**Supplemental Digital Content**

**Supplementary Table 1.** Computedstability, discriminative power and cumulative sum of both measures from the 86 radiomics features. firstorder: First-Order statistics, glcm: Grey Level Co-occurrence Matrix, gldm: Grey Level Dependence Matrix, glszm: Grey Level Size Zone Matrix, glrlm: Grey Level Run Length Matrix.

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| --- | --- | --- | --- |
|  Features | Stability (%) | Discriminative power (%) | Sum |
|  original\_firstorder\_Median | 65.2 | 100.0 | 165.2 |
|  original\_firstorder\_Mean | 53.6 | 100.0 | 153.6 |
|  original\_gldm\_LargeDependenceHighGreyLevelEmphasis | 67.9 | 81.3 | 149.1 |
|  original\_glcm\_ClusterShade | 56.3 | 89.6 | 145.8 |
|  original\_gldm\_SmallDependenceLowGreyLevelEmphasis | 54.5 | 85.4 | 139.9 |
|  original\_glcm\_InverseDifferenceMomentNormalised | 52.7 | 83.3 | 136.0 |
|  original\_firstorder\_Skewness | 51.8 | 83.3 | 135.1 |
|  original\_glszm\_SmallAreaLowGreyLevelEmphasis | 67.0 | 66.7 | 133.6 |
|  original\_glrlm\_LongRunHighGreyLevelEmphasis | 36.6 | 93.8 | 130.4 |
|  original\_glszm\_LargeAreaHighGreyLevelEmphasis | 25.0 | 100.0 | 125.0 |
|  original\_gldm\_DependenceEntropy | 22.3 | 95.8 | 118.2 |
|  original\_glrlm\_ShortRunLowGreyLevelEmphasis | 50.9 | 66.7 | 117.6 |
|  original\_firstorder\_Energy | 17.0 | 100.0 | 117.0 |
|  original\_firstorder\_TotalEnergy | 17.0 | 100.0 | 117.0 |
|  original\_glszm\_GreyLevelNonUniformity | 13.4 | 100.0 | 113.4 |
|  original\_firstorder\_Minimum | 12.5 | 100.0 | 112.5 |
|  original\_glrlm\_LowGreyLevelRunEmphasis | 44.6 | 66.7 | 111.3 |
|  original\_gldm\_LowGreyLevelEmphasis | 43.8 | 66.7 | 110.4 |
|  original\_firstorder\_Kurtosis | 40.2 | 68.8 | 108.9 |
|  original\_glrlm\_GreyLevelNonUniformity | 8.0 | 100.0 | 108.0 |
|  original\_glszm\_LargeAreaLowGreyLevelEmphasis | 8.0 | 100.0 | 108.0 |
|  original\_glszm\_LowGreyLevelZoneEmphasis | 48.2 | 58.3 | 106.5 |
|  original\_firstorder\_RootMeanSquared | 17.0 | 89.6 | 106.5 |
|  original\_firstorder\_Range | 10.7 | 95.8 | 106.5 |
|  original\_glszm\_ZoneEntropy | 20.5 | 85.4 | 106.0 |
|  original\_glszm\_SizeZoneNonUniformity | 5.4 | 100.0 | 105.4 |
|  original\_glszm\_GreyLevelNonUniformityNormalised | 14.3 | 89.6 | 103.9 |
|  original\_firstorder\_Maximum | 16.1 | 87.5 | 103.6 |
|  original\_glrlm\_RunLengthNonUniformity | 3.6 | 100.0 | 103.6 |
|  original\_glszm\_LargeAreaEmphasis | 3.6 | 100.0 | 103.6 |
|  original\_glszm\_ZoneVariance | 3.6 | 100.0 | 103.6 |
|  original\_gldm\_DependenceNonUniformity | 2.7 | 100.0 | 102.7 |
|  original\_glrlm\_RunEntropy | 4.5 | 97.9 | 102.4 |
|  original\_firstorder\_10Percentile | 1.8 | 100.0 | 101.8 |
|  original\_glcm\_JointAverage | 38.4 | 62.5 | 100.9 |
|  original\_glrlm\_RunLengthNonUniformityNormalised | 3.6 | 95.8 | 99.4 |
|  original\_glrlm\_ShortRunEmphasis | 3.6 | 95.8 | 99.4 |
|  original\_firstorder\_90Percentile | 0.9 | 97.9 | 98.8 |
|  original\_glrlm\_GreyLevelVariance | 0.9 | 97.9 | 98.8 |
|  original\_glrlm\_GreyLevelNonUniformityNormalised | 0.0 | 97.9 | 97.9 |
|  original\_glrlm\_RunPercentage | 2.7 | 93.8 | 96.4 |
|  original\_glcm\_InformationalMeasureOfCorrelation1 | 6.3 | 89.6 | 95.8 |
|  original\_glcm\_ClusterTendency | 0.0 | 95.8 | 95.8 |
|  original\_glcm\_MaximumProbability | 0.0 | 95.8 | 95.8 |
|  original\_glszm\_GreyLevelVariance | 3.6 | 91.7 | 95.2 |
|  original\_gldm\_LargeDependenceEmphasis | 2.7 | 91.7 | 94.3 |
|  original\_glcm\_ClusterProminence | 0.0 | 93.8 | 93.8 |
|  original\_glcm\_SumEntropy | 0.0 | 93.8 | 93.8 |
|  original\_gldm\_GreyLevelNonUniformity | 0.0 | 93.8 | 93.8 |
|  original\_glrlm\_LongRunEmphasis | 0.9 | 91.7 | 92.6 |
|  original\_glszm\_HighGreyLevelZoneEmphasis | 21.4 | 70.8 | 92.3 |
|  original\_glcm\_Autocorrelation | 29.5 | 62.5 | 92.0 |
|  original\_firstorder\_Entropy | 0.0 | 91.7 | 91.7 |
|  original\_firstorder\_MeanAbsoluteDeviation | 0.0 | 91.7 | 91.7 |
|  original\_firstorder\_Uniformity | 0.0 | 91.7 | 91.7 |
|  original\_glcm\_SumSquares | 0.0 | 91.7 | 91.7 |
|  original\_gldm\_GreyLevelVariance | 0.0 | 91.7 | 91.7 |
|  original\_glcm\_Correlation | 8.0 | 83.3 | 91.4 |
|  original\_glcm\_InformationalMeasureOfCorrelation2 | 8.0 | 83.3 | 91.4 |
|  original\_gldm\_SmallDependenceEmphasis | 3.6 | 87.5 | 91.1 |
|  original\_glcm\_JointEnergy | 0.9 | 89.6 | 90.5 |
|  original\_glcm\_JointEntropy | 2.7 | 87.5 | 90.2 |
|  original\_gldm\_DependenceNonUniformityNormalised | 2.7 | 87.5 | 90.2 |
|  original\_glcm\_InverseDifferenceNormalised | 15.2 | 75.0 | 90.2 |
|  original\_firstorder\_RobustMeanAbsoluteDeviation | 0.0 | 89.6 | 89.6 |
|  original\_firstorder\_InterquartileRange | 0.9 | 87.5 | 88.4 |
|  original\_glszm\_ZonePercentage | 2.7 | 85.4 | 88.1 |
|  original\_glszm\_SmallAreaHighGreyLevelEmphasis | 15.2 | 72.9 | 88.1 |
|  original\_glrlm\_HighGreyLevelRunEmphasis | 23.2 | 64.6 | 87.8 |
|  original\_firstorder\_Variance | 0.0 | 87.5 | 87.5 |
|  original\_glrlm\_RunVariance | 0.0 | 87.5 | 87.5 |
|  original\_gldm\_DependenceVariance | 0.0 | 85.4 | 85.4 |
|  original\_gldm\_HighGreyLevelEmphasis | 15.2 | 64.6 | 79.8 |
|  original\_glcm\_DifferenceEntropy | 3.6 | 75.0 | 78.6 |
|  original\_gldm\_SmallDependenceHighGreyLevelEmphasis | 8.9 | 68.8 | 77.7 |
|  original\_glcm\_Contrast | 3.6 | 72.9 | 76.5 |
|  original\_glcm\_DifferenceVariance | 4.5 | 70.8 | 75.3 |
|  original\_glcm\_DifferenceAverage | 3.6 | 68.8 | 72.3 |
|  original\_glcm\_InverseDifference | 3.6 | 68.8 | 72.3 |
|  original\_glcm\_InverseDifferenceMoment | 3.6 | 68.8 | 72.3 |
|  original\_glcm\_InverseVariance | 0.9 | 70.8 | 71.7 |
|  original\_glszm\_SizeZoneNonUniformityNormalised | 17.0 | 52.1 | 69.0 |
|  original\_glszm\_SmallAreaEmphasis | 18.8 | 45.8 | 64.6 |
|  original\_gldm\_LargeDependenceLowGreyLevelEmphasis | 7.1 | 54.2 | 61.3 |
|  original\_glrlm\_ShortRunHighGreyLevelEmphasis | 6.3 | 52.1 | 58.3 |
|  original\_glrlm\_LongRunLowGreyLevelEmphasis | 6.3 | 41.7 | 47.9 |

**Supplementary Figure 1.** Coronal (A), axial (B) and sagittal (C) view of the anthropomorphic 3D-printed CT phantom.



**Supplementary Figure 2.** Qualitative comparison of manually annotated ROIs in the anthropomorphic 3D-printed phantom. In the top row, 2D axial slices of cyst\_1, cyst\_2, metastasis and normal\_1 (from left to right) are shown with the same window level. In the bottom row, three dimensional renderings of full ROIs are shown in the same order.

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