LIFEx v7.0.0

Announcement

— LIFEx —

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What is new?

LIFEx version 7.0.0
Last update of document: 2021/05/07

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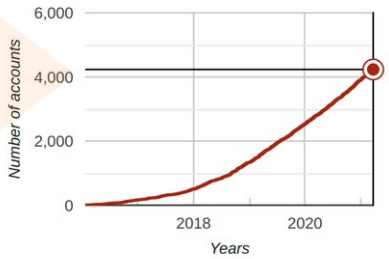
Acknowledgements

Dear LIFEx users,

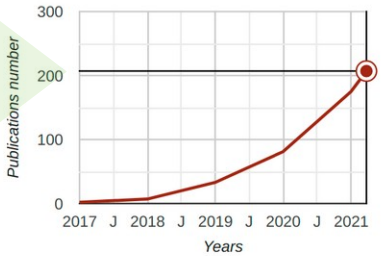
We are pleased to announce the release of LIFEx v7.0.0

We would like to take this opportunity **to thank all 4.400 LIFEx users** for their feedback and relevant suggestions. We took into account your comments to enhance the software and produce this version. We hope you will enjoy it.

Do not hesitate to download this new release and replace your old LIFEx version. Your feedback will always be welcome.



Evolution of the number of accounts
(from our site web)



Evolution of the number of citing LIFEx
(from PubMed)

LIFEx is free of charge.

Please help us to keep it free by always quoting the LIFEx reference: (see below)

Please note that the correct reference to be cited is:
C Nioche, F Orlhac, S Boughdad, S Reuzé, J Goya-Outi, C Robert, C Pellot-Barakat, M Soussan, F Frouin, and I Buvat. LIFEx: a freeware for radiomic feature calculation in multimodality imaging to accelerate advances in the characterization of tumor heterogeneity. Cancer Research 2018; 78(16):4786-4789

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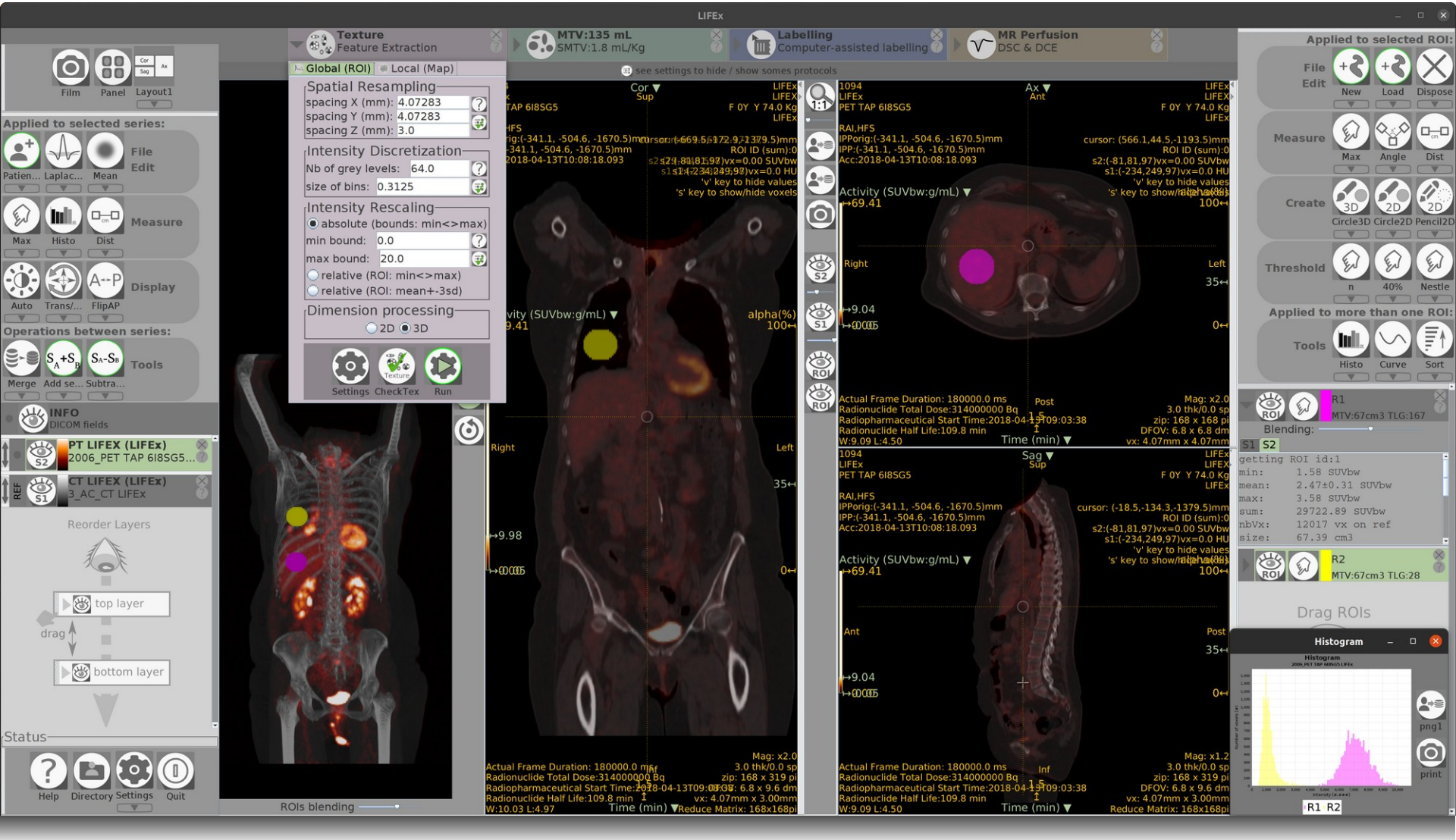
Interface screenshot



Main updates

C. Nioche

Added

- New Laplacian (LoG), Mean, Laws, Wavelet filters on series
- Dmax feature on MTV protocol
- New formatting of statistics in ROI box information
- Added the duration of the frames on the dynamic chart

- Optimized ressources, and 4K, 5K, 8K display resolution
- Faster application loading
- New package of distribution (debian, ubuntu, M1 (new Mac), fedora, redhat)

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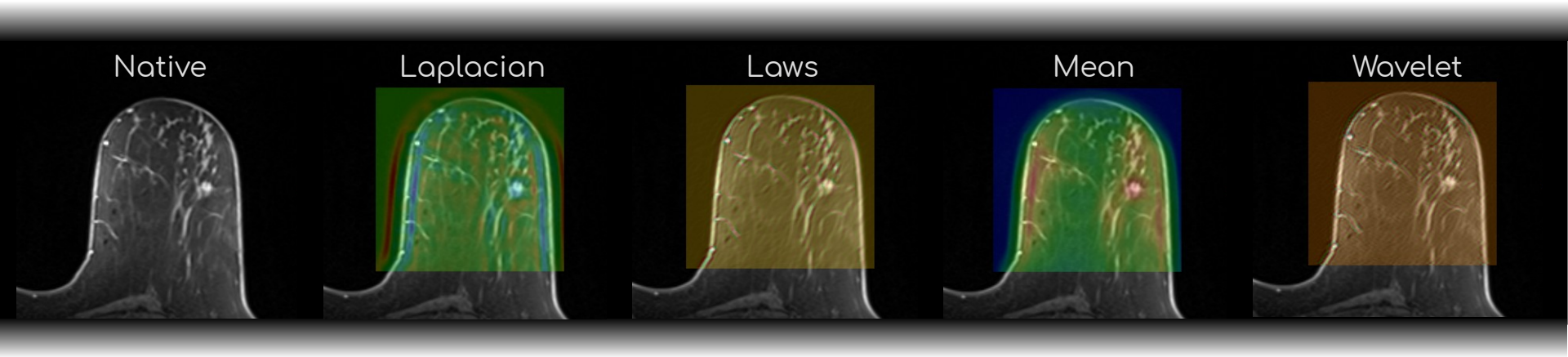
Main updates

C. Nioche

Added filters (preprocessing of texture)

Laplacian, Law, Mean and Wavelet filters are now avalaible for series



Laplacian Input
Sigma 2x2x2mm
Boundary conditons : Edge

Law Input :
Edge E3 (-1, 0, 1), E3, E3
Boundary conditons : Edge

Mean Input :
15 vx diameter kernel size
Boundary conditions : Edge

Wavelet Input :
Coiflets (Order 1, Level1)
Boundary conditions : Reflect

All updates

C. Nioche

Main:

- added: addition of a shortcut for the settings in the protocol frame
- improved: optimized use of the RAM for histogram calculation (series and ROI)
- improved: change from jdk-8 to jdk-16 which integrates the new java modules (jmod)
- improved: support of 4K, 5K, 8K display resolution
- improved: generation of the iconography (SVG->PNG) is done only once at the first start of the application.
- improved: add .deb (debian, ubuntu) .rpm (fedora, redhat) .aarch64 (new M1 macos) packaging of LIFEx distribution
- changed: documentation and tutorials are now excluded from the application and become exclusively accessible through Internet
- changed: resources, log, properties, setting files are moved into .LIFExv.vv directory of root user
- fixed issue: bad filename on some written nifti file

All updates on Series, ROI and protocols are in the next slide

All updates

C. Nioche

Main (Series):

- added: Fat (W500 L-100) window leveling of CT contrast
- added: Laplacian, Mean, Law, Wavelet series filters
- improved: read series from NRRD file format
- improved: Not a Number (NaN) values are no longer visible now (with aplha=0) on images
- improved: DICOM-RealWorldValueSlope file no longer stops the opening of the other series on loading
- fixed issue: empty sub region on US DICOM format are not copied on b-mode base image
- fixed issue: CT DICOM images with bitsAllocated=16, bitsStored=16, highBit=15
- fixed issue: DICOM multi frames with enhanced class storage and without PerFrameFunctionalGroupsSequence) / FrameContentSequence / DimensionIndexValues
- fixed issue: "Radionuclide Total Dose" DICOM attribute is now in MBq for NM modality, and in Bq for PET modality
- fixed issue: acquisition time instead of serieTime is displayed on overlaid images
- fixed issue: patient size are now in "float" value while it was "int" before (impact scale factor SuvLbm)
- fixed issue: no interpolation needed when matrix loaded from nifti are exact inversion (-1) on Z, Y or X axis (only flip is executed)
- fixed issue: add IOP management on registration file (DICOM-REG)

Main (ROI):

- added: invert selection tool of ROI
- improved: read ROI from NRRD file format
- improved: new formatting of statistics in ROI box information
- improved: changed default names of ROI "C1...Cn" into new names "R1...Rn"
- downgrade: ROI file format before v4.00 is no longer supported

All updates on protocols are in the next slide

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All updates

C. Nioche

Texture protocol:

- improved: all results of features are set to NaN when they are not selected for calculation
- improved: CONV/DISCRETIZED_peak (0.5mL and 1mL) are accelerated (on 2D slices only)
- Added : DISCRETIZED_AUC_CSH
- fixed issue: DISCRETIZED_HISTO_Skewness is removed (duplicate values with DISCRETIZED_Skewness)
- fixed issue: DISCRETIZED_HISTO_Kurtosis is removed (duplicate values with DISCRETIZED_Kurtosis
- fixed issue: DISCRETIZED_HISTO_Entropy_log2 and__log10 are corrected
- fixed issue: DISCRETIZED_HISTO_Energy is corrected
- fixed issue: unavailable 3d processing on GUI on 2D series

MTV protocol:

- added: Dmax (and other MTV features) feature is now available
- added (MTVNotation): add property "LIFEx.mtv.Frame.Annotation" to hide/show annotations ; none as default ; available options: none || fill
- changed (MTVnotation): minimal value of initial threshold is set to SUV 1.1
- changed (MTVnotation): empty ROI is now possible
- changed (MTVnotation): on result csv file, coordinate of SUVmax of selected ROI is written in place of mouse coordinate when clicking on ROI
- improved: greatly increased responsiveness when many ROIs are present
- improved: row of total results in csv file is now at the right place (right shift of one column).
- improved: add Center of mass(COM), sumBindCOM, avBindCOM, stdBindCOM, minBindCOM, maxBindCOM, avTotBindCOM on protocol
- fixed issue: no ROI creation if empty size

All updates on protocols are in the next slide

All updates

C. Nioche

PT Compartmental analysis protocol:

- added: dicom-extension in nifti file from PMOD1 format of extension (Frame Start Times & Frame Duration)
- added: added the width of the "frame duration" on the dynamic chart
- added: added a weighting corresponding to the "duration frame" in the TAC output file in dft format
- improved: "frame acquisition time" is replaced by "frame reference time" on dft file
- improved: x and y units are adjustable before saving on dft file

Quality Control protocol:

- changed: rename of column title of field RedExternDiameterRatio by RedExternDiameter(mm) ; idem for GreenDiameterRatio and RedDiameterRatio

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LIFEx is still evolving

The suite is coming up
We hope you go on enjoying LIFEx !

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