Texture Parameter	Extended Name	Definition
CONVENTIONAL_HUQ1	Conventional – First Quartile	The first quartile (Q1) is defined as the middle number between the smallest number and the median of the data set (intensity value in HU in the Volume of Interest). It is also known as the lower quartile or the 25th empirical quartile and it marks where 25% of the data is below or to the left of it (if data is ordered on a timeline from smallest to largest).
CONVENTIONAL_HUQ2	Conventional – Second Quartile	The second quartile (Q2) is the median of a data set and 50% of the data lies below this point.
CONVENTIONAL_HUQ3	Conventional - Third Quartile	The third quartile (Q3) is the middle value between the median and the highest value of the data set. It is also known as the upper quartile or the 75th empirical quartile and 75% of the data lies below this point.
CONVENTIONAL_HUmin	Conventional - Minimum	Reflects the minimum intensity value in the Volume of Interest.
CONVENTIONAL_HUmean	Conventional - Mean	Reflects the average intensity value in the Volume of Interest.
CONVENTIONAL_HUmax	Conventional - Maximum	Reflects the maximum intensity value in the Volume of Interest.
CONVENTIONAL_HUPeak	Conventional – Peak Sphere (0.5 – 1 mL)	Reflects the mean intensity value in a sphere with a volume of ~0.5 or ~1 mL and located so that the average intensity value in the VOI is maximum
CONVENTIONAL_HU Skewnewss	Conventional - Skewness	Is the asymmetry of the grey-level distribution.
CONVENTIONAL_HU Kurtosis	Conventional - Kurtosis	Reflects the shape of the grey-level distribution (peaked or flat) relative to a normal distribution.
DISCRETIZED_HUQ1	Discretized – First Quartile	**To build discretized values, it is necessary to determine a bin width ("bin" parameter). The indices derived from these indices will depend on this bin width parameter.** The first quartile (Q1) is defined as the middle number between the smallest number and the median of the data set (intensity value in HU in the Volume of Interest). It is also known as the lower quartile or the 25th empirical quartile and it marks where 25% of the data is below or to the left of it (if data is ordered on a timeline from smallest to largest).
DISCRETIZED_HUQ2	Discretized – Second Quartile	The second quartile (Q2) is the median of a data set and 50% of the data lies below this point.
DISCRETIZED_HUQ3	Discretized – Third Quartile	The third quartile (Q3) is the middle value between the median and the highest value of the data set. It is also known as the upper quartile or the 75th empirical quartile and 75% of the data lies below this point.
DISCRETIZED_HUmin	Discretized - Minimum	Reflects the minimum intensity value in the Volume of Interest.
DISCRETIZED_HUmean	Discretized - Mean	Reflects the average intensity value in the Volume of Interest.
DISCRETIZED_HUmax	Discretized - Maximum	Reflects the maximum intensity value in the Volume of Interest.
DISCRETIZED_HUPeak	Discretized - Peak Sphere (0.5 – 1 mL)	Reflects the mean intensity value in a sphere with a volume of ~0.5 or ~1 mL and located so that the average intensity value in the VOI is maximum
DISCRETIZED_HUSkewness	Discretized – Skewness	Is the asymmetry of the grey-level distribution.
DISCRETIZED_HUKurtosis	Discretized - Kurtosis	Reflects the shape of the grey-level distribution (peaked or flat) relative to a normal distribution.

DISCRETIZED_HISTO_ Entropy_log10 **DISCRETIZED_HISTO_ Entropy_log2**	Discretized – Histogram Entropy	Reflects the randomness of the distribution.
DISCRETIZED_HISTO_ Energy	Discretized – Histogram Energy	Reflects the uniformity of the distribution.
DISCRETIZED_AUC_CSH	Discretized - Area Under Curve – Cumulative SUV-volume histograms	Reflects the cumulative intensity of histograms p(i) produce by a per cent volume of a ROI with an intensity above a certain threshold is plotted against that threshold value jj, which is varied from 1 to number of grey [Van Velden 2011]. The area under of this new histogram (DISCRETIZED_AUC_CSH feature) is a quantitative index of tracer uptake heterogeneity and/or heterogeneous response where lower values correspond with increased heterogeneity. In this case DISCRETIZED_AUC_CSH is independent of value max (here, number of grey).
SHAPE_Sphericity	Shape - Sphericity	Is how spherical a Volume of Interest is. Sphericity is equal to 1 for a perfect sphere.
SHAPE_Compacity	Shape - Compacity	Reflects how compact the Volume of Interest is.
SHAPE_Volume(mL) **SHAPE_Volume(vx)**	Shape - Volume	Is the Volume of Interest in mL and in voxels.
GLZLM_SZE **GLZLM_LZE**	Grey-Level Zone Length Matrix (Short Zone Emphasis) or (Long Zone Emphasis)	**GLZLM Provides information on the size of homogeneous zones for each grey-level in 3 dimensions. From this matrix, 11 texture indices can be computed. Element (i,j)(i,j) of GLZLM corresponds to the number of homogeneous zones of jj voxels with the intensity ii in an image and is called GLZLM(i,j)GLZLM(i,j) thereafter.** Short-Zone Emphasis or Long-Zone Emphasis is the distribution of the short or the long homogeneous zones in an image.
GLZLM_LGZE **GLZLM_HGZE**	Grey-Level Zone Length Matrix (Low Gray-level Zone Emphasis) or (High Gray-level Zone Emphasis)	Low Gray-level Zone Emphasis or High Gray-level Zone Emphasis is the distribution of the low or high grey-level zones
GLZLM_SZLGE **GLZLM_SZHGE**	Grey-Level Zone Length Matrix (Short-Zone Low Gray-level Emphasis) or (Short-Zone High Grey-level Emphasis)	Is the distribution of the short homogeneous zones with low or high grey-levels.
GLZLM_LZLGE **GLZLM_LZHGE**	Grey-Level Zone Length Matrix (Long-Zone Low Gray-level Emphasis) or (Long-Zone High Grey-level Emphasis)	Is the distribution of the long homogeneous zones with low or high grey-levels.
GLZLM_GLNU **GLZLM_ZLNU**	Grey-Level Zone Length Matrix (Gray-Level Non-Uniformity)	Is the non-uniformity of the grey-levels or the length of the homogeneous zones.

	or (Zone-Length Non-Uniformity)	
GLZLM_ZP	Gray-Level Zone Length Matrix (Zone Percentage)	Zone Percentage measures the homogeneity of the homogeneous zones.
GLRLM_SRE **GLRLM_LRE**	Grey-Level Run Length Matrix – (Short Run Emphasis) or (Long Run Emphasis)	**The grey-level run length matrix (GLRLM) gives the size of homogeneous runs for each grey level. This matrix is computed for the 13 different directions in 3D (4 in 2D) and for each of the 11 texture indices derived from this matrix, the 3D value is the average over the 13 directions in 3D (4 in 2D). The element (i,j)(i,j) of GLRLM corresponds to the number of homogeneous runs of jj voxels with intensity ii in an image and is called GLRLM(i,j)GLRLM(i,j) thereafter.** Short-Run Emphasis or Long-Run Emphasis is the distribution of the short or the long homogeneous runs in an image.
GLRLM_LGRE **GLRLM_HGRE**	Grey-Level Run Length Matrix – (Low Gray-level Run Emphasis) or (High Gray-level Run Emphasis)	Is the distribution of the low or high grey-level runs.
GLRLM_SRLGE **GLRLM_SRHGE**	Grey-Level Run Length Matrix – (Short-Run Low Gray-level Emphasis) or (Short-Run High Gray-level Emphasis)	Is the distribution of the short homogeneous runs with low or high grey-levels.
GLRLM_LRLGE **GLRLM_LRHGE**	Grey-Level Run Length Matrix – (Long-Run Low Gray-level Emphasis) or (Long-Run High Gray-level Emphasis)	Is the distribution of the long homogeneous runs with low or high grey-levels.
GLRLM_GLNU **GLRLM_RLNU**	Grey-Level Run Length Matrix (Grey-Level Non-Uniformity) or (Run-Length Non-Uniformity)	Gray-Level Non-Uniformity for zone is the non-uniformity of the grey-levels or the length of the homogeneous runs.
GLRLM_RP	Grey-Level Run Length Matrix (Run Percentage)	Measures the homogeneity of the homogeneous runs.
NGLDM_Coarseness	Neighborhood Grey-Level Difference Matrix (Coarseness)	**The neighborhood grey-level difference matrix (NGLDM) corresponds to the difference of grey-level between one voxel and its 26 neighbours in 3 dimensions (8 in 2D). Three texture indices can be computed from this matrix.** Is the level of spatial rate of change in intensity.
NGLDM_Contrast	Neighborhood Grey-Level Difference Matrix (Contrast)	Is the intensity difference between neighbouring regions.

NGLDM_Busyness	Neighborhood Grey-Level Difference Matrix (Busyness)	Is the spatial frequency of changes in intensity.
GLCM_Homogeneity	Grey Level Co-occurrence Matrix (Homogeneity)	**The grey level co-occurrence matrix (GLCM) [Haralick] takes into account the arrangements of pairs of voxels to calculate textural indices. The GLCM is calculated from 13 different directions in 3D with a δ-voxel distance (‖d‖−→‖δ‖→) relationship between neighboured voxels. The index value is the average of the index over the 13 directions in space (X, Y, Z). Six textural indices can be computed from this matrix.** Is the homogeneity of grey-level voxel pairs.
GLCM_Energy	Grey Level Co-occurrence Matrix (Energy)	Also called Uniformity or Second Angular Moment, is the uniformity of grey-level voxel pairs.
GLCM_Contrast	Grey Level Co-occurrence Matrix (Contrast)	Also called Variance or Inertia, is the local variations in the GLCM.
GLCM_Correlation	Grey Level Co-occurrence Matrix (Correlation)	Is the linear dependency of grey-levels in GLCM.
GLCM_Entropy_log10 **GLCM_Entropy_log2**	Grey Level Co-occurrence Matrix (Entropy)	Is the randomness of grey-level voxel pairs.
GLCM_Dissimilarity	Grey Level Co-occurrence Matrix (Dissimilarity)	Is the variation of grey-level voxel pairs.

Reference: https://www.lifexsoft.org/