	✓ / ✓	✗ / -
Translation	✓	✓	✓	✗	✓ / ✓	✗ / -
Rotation	✓	✓	✓	✗	✓ / ✓	✗ / -
Transposition	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Resize	✓	✓	✗	✗	✗ / ✗	✗ / ✗
BilinearRescale	✓	✓	✗	✗	✗ / ✗	✗ / ✗
BicubicRescale	✓	✓	✗	✗	✗ / ✗	✗ / ✗
BellRescale	✓	✓	✗	✗	✗ / ✗	✗ / ✗
LanczosRescale	✓	✓	✗	✗	✗ / ✗	✗ / ✗
MitchellRescale	✓	✓	✗	✗	✗ / ✗	✗ / ✗
HermiteRescale	✓	✓	✗	✗	✗ / ✗	✗ / ✗
QuadricBSplinesRescale	✓	✓	✗	✗	✗ / ✗	✗ / ✗

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
TriangleRescale	✓	✓	✗	✗	✗ / ✗	✗ / ✗
RectangleCropping	✓	✓	✓	✗	✓ / ✓	✗ / -
InverseRectangleCropping	✓	✓	✓	✗	✓ / ✓	✗ / -
CircleCropping	✓	✓	✓	✗	✓ / ✓	✗ / -
InverseCircleCropping	✓	✓	✓	✗	✓ / ✓	✗ / -
SetBorder	✓	✓	✓	✗	✓ / ✓	✗ / -
CartesianToPolarTransform	✓	✓	✗	✗	✗ / ✗	✗ / ✗
PolarToCartesianTransform	✓	✓	✗	✗	✗ / ✗	✗ / ✗
CartesianToLogPolarTransform	✓	✓	✗	✗	✗ / ✗	✗ / ✗
LogPolarToCartesianTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗

## Histogram

## Hough and Radon Transforms

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
LinearHoughTransform	✓	✓	✗	✗	✗ / -	✗ / -
CircularHoughTransform	✓	✓	✗	✗	✗ / -	✗ / -
RadonTransform	✓	✓	✗	✗	✗ / ✗	✗ / ✗

## Integral Image

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
IntegrallImage	✓	✓	✗	✗	✓ / -	✗ / -



## Logic Operators

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
ImageNot	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ImageAnd	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ImageOr	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ImageXor	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ConstantAnd	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ConstantOr	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ConstantXor	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ImageMaskOr	✓	✓	✗	✗	✓ / ✓	✗ / ✗

## Morphological Operators

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Erosion3x3	✓	✓	✓	✗	✓ / ✓	✗ / ✗
FlatErosionCrossMask	✓	✓	✓	✗	✓ / ✓	✗ / ✗
FlatErosionNegativeCrossMask	✓	✓	✓	✗	✓ / ✓	✗ / ✗
FlatErosionDiskMask	✓	✓	✓	✗	✓ / ✓	✗ / ✗
FlatErosionNegativeDiskMask	✓	✓	✓	✗	✓ / ✓	✗ / ✗
Dilation3x3	✓	✓	✓	✗	✓ / ✓	✗ / ✗
FlatDilationCrossMask	✓	✓	✓	✗	✓ / ✓	✗ / ✗
FlatDilationNegativeCrossMask	✓	✓	✗	✗	✓ / ✓	✗ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
FlatDilationDiskMask	✓	✓	✗	✗	✓ / ✓	✗ / ✗
FlatDilationNegativeDiskMask	✓	✓	✗	✗	✓ / ✓	✗ / ✗
Open	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Close	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Thin	✓	✓	✗	✗	✗ / ✗	✗ / ✗
HitOrMiss	✓	✓	✗	✗	✗ / ✗	✗ / ✗
TopHat	✓	✓	✗	✗	✗ / ✗	✗ / ✗
BottomHat	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Floodfill4	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Floodfill8	✓	✓	✗	✗	✗ / ✗	✗ / ✗

## Noise Filters

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
MaskFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
MeanFilter3x3	✓	✓	✓	✗	✓ / ✓	✗ / ✗
MeanFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
MedianFilter3x3	✓	✓	✓	✗	✓ / ✓	✗ / ✗
MedianFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
ModeFilter3x3	✓	✓	✓	✗	✓ / ✓	✗ / ✗
ModeFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
LowPixelFilter3x3	✓	✓	✓	✗	✓ / ✓	✗ / ✗
LowPixelFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
HighPixelFilter3x3	✓	✓	✓	✗	✓ / ✓	✗ / ✗
HighPixelFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
BilateralFilter3x3	✓	✓	✗	✗	✓ / ✓	✗ / ✗
BilateralFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
AlphaTrimmedMeanFilter3x3	✓	✓	✗	✗	✓ / ✓	✗ / ✗
AlphaTrimmedMeanFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
AdaptiveMedianFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
HybridMedianFilter3x3	✓	✓	✗	✗	✓ / ✓	✗ / ✗
HybridMedianFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
RobustSmoothingFilter3x3	✓	✓	✗	✗	✓ / ✓	✗ / ✗
RobustSmoothingFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
GaussBinomialFilter3x3	✓	✓	✗	✗	✓ / ✓	✗ / ✗
GaussFilter3x3_Sigma_0_391	✓	✓	✗	✗	✓ / ✓	✗ / ✗
GaussFilter5x5_Sigma_1	✓	✓	✗	✗	✓ / ✓	✗ / ✗
GaussFilter5x5_Sigma_0_65	✓	✓	✗	✗	✓ / ✓	✗ / ✗
GaussFilter5x5_Sigma_1_4	✓	✓	✗	✗	✓ / ✓	✗ / ✗
MakeGaussianKernel	✓	✓	✗	✗	✓ / ✓	✗ / ✗
GaussianSmooth	✓	✓	✗	✗	✓ / ✓	✗ / ✗
VarianceFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
SnnFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
SigmaFilter3x3	✓	✓	✗	✗	✓ / ✓	✗ / ✗
SigmaFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
OutlierMeanFilter3x3	✓	✓	✗	✗	✓ / ✓	✗ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
OutlierMeanFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
ShenFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
KuwaharaFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
NagaoMatsuyamaFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
DericheFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
HorizontalExponentialFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
VerticalExponentialFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
SymmetricExponentialFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
HorizontalISEFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
VerticalISEFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
InfinitySymmetricExponentialFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
MinimalGradientMeanFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
MinimalGradientMedianFilter	✓	✓	✗	✗	✓ / ✓	✗ / ✗
PeronaMalikFilter	✗	✗	✗	✗	✗ / ✗	✗ / ✗
ClosestMinMaxFilter3x3	✓	✓	✗	✗	✓ / ✓	✗ / ✗
ClosestMinMaxFilter5x5	✓	✓	✗	✗	✓ / ✓	✗ / ✗
AlphaBlendingConvexCombination	✓	✓	✓	✗	✓ / -	✓ / -
AlphaBlendingPorterDuff	✓	✓	✓	✗	✓ / -	✓ / -

## Noise Generators

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
GenerateUniformNoise	✓	✓	✓	✗	✓ / ✓	✗ / ✗

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
GenerateGaussianNoise	✓	✓	✓	✗	✓ / ✓	✗ / ✗
GenerateExponentialNoise	✗	✓	✗	✗	✓ / ✓	✗ / ✗
GenerateSaltAndPepperNoise	✓	✓	✓	✗	✓ / ✓	✗ / ✗

## Noise Measurement

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
MeanSquaredError (MSE)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
RootMeanSquaredError (RMSE)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
SignalToNoiseRatio (SNR)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
PeakSignalToNoiseRatio (PSNR)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
MeanPercentageError (MPE)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
MeanAbsoluteError (MAE)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
MeanAbsolutePercentageDeviation (MAPD)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
SymmetricMeanAbsolutePercentageDeviation (SMAPD)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
MaximumAbsoluteError (MaxAE)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
MaximumAbsolutePercentageError (MaxAPE)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
MinimumAbsoluteError (MinAE)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
MinimumAbsolutePercentageError (MinAPE)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
StructuralSimilarity (SSIM)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
StructuralDissimilarity (DSSIM)	✓	✓	✗	✗	✓ / ✗	✓ / ✗
UniversalQualityIndex (UQI)	✓	✓	✗	✗	✓ / ✗	✓ / ✗

## Overlay

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
OverlayPoint	✓	✓	✓	✗	✓ / ✓	✗ / ✗
OverlayScanline	✓	✓	✓	✗	✓ / ✓	✗ / ✗
OverlayVerticalLine	✓	✓	✓	✗	✓ / ✓	✗ / ✗
OverlayLine	✓	✓	✓	✗	✓ / ✓	✗ / ✗
OverlayCross	✓	✓	✓	✗	✓ / ✓	✗ / ✗
OverlayBox	✓	✓	✓	✗	✓ / ✓	✗ / ✗
OverlayCircle	✓	✓	✓	✗	✓ / ✓	✗ / ✗
OverlayEllipse	✓	✓	✓	✗	✓ / ✓	✗ / ✗
OverlayFont	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayPoints	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayScanlines	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayVerticalLines	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayLines	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayCrosses	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayBoxes	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayCircles	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayEllipses	✓	✓	✗	✗	✗ / ✗	✗ / ✗
OverlayText	✓	✓	✗	✗	✗ / ✗	✗ / ✗

## Segmentation

## Similarity Measurement

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Correlation	✓		✗	✗	✓ / ✗	✗ / ✗
CorrelationCoefficient (CC)	✓		✗	✗	✓ / ✗	✓ / ✗
NormalizedCorrelationCoefficient (NCC)	✓		✗	✗	✓ / ✗	✓ / ✗
LorentzianCorrelationCoefficient (LCC)	✓		✗	✗	✓ / ✗	✓ / ✗
PearsonCorrelationCoefficient (PCC)	✓		✗	✗	✓ / ✗	✗ / ✗
OrdinalCrossCorrelation (OCC)	✓		✗	✗	✓ / ✗	✗ / ✗
SumOfSquaredDifferences (SSD)	✓		✗	✗	✓ / ✗	✓ / ✗
LocallyScaledSumOfSquaredDifferences(LSSD)	✓		✗	✗	✓ / ✗	✗ / ✗
ZeroMeanSumOfSquaredDifferences (ZSSD)	✓	✗	✗	✗	✓ / ✗	✗ / ✗
SumOfAbsoluteDifferences (SAD)	✓	✗	✗	✗	✓ / ✗	✓ / ✗
LocallyScaledSumOfAbsoluteDifferences (LSAD)	✓	✗	✗	✗	✓ / ✗	✗ / ✗
ZeroMeanSumOfAbsoluteDifferences (ZSAD)	✓	✗	✗	✗	✓ / ✗	✗ / ✗
SumOfHammingDistancesRank	✓	✗	✗	✗	✗ / ✗	✗ / ✗
SumOfHammingDistancesCensus	✓	✗	✗	✗	✗ / ✗	✗ / ✗

## Statistical Analysis

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Maximum	✓	✓	✗	✗	✓ / ✗	✗ / ✗
Minimum	✓	✓	✗	✗	✓ / ✗	✗ / ✗
Mean	✓	✓	✗	✗	✓ / ✗	✗ / ✗
Mean	✓	✓	✗	✗	✓ / ✗	✗ / ✗
Median	✓	✓	✗	✗	✓ / ✗	✗ / ✗

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Mode	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Mass	✓	✓	✗	✗	✓ / ✗	✗ / ✗
Variance	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Energy	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Entropy	✓	✓	✗	✗	✗ / ✗	✗ / ✗
StandardDeviation	✓	✓	✗	✗	✗ / ✗	✗ / ✗
MeanAbsoluteDeviation	✓	✓	✗	✗	✓ / ✗	✗ / ✗
MedianAbsoluteDeviation	✓	✓	✗	✗	✗ / ✗	✗ / ✗
ModeAbsoluteDeviation	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Skewness	✓	✓	✗	✗	✗ / ✗	✗ / ✗
Kurtosis	✓	✓	✗	✗	✗ / ✗	✗ / ✗

## Texture Analysis

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
CoocurrenceMatrix	✗	✗	✗	✗	✗ / ✗	✗ / ✗
HaralickFeaturesExtractor	✗	✗	✗	✗	✗ / ✗	✗ / ✗
TamuraFeaturesExtractor	✗	✗	✗	✗	✗ / ✗	✗ / ✗

## Thresholding

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Binarization	✓	✓	✗	✗	✓ / ✗	✗ / ✗



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Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
MeanBinarization	✓	✓	✗	✗	✓ / ✓	✗ / ✗
JohanssenThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
MinimumErrorThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
TwoPeaksThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
RelaxationThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
MovingAveragesThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
EntropyFuzzyThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
YagerFuzzyThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
OtsuThesholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
KapurThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
PunThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
BlackPercentThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
IterativeSelectionThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗
FastIterativeSelectionThresholding	✓	✓	✗	✗	✓ / ✓	✗ / ✗

### Tracking

### TV Effects

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Negative	✓	✓	✗	✗	✓ / ✓	✗ / ✗
GammaCorrection	✓	✓	✗	✗	✓ / ✓	✗ / ✗
Emboss	✓	✓	✗	✗	✓ / ✓	✗ / ✗
Halftone	✓	✓	✗	✗	✓ / ✓	✗ / ✗

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Dithering	✓	✓	✗	✗	✓ / ✓	✗ / ✗

## Wavelet Transforms

Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
FastWaveletTransform (FWT)	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseFastWaveletTransform (IFWT)	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Haar1DWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseHaar1DWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Haar2DWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseHaar2DWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Daubechies2WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseDaubechies2WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Daubechies3WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseDaubechies3WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Daubechies4WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseDaubechies4WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Daubechies5WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseDaubechies5WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Daubechies6WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseDaubechies6WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Daubechies7WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseDaubechies7WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
Daubechies8WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseDaubechies8WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
Daubechies9WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseDaubechies9WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal11WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal11WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal13WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal13WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal15WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal15WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal22WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal22WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal24WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal24WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal26WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal26WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal28WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal28WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal31WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal31WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal33WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal33WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal35WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
InverseBiOrthogonal35WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal37WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal37WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal39WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal39WaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal11RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal11RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal13RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal13RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal15RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal15RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal22RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal22RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal24RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal24RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal26RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal26RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal28RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal28RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal31RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal31RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal33RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal33RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗

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Function	C++	OpenMP	OpenCL	ROI / Masked	Grey / InPlace	RGB / InPlace
BiOrthogonal35RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal35RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal37RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal37RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
BiOrthogonal39RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseBiOrthogonal39RecWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
WalshWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗
InverseWalshWaveletTransform	✓	✗	✗	✗	✗ / ✗	✗ / ✗