Supplemental Definitions: Feature extraction implementation properties

- Programming language: C++, standard 11
- Development environment (IDE):   Visual Studio Community 2013, Windows 10, 64bit
- Compiler: VS 2013 in-built, 64bit
- Development status: Active, since 2016
- Feature equation calculations: According to (*1*,*2*)
- Neighborhood analysis: 3D, 3x3x3 kernel
- Textural matrix normalization: Yes, according to suggested calculations in (*2*)
- Textural matrix precision: Float (32bit)
- Radiomics feature precision: Double (64bit)
- Binning: On-the-fly, voxel-by-voxel, based on mapper function
- Binning mapper function: Fixed bin size, variable number of bins per lesion (*3*)
- Multi-threading applied: Yes, during textural matrix generation
- Multi-threading technology: OpenMP, pre-configured in the IDE
- Multi-threading validation: Yes, compared to single-threading results
- Number of threads: Dynamic, based on max. CPU cores
- Feature extraction validation: Yes, compared to manually calculated features
- Feature extraction validation reference: Own 3D digital phantom

Supplemental TABLE 1: Sphere 1 (S_{37}) COV matrix of features (rows) and imaging systems (columns) together with their COV across the 12 feature extraction configurations (C). The table rows and columns are ordered by the respective mean COV across imaging sites and features respectively. The imaging system identifiers are numbered by their rank as defined by manuscript TABLE 1. Numeric values are in absolute COV unit (deviation/mean). Color code represents low (green) to high (red) COVs. Color code: COV<5%, (green), 5%≤COV<10% (yellow), 10%≤COV<20% (orange), COV≥20% (pink).

Feature	Feature category	PCS_{13}	PCS_7	PCS_5	PCS_{11}	PCS_6	PCS_8	PCS_2	PCS_1	PCS_4	PCS_{12}	PCS_{10}	PCS_3	PCS_9	Mean RSD
Information correlation	GLCM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactness	Shape	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01
Volume	Shape	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.06	0.06	0.00	0.01	0.00	0.01	0.02
Spherical dice coefficient	Shape	0.11	0.01	0.04	0.01	0.01	0.03	0.01	0.04	0.02	0.02	0.01	0.04	0.02	0.03
Correlation	GLCM	0.21	0.14	0.14	0.20	0.15	0.14	0.13	0.13	0.12	0.10	0.09	0.09	0.19	0.14
Sum entropy	GLCM	0.17	0.16	0.16	0.17	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.18	0.16	0.17
Entropy	GLCM	0.18	0.17	0.17	0.19	0.18	0.19	0.20	0.20	0.20	0.21	0.21	0.22	0.18	0.19
Small zone size emphasis	GLZSM	0.19	0.21	0.19	0.22	0.22	0.24	0.28	0.30	0.32	0.33	0.35	0.35	0.20	0.26
Difference entropy	GLCM	0.28	0.29	0.28	0.29	0.29	0.30	0.31	0.32	0.32	0.33	0.34	0.36	0.29	0.31
Zone size percentage	GLZSM	0.43	0.44	0.42	0.46	0.46	0.50	0.54	0.56	0.58	0.61	0.68	0.72	0.45	0.53
Inverse difference	GLCM	0.56	0.61	0.60	0.57	0.59	0.58	0.58	0.57	0.56	0.56	0.55	0.56	0.58	0.57
Coarseness	NGTDM	0.64	0.57	0.56	0.64	0.56	0.58	0.59	0.56	0.56	0.58	0.60	0.63	0.62	0.59
Inverse difference moment	GLCM	0.74	0.83	0.82	0.76	0.81	0.78	0.79	0.77	0.76	0.76	0.76	0.77	0.79	0.78
Sum average	GLCM	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Dissimilarity	GLCM	1.04	1.08	1.07	1.05	1.07	1.07	1.07	1.06	1.06	1.08	1.08	1.08	1.05	1.07
Small zone low gray emphasis	GLZSM	1.19	0.94	1.15	1.23	1.28	1.04	1.10	0.98	1.04	1.01	1.19	1.37	1.02	1.12
Maximum probability	GLCM	1.16	1.19	1.18	1.19	1.21	1.13	1.13	1.27	1.08	1.17	1.35	1.39	1.14	1.20
Low gray level zone emphasis	GLZSM	1.12	0.98	1.04	1.15	1.18	1.09	1.22	1.26	1.42	1.22	1.30	1.67	1.01	1.20
Auto correlation	GLCM	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.36	1.35	1.35	1.35
Sum of squares variance	GLCM	1.35	1.36	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Sum variance	GLCM	1.36	1.35	1.35	1.36	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.36	1.35
Angular second moment	GLCM	1.26	1.34	1.35	1.28	1.36	1.35	1.37	1.36	1.35	1.41	1.42	1.44	1.30	1.35
High gray level zone emphasis	GLZSM	1.40	1.37	1.37	1.40	1.37	1.37	1.37	1.38	1.37	1.33	1.33	1.32	1.38	1.37
Small zone high gray emphasis	GLZSM	1.43	1.41	1.41	1.43	1.41	1.41	1.42	1.43	1.43	1.39	1.41	1.40	1.42	1.42
Texture strength	NGTDM	1.59	1.52	1.54	1.60	1.56	1.51	1.60	1.60	1.60	1.56	1.56	1.54	1.56	1.56
Cluster prominence	GLCM	1.69	1.68	1.68	1.69	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.69	1.68
Contrast	NGTDM	1.74	1.85	1.83	1.68	1.72	1.76	1.64	1.58	1.59	1.62	1.59	1.61	1.74	1.69
Zone size non-uniformity	GLZSM	1.70	1.56	1.70	1.72	1.60	1.75	1.65	1.77	1.71	1.73	1.75	1.71	1.81	1.70
Busyness	NGTDM	1.61	1.62	1.64	1.60	1.60	1.67	1.71	1.72	1.77	1.86	2.00	2.08	1.63	1.73
Contrast	GLCM	1.96	2.05	2.04	1.99	2.03	2.04	2.04	2.01	2.02	2.06	2.06	2.06	1.98	2.03
Difference variance	GLCM	1.97	2.05	2.05	2.00	2.03	2.04	2.05	2.02	2.03	2.05	2.05	2.06	1.99	2.03
Gray level non-uniformity	GLZSM	1.97	2.03	2.00	2.00	2.04	2.09	2.12	2.11	2.14	2.21	2.27	2.32	2.03	2.10
Complexity	NGTDM	2.01	2.10	2.10	2.06	2.14	2.09	2.16	2.15	2.16	2.21	2.20	2.15	2.02	2.12
Large zone high gray emphasis	GLZSM	2.19	2.41	2.24	2.40	2.49	2.79	3.08	3.11	3.14	3.13	3.18	3.12	2.50	2.75
Large zone size emphasis	GLZSM	3.06	3.23	3.20	3.13	3.23	3.27	3.30	3.30	3.30	3.27	3.27	3.24	3.19	3.23
Large zone low gray Emphasis	GLZSM	3.24	3.30	3.29	3.28	3.30	3.30	3.31	3.31	3.31	3.28	3.29	3.27	3.29	3.29
Cluster shade	GLCM	1.65	1.68	1.67	1.88	1.69	1.65	1.62	1.59	1.59	1.60	1.60	1.60	26.44	3.56
Mean RSD		1.17	1.18	1.18	1.19	1.20	1.20	1.22	1.22	1.23	1.23	1.25	1.27	1.85	

Supplemental TABLE 2: Sphere 2 (S_{28}) COV matrix of features (rows) and imaging systems (columns) together with their COV across the 12 feature extraction configurations (C). The table rows and columns are ordered by the respective mean COV across imaging sites and features respectively. The imaging system identifiers are numbered by their rank as defined by manuscript TABLE 1. Numeric values are in absolute COV unit (deviation/mean). Color code represents low (green) to high (red) COVs. Color code: COV<5%, (green), 5%≤COV<10% (yellow), 10%≤COV<20% (orange), COV≥20% (pink).

Feature	Feature category	PCS_{13}	PCS_{11}	PCS_9	PCS_5	PCS_6	PCS_7	PCS_8	PCS_1	PCS_2	PCS_4	PCS_{12}	PCS_3	PCS_{10}	Mean RSD
Information correlation	GLCM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactness	Shape	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01	0.02
Volume	Shape	0.00	0.01	0.02	0.03	0.02	0.03	0.01	0.08	0.02	0.08	0.01	0.00	0.00	0.02
Spherical dice coefficient	Shape	0.10	0.02	0.03	0.03	0.01	0.01	0.03	0.01	0.00	0.02	0.04	0.03	0.03	0.03
Sum entropy	GLCM	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.18	0.17
Correlation	GLCM	0.26	0.24	0.24	0.17	0.17	0.18	0.17	0.17	0.17	0.16	0.14	0.13	0.13	0.18
Entropy	GLCM	0.17	0.17	0.17	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.21	0.24	0.22	0.19
Small zone size emphasis	GLZSM	0.21	0.20	0.22	0.23	0.22	0.24	0.24	0.31	0.28	0.31	0.33	0.36	0.33	0.27
Difference entropy	GLCM	0.28	0.28	0.29	0.29	0.29	0.29	0.30	0.31	0.32	0.33	0.33	0.37	0.35	0.31
Zone size percentage	GLZSM	0.41	0.40	0.45	0.44	0.44	0.47	0.48	0.54	0.55	0.58	0.63	0.78	0.68	0.53
Coarseness	NGTDM	0.58	0.62	0.59	0.58	0.54	0.55	0.57	0.53	0.58	0.55	0.60	0.65	0.61	0.58
Inverse difference	GLCM	0.61	0.61	0.60	0.62	0.61	0.60	0.60	0.59	0.60	0.58	0.57	0.54	0.56	0.59
Inverse difference moment	GLCM	0.84	0.83	0.83	0.85	0.85	0.82	0.81	0.82	0.83	0.81	0.79	0.74	0.77	0.81
Sum average	GLCM	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.84	0.83	0.83
Dissimilarity	GLCM	1.05	1.05	1.06	1.07	1.07	1.06	1.08	1.06	1.07	1.06	1.09	1.09	1.10	1.07
Small zone low gray emphasis	GLZSM	1.10	1.18	0.91	1.03	1.07	1.19	1.15	1.01	0.91	1.07	1.07	1.25	1.37	1.10
Low gray level zone emphasis	GLZSM	1.05	1.10	0.94	0.97	1.04	1.12	1.11	1.17	1.17	1.27	1.30	1.35	1.65	1.17
Maximum probability	GLCM	1.04	1.09	1.00	1.18	1.22	1.16	1.26	1.15	1.24	1.19	1.26	1.37	1.36	1.19
High gray level zone emphasis	GLZSM	1.37	1.37	1.36	1.34	1.34	1.34	1.34	1.35	1.34	1.33	1.30	1.28	1.30	1.34
Angular second moment	GLCM	1.21	1.25	1.28	1.33	1.33	1.34	1.38	1.32	1.33	1.33	1.43	1.42	1.44	1.34
Auto correlation	GLCM	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Sum of squares variance	GLCM	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.36	1.36	1.35
Sum variance	GLCM	1.36	1.36	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Small zone high gray emphasis	GLZSM	1.40	1.41	1.41	1.38	1.38	1.38	1.38	1.41	1.40	1.39	1.37	1.39	1.38	1.39
Texture strength	NGTDM	1.38	1.42	1.38	1.35	1.36	1.36	1.37	1.46	1.40	1.40	1.40	1.44	1.38	1.39
Cluster shade	GLCM	1.72	1.74	1.68	1.60	1.60	1.61	1.60	1.59	1.60	1.59	1.61	1.60	1.59	1.63
Cluster prominence	GLCM	1.70	1.69	1.68	1.68	1.69	1.69	1.68	1.68	1.69	1.68	1.69	1.68	1.68	1.69
Zone size non-uniformity	GLZSM	1.59	1.62	1.57	1.63	1.68	1.66	1.50	1.54	2.02	2.20	1.93	2.09	1.86	1.76
Busyness	NGTDM	1.60	1.57	1.62	1.82	1.75	1.68	1.75	1.79	1.77	1.77	1.93	2.12	2.04	1.79
Complexity	NGTDM	1.77	1.84	1.82	1.79	1.83	1.82	1.87	1.93	1.89	1.85	1.96	1.97	1.92	1.86
Contrast	GLCM	1.98	2.00	2.02	2.04	2.03	2.02	2.06	2.02	2.03	2.01	2.07	2.07	2.09	2.03
Difference variance	GLCM	1.98	2.00	2.02	2.05	2.03	2.03	2.06	2.04	2.04	2.04	2.06	2.07	2.09	2.04
Contrast	NGTDM	2.31	2.16	2.22	2.25	2.22	2.15	2.18	1.96	2.05	2.00	1.96	1.83	2.00	2.10
Gray level non-uniformity	GLZSM	2.00	1.98	2.04	2.05	2.06	2.08	2.10	2.12	2.15	2.17	2.22	2.36	2.28	2.12
Large zone high gray emphasis	GLZSM	2.01	1.89	2.38	2.18	2.17	2.59	2.57	3.12	3.16	3.18	3.19	2.87	3.17	2.65
Large zone size emphasis	GLZSM	3.18	3.17	3.24	3.27	3.26	3.27	3.27	3.30	3.29	3.28	3.25	3.13	3.24	3.24
Large zone low gray Emphasis	GLZSM	3.25	3.27	3.29	3.29	3.28	3.28	3.28	3.31	3.30	3.29	3.27	3.23	3.28	3.28
Mean RSD		1.17	1.17	1.17	1.18	1.18	1.20	1.20	1.21	1.23	1.24	1.25	1.26	1.27	

Supplemental TABLE 3: Sphere 3 (S_{22}) COV matrix of features (rows) and imaging systems (columns) together with their COV across the 12 feature extraction configurations (C). The table rows and columns are ordered by the respective mean COV across imaging sites and features respectively. The imaging system identifiers are numbered by their rank as defined by manuscript TABLE 1. Numeric values are in absolute COV unit (deviation/mean). Color code represents low (green) to high (red) COVs. Color code: COV<5%, (green), 5%≤COV<10% (yellow), 10%≤COV<20% (orange), COV≥20% (pink).

Feature	Feature category	PCS_{13}	PCS_5	PCS_{11}	PCS_8	PCS_6	PCS_9	PCS_7	PCS_4	PCS_1	PCS_{12}	PCS_2	PCS_3	PCS_{10}	Mean RSD
Information correlation	GLCM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactness	Shape	0.03	0.02	0.01	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Volume	Shape	0.03	0.03	0.01	0.02	0.01	0.02	0.02	0.10	0.09	0.02	0.02	0.01	0.02	0.03
Spherical dice coefficient	Shape	0.15	0.04	0.14	0.03	0.04	0.12	0.08	0.03	0.02	0.03	0.09	0.08	0.03	0.07
Sum entropy	GLCM	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.20	0.20	0.18
Entropy	GLCM	0.17	0.17	0.17	0.18	0.18	0.18	0.18	0.20	0.20	0.22	0.20	0.25	0.24	0.19
Correlation	GLCM	0.33	0.21	0.27	0.22	0.23	0.27	0.22	0.21	0.21	0.17	0.22	0.18	0.17	0.22
Small zone size emphasis	GLZSM	0.22	0.22	0.22	0.24	0.23	0.24	0.24	0.33	0.32	0.28	0.29	0.42	0.37	0.28
Difference entropy	GLCM	0.28	0.29	0.28	0.30	0.30	0.29	0.29	0.33	0.32	0.34	0.32	0.39	0.37	0.32
Zone size percentage	GLZSM	0.41	0.45	0.42	0.50	0.48	0.47	0.48	0.60	0.59	0.67	0.57	0.87	0.79	0.56
Inverse difference	GLCM	0.61	0.59	0.61	0.59	0.60	0.61	0.62	0.57	0.57	0.55	0.58	0.51	0.53	0.58
Coarseness	NGTDM	0.61	0.58	0.61	0.52	0.53	0.61	0.55	0.55	0.56	0.60	0.59	0.68	0.62	0.59
Inverse difference moment	GLCM	0.83	0.81	0.83	0.81	0.82	0.84	0.85	0.79	0.79	0.75	0.81	0.70	0.72	0.80
Sum average	GLCM	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Dissimilarity	GLCM	1.07	1.07	1.07	1.09	1.08	1.06	1.08	1.05	1.05	1.09	1.08	1.08	1.09	1.07
Small zone low gray emphasis	GLZSM	0.96	0.92	1.27	1.18	1.10	1.10	1.20	0.87	0.96	1.19	1.29	1.15	1.13	1.10
Low gray level zone emphasis	GLZSM	0.91	0.98	1.14	1.12	1.08	1.06	1.08	1.23	1.13	1.22	1.49	1.30	1.36	1.16
Maximum probability	GLCM	1.02	1.19	1.05	1.20	1.10	1.13	1.26	1.16	1.22	1.27	1.22	1.36	1.32	1.19
Texture strength	NGTDM	1.28	1.24	1.29	1.27	1.26	1.31	1.26	1.31	1.28	1.28	1.30	1.35	1.35	1.29
High gray level zone emphasis	GLZSM	1.35	1.30	1.34	1.29	1.31	1.33	1.32	1.31	1.31	1.26	1.31	1.26	1.26	1.30
Angular second moment	GLCM	1.14	1.32	1.24	1.30	1.32	1.28	1.33	1.33	1.33	1.41	1.35	1.38	1.41	1.32
Auto correlation	GLCM	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.36	1.36	1.35	1.35	1.35	1.35	1.35
Sum variance	GLCM	1.36	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
Sum of squares variance	GLCM	1.36	1.35	1.35	1.36	1.35	1.35	1.35	1.35	1.35	1.36	1.36	1.35	1.35	1.35
Small zone high gray emphasis	GLZSM	1.39	1.35	1.38	1.34	1.35	1.37	1.37	1.38	1.38	1.34	1.37	1.38	1.36	1.37
Cluster shade	GLCM	1.68	1.60	1.66	1.59	1.61	1.64	1.60	1.59	1.59	1.60	1.60	1.60	1.60	1.61
Cluster prominence	GLCM	1.71	1.69	1.70	1.68	1.69	1.70	1.69	1.68	1.68	1.69	1.69	1.69	1.69	1.69
Complexity	NGTDM	1.67	1.65	1.70	1.69	1.68	1.71	1.69	1.72	1.71	1.77	1.72	1.86	1.83	1.72
Busyness	NGTDM	1.80	1.64	1.66	1.64	1.62	1.69	1.68	1.75	1.76	1.94	1.78	2.10	2.05	1.78
Zone size non-uniformity	GLZSM	1.51	1.71	1.63	1.76	1.95	1.71	1.75	2.09	2.30	1.99	1.98	2.23	2.31	1.92
Contrast	GLCM	2.03	2.03	2.03	2.07	2.06	2.01	2.05	2.00	2.00	2.06	2.06	2.06	2.06	2.04
Difference variance	GLCM	2.03	2.04	2.03	2.08	2.06	2.01	2.06	2.04	2.03	2.06	2.07	2.07	2.06	2.05
Gray level non-uniformity	GLZSM	2.03	2.09	2.05	2.12	2.12	2.09	2.10	2.20	2.19	2.27	2.19	2.40	2.34	2.17
Contrast	NGTDM	2.64	2.44	2.59	2.44	2.50	2.44	2.42	2.21	2.25	2.20	2.34	1.98	2.04	2.35
Large zone high gray emphasis	GLZSM	1.44	1.91	1.84	2.39	2.43	2.60	2.46	3.14	3.17	3.10	3.11	2.61	2.95	2.55
Large zone size emphasis	GLZSM	3.20	3.22	3.24	3.22	3.23	3.27	3.26	3.26	3.28	3.22	3.26	3.03	3.16	3.22
Large zone low gray Emphasis	GLZSM	3.26	3.24	3.26	3.24	3.25	3.28	3.28	3.29	3.29	3.27	3.28	3.19	3.24	3.26
Mean RSD		1.16	1.16	1.18	1.19	1.20	1.20	1.20	1.23	1.23	1.24	1.25	1.25	1.26	

Supplemental TABLE 4: Sphere 4 (S_{17}) COV matrix of features (rows) and imaging systems (columns) together with their COV across the 12 feature extraction configurations (C). The table rows and columns are ordered by the respective mean COV across imaging sites and features respectively. The imaging system identifiers are numbered by their rank as defined by manuscript TABLE 1. Numeric values are in absolute COV unit (deviation/mean). Color code represents low (green) to high (red) COVs. Color code: COV<5%, (green), 5%≤COV<10% (yellow), 10%≤COV<20% (orange), COV≥20% (pink).

Feature	Feature category	PCS_{11}	PCS_{13}	PCS_6	PCS_5	PCS_9	PCS_1	PCS_4	PCS_7	PCS_{12}	PCS_8	PCS_3	PCS_2	PCS_{10}	Mean RSD
Information correlation	GLCM	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Compactness	Shape	0.03	0.04	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03
Volume	Shape	0.02	0.01	0.02	0.04	0.03	0.11	0.11	0.03	0.01	0.01	0.01	0.04	0.01	0.03
Spherical dice coefficient	Shape	0.07	0.16	0.11	0.04	0.10	0.06	0.09	0.14	0.11	0.14	0.05	0.07	0.10	0.10
Sum entropy	GLCM	0.16	0.17	0.17	0.17	0.18	0.18	0.21	0.17	0.20	0.18	0.24	0.19	0.22	0.19
Entropy	GLCM	0.17	0.18	0.17	0.19	0.19	0.20	0.24	0.19	0.23	0.19	0.29	0.22	0.26	0.21
Correlation	GLCM	0.36	0.40	0.29	0.28	0.36	0.26	0.28	0.29	0.22	0.30	0.23	0.29	0.21	0.29
Small zone size emphasis	GLZSM	0.18	0.22	0.22	0.23	0.24	0.28	0.41	0.25	0.30	0.26	0.46	0.34	0.43	0.29
Difference entropy	GLCM	0.26	0.28	0.29	0.30	0.30	0.32	0.37	0.31	0.35	0.31	0.43	0.34	0.40	0.33
Inverse difference	GLCM	0.61	0.60	0.61	0.57	0.60	0.56	0.54	0.58	0.53	0.58	0.49	0.54	0.50	0.56
Coarseness	NGTDM	0.54	0.60	0.56	0.57	0.58	0.54	0.59	0.53	0.62	0.58	0.73	0.58	0.69	0.59
Zone size percentage	GLZSM	0.38	0.45	0.46	0.52	0.51	0.57	0.74	0.54	0.73	0.55	0.99	0.66	0.91	0.62
Inverse difference moment	GLCM	0.82	0.82	0.84	0.78	0.82	0.76	0.74	0.79	0.71	0.80	0.65	0.74	0.66	0.76
Sum average	GLCM	0.83	0.83	0.83	0.83	0.84	0.83	0.84	0.83	0.83	0.83	0.85	0.83	0.84	0.83
Dissimilarity	GLCM	1.08	1.09	1.09	1.07	1.08	1.07	1.06	1.10	1.08	1.08	1.09	1.09	1.09	1.08
Low gray level zone emphasis	GLZSM	1.25	0.83	1.00	0.96	0.93	1.03	1.17	1.19	1.07	1.07	1.27	1.15	1.26	1.09
Small zone low gray emphasis	GLZSM	1.24	0.68	1.10	1.02	0.96	0.96	1.08	1.27	0.84	1.21	1.16	1.29	1.66	1.11
Maximum probability	GLCM	1.01	1.13	1.18	1.15	1.22	1.15	1.26	1.26	1.21	1.26	1.33	1.23	1.30	1.21
Texture strength	NGTDM	1.22	1.18	1.21	1.22	1.22	1.24	1.31	1.24	1.28	1.25	1.39	1.26	1.35	1.26
High gray level zone emphasis	GLZSM	1.31	1.30	1.29	1.28	1.30	1.29	1.29	1.29	1.24	1.28	1.26	1.29	1.24	1.28
Angular second moment	GLCM	1.13	1.18	1.30	1.31	1.32	1.29	1.37	1.34	1.36	1.35	1.39	1.30	1.39	1.31
Small zone high gray emphasis	GLZSM	1.34	1.34	1.32	1.33	1.35	1.35	1.39	1.35	1.32	1.33	1.41	1.37	1.35	1.35
Sum variance	GLCM	1.35	1.35	1.35	1.35	1.36	1.35	1.36	1.35	1.36	1.35	1.36	1.35	1.36	1.36
Auto correlation	GLCM	1.35	1.35	1.35	1.35	1.35	1.36	1.36	1.35	1.36	1.35	1.36	1.36	1.37	1.36
Sum of squares variance	GLCM	1.35	1.38	1.36	1.36	1.37	1.35	1.36	1.35	1.35	1.35	1.36	1.36	1.36	1.36
Cluster shade	GLCM	1.62	1.61	1.61	1.61	1.63	1.59	1.60	1.59	1.61	1.62	1.62	1.60	1.61	1.61
Complexity	NGTDM	1.54	1.54	1.55	1.59	1.60	1.64	1.73	1.65	1.71	1.62	1.85	1.67	1.80	1.65
Cluster prominence	GLCM	1.71	1.68	1.71	1.70	1.71	1.68	1.68	1.68	1.70	1.71	1.70	1.68	1.70	1.70
Busyness	NGTDM	1.32	1.50	1.51	1.59	1.66	1.60	1.87	1.51	1.87	1.58	2.25	1.71	2.16	1.70
Zone size non-uniformity	GLZSM	1.92	1.73	1.70	1.78	1.94	1.92	1.49	1.96	2.03	2.10	1.80	1.70	2.00	1.85
Contrast	GLCM	2.06	2.10	2.07	2.04	2.04	2.04	2.01	2.11	2.06	2.05	2.07	2.08	2.06	2.06
Difference variance	GLCM	2.07	2.14	2.07	2.04	2.04	2.07	2.04	2.12	2.05	2.05	2.07	2.10	2.05	2.07
Gray level non-uniformity	GLZSM	2.03	2.08	2.11	2.16	2.15	2.18	2.31	2.18	2.30	2.21	2.41	2.28	2.37	2.21
Large zone high gray emphasis	GLZSM	1.07	1.60	1.79	2.36	2.47	2.98	2.78	2.66	2.98	2.83	2.15	3.03	2.59	2.41
Contrast	NGTDM	2.77	2.80	2.70	2.55	2.61	2.45	2.14	2.55	2.29	2.58	1.98	2.47	2.04	2.46
Large zone size emphasis	GLZSM	3.15	3.20	3.20	3.13	3.20	3.22	3.10	3.17	3.17	3.18	2.70	3.20	3.03	3.13
Large zone low gray Emphasis	GLZSM	3.19	3.24	3.24	3.20	3.25	3.25	3.22	3.24	3.25	3.24	3.04	3.24	3.19	3.21
Mean RSD		1.15	1.16	1.17	1.18	1.20	1.21	1.22	1.22	1.23	1.23	1.23	1.23	1.26	

Supplemental TABLE 5: Features sorted by decreasing ANOVA p value over voxel size 1, 2 and 4 mm feature subgroups. The subgroup mean COV trend is in reference to increasing voxel size (1 to 4 mm). Higher p values correspond to more similar resolution subgroups, indicating that the given feature is less dependent from resolution.

Feature	Feature Category	P	Trend
Correlation	GLCM	1.000000	-
Sum variance	GLCM	0.995004	↓
Cluster prominence	GLCM	0.992275	X
Contrast	GLCM	0.991206	X
Difference variance	GLCM	0.975632	X
Dissimilarity	GLCM	0.951504	↓
Sum entropy	GLCM	0.950591	↓
Auto correlation	GLCM	0.922664	X
Information correlation	GLCM	0.919974	↓
Sum of squares variance	GLCM	0.801710	X
Volume	Shape	0.710357	X
Inverse difference	GLCM	0.676611	X
Inverse difference moment	GLCM	0.652528	X
Sum average	GLCM	0.633000	X
High gray level zone emphasis	GLZSM	0.623499	X
Complexity	NGTDM	0.577589	X
Cluster shade	GLCM	0.257873	↓
Small zone high gray emphasis	GLZSM	0.202858	↓
Coarseness	NGTDM	0.055916	X
Texture strength	NGTDM	0.033601	↓
Spheric dice coefficient	Shape	0.024423	X
Zone size non-uniformity	GLZSM	0.014283	↓
Difference entropy	GLCM	0.008004	↓
Gray level non-uniformity	GLZSM	0.004777	↓
Large zone high gray emphasis	GLZSM	0.003424	↓
Entropy	GLCM	0.002774	↓
Small zone size emphasis	GLZSM	0.002068	↓
Small zone low gray emphasis	GLZSM	0.001958	↓
Large zone size emphasis	GLZSM	0.000972	↓
Contrast	NGTDM	0.000830	↑
Low gray level zone emphasis	GLZSM	0.000672	↓
Zone size percentage	GLZSM	0.000634	↓
Busyness	NGTDM	0.000127	↓
Large zone low gray Emphasis	GLZSM	0.000091	↓
Maximum probability	GLCM	0.000028	X
Angular second moment	GLCM	0.000007	↓
Compactness	Shape	5.42E-12	↑

Supplemental TABLE 6: Features sorted by decreasing ANOVA p value over bin size 0.01, 0.025, 0.05 and 0.1 feature subgroups. The subgroup mean COV trend is in reference to increasing bin size (0.01 to 0.1). Higher p values correspond to more similar bin size subgroups, indicating that the given feature is less dependent from binning.

Feature	Feature Category	p	Trend
Compactness	Shape	1.000000	-
Spheric dice coefficient	Shape	1.000000	-
Volume	Shape	1.000000	-
Correlation	GLCM	0.999978	↓
Contrast	GLCM	0.999971	↑
Cluster shade	GLCM	0.994648	↑
Cluster prominence	GLCM	0.993866	↑
Dissimilarity	GLCM	0.991842	↑
Difference variance	GLCM	0.990493	X
Sum variance	GLCM	0.989194	↑
Sum of squares variance	GLCM	0.986295	↑
Auto correlation	GLCM	0.983679	↑
Complexity	NGTDM	0.983275	X
Sum average	GLCM	0.964235	↑
High gray level zone emphasis	GLZSM	0.553549	X
Zone size non-uniformity	GLZSM	0.466191	X
Texture strength	NGTDM	0.442112	↑
Coarseness	NGTDM	0.131593	X
Maximum probability	GLCM	0.128193	↑
Contrast	NGTDM	0.100090	↓
Angular second moment	GLCM	0.096172	↑
Small zone high gray emphasis	GLZSM	0.089241	↑
Inverse difference moment	GLCM	0.069921	↓
Large zone high gray emphasis	GLZSM	0.025940	↑
Busyness	NGTDM	0.021837	↑
Inverse difference	GLCM	0.019988	↓
Low gray level zone emphasis	GLZSM	0.004272	↑
Sum entropy	GLCM	0.002355	↑
Small zone low gray emphasis	GLZSM	0.002262	↑
Information correlation	GLCM	0.002050	↑
Difference entropy	GLCM	0.000085	↑
Gray level non-uniformity	GLZSM	0.000044	↑
Entropy	GLCM	0.000020	↑
Large zone size emphasis	GLZSM	0.000012	↑
Large zone low gray Emphasis	GLZSM	0.000006	↑
Zone size percentage	GLZSM	1.25E-07	↑
Small zone size emphasis	GLZSM	1.61E-08	↑

Supplemental TABLE 7: Features sorted by decreasing ANOVA p value over sphere 1-4 (S_{37}-S_{17}) subgroups. The subgroup mean COV trend is in reference to increasing volume (S_{17} to S_{37}). Higher p values correspond to more similar volume subgroups, indicating that the given feature is less dependent from volume.

Feature	Feature Category	p	Trend
Large zone low gray Emphasis	GLZSM	0.797472	X
Correlation	GLCM	0.680383	↓
Large zone size emphasis	GLZSM	0.482819	↓
Zone size percentage	GLZSM	0.449660	↓
Small zone size emphasis	GLZSM	0.273200	↓
Coarseness	NGTDM	0.211454	↓
Large zone high gray emphasis	GLZSM	0.138304	↓
Small zone low gray emphasis	GLZSM	0.110290	X
Low gray level zone emphasis	GLZSM	0.065113	X
Information correlation	GLCM	0.026789	↓
Gray level non-uniformity	GLZSM	0.014603	X
Compactness	Shape	0.013803	↓
Zone size non-uniformity	GLZSM	0.010271	↓
Entropy	GLCM	0.004455	↓
Contrast	NGTDM	0.001405	↓
Maximum probability	GLCM	0.000980	↓
Angular second moment	GLCM	0.000848	↓
Busyness	NGTDM	0.000484	X
Difference entropy	GLCM	0.000093	↓
Small zone high gray emphasis	GLZSM	8.68E-10	X
Sum entropy	GLCM	3.30E-10	↓
Inverse difference	GLCM	2.23E-12	↓
Texture strength	NGTDM	1.74E-12	↓
Spheric dice coefficient	Shape	4.31E-14	↓
Inverse difference moment	GLCM	3.71E-14	↓
Cluster shade	GLCM	1.06E-14	X
High gray level zone emphasis	GLZSM	8.84E-17	↓
Complexity	NGTDM	7.38E-19	X
Sum average	GLCM	7.89E-30	↓
Volume	Shape	2.11E-34	↓
Sum of squares variance	GLCM	1.42E-37	↓
Auto correlation	GLCM	3.17E-38	↓
Difference variance	GLCM	3.91E-40	X
Dissimilarity	GLCM	1.54E-43	↓
Cluster prominence	GLCM	9.95E-44	↓
Contrast	GLCM	2.02E-49	↓
Sum variance	GLCM	6.79E-52	↓

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