

Supplementary Material

Automated Scoring of Alzheimer's Disease Atrophy Scale with Subtype Classification Using Deep Learning-Based T1-Weighted Magnetic Resonance Image Segmentation

Supplementary Table 1. Summary of the MR protocol for each site

Scanner name		Scanner manufacturing	TR (ms)	TE (ms)	FA (°)	image matrix	voxel size (mm ³)
Development Set							
Site 1	Achieva	Philips, Netherlands	9.3	4.6	8	224×224	1.0×1.0×1.0
Site 2	Achieva	Philips, Netherlands	9.7	4.6	8	256×256	1.0×1.0×1.0
	Ingenia Elition X		9.4	4.4			
Site 3	Ingenia CX		8.5	4.3		256×256	1.0×1.0×1.0
	Skyra	Siemens, Germany	1940	2.6	9		
Site 4	Ingenia CX	Philips, Netherlands	9.8	4.6	9	230×230	1.0×1.0×1.0
Site 5	Vida	Siemens, Germany	2090	2.8	9	256×256	1.0×1.0×1.0
Site 6	Verio	Siemens, Germany	1,900	2.5	9	256×256	1.0×1.0×1.0
Site 7		GE HealthCare,	8.5	3.2	12	256×256	1.0×1.0×1.0
	DISCOVERY	USA	8.3	4.6	8		
	MR750w	Philips, Netherlands	1554.3	2.3	9		
	Ingenia CX	Siemens, Germany					
	Skyra/ Skyra fit						
Validation Set							
Site 1	Achieva	Philips, Netherlands	9.3	4.6	8	224×224	1.0×1.0×1.0
Site 2	Achieva	Philips, Netherlands	9.7	4.6	8	256×256	1.0×1.0×1.0
	Ingenia Elition X		9.4	4.4			
Site 3	Ingenia CX		8.5	4.3		256×256	1.0×1.0×1.0
	Skyra	Siemens, Germany	1940	2.6	9		

TE, echo time; TR, repetition time; FA, flip angle

Supplementary Table 2. Comparison of radiologists' consensus visual scoring results and volume-based scoring data distribution with each regional occupancy index mean and standard deviation.

visual score	V0	V1	V2	V3	V4
HOC (mean ± SD)	0.979 ± 0.015	0.931 ± 0.045	0.831 ± 0.066	0.735 ± 0.097	0.658 ± 0.135
Q1 (% , N)	6.2% (22)	2.8% (10)	0.3% (1)	0% (0)	0% (0)
Q2 (% , N)	4.8% (17)	11.5% (41)	0% (0)	0% (0)	0% (0)
Q3 (% , N)	0.6% (2)	12.4% (44)	3.1% (11)	0.3% (1)	0% (0)
Q4 (% , N)	0% (0)	7.6% (27)	13.2% (47)	1.7% (6)	0.8% (3)
Q5 (% , N)	0% (0)	1.4% (5)	14.6% (52)	13.2% (47)	5.4% (19)
TOC (mean ± SD)	0.989 ± 0.008	0.961 ± 0.026	0.900 ± 0.041	0.83 ± 0.068	0.757 ± 0.106
Q1 (% , N)	6.2% (22)	2.8% (10)	0.3% (1)	0% (0)	0% (0)
Q2 (% , N)	4.8% (17)	12.7% (45)	0% (0)	0% (0)	0% (0)
Q3 (% , N)	0.6% (2)	13% (46)	3.7% (13)	0.3% (1)	0% (0)
Q4 (% , N)	0% (0)	5.9% (21)	14.9% (53)	1.7% (6)	0.6% (2)
Q5 (% , N)	0% (0)	1.4% (5)	12.4% (44)	13.2% (47)	5.6% (20)
POC (mean ± SD)	0.994 ± 0.008	0.989 ± 0.012	0.978 ± 0.017	0.972 ± 0.019	–
Q1 (% , N)	2% (7)	7.3% (26)	0.6% (2)	0% (0)	–
Q2 (% , N)	1.1% (4)	13.8% (49)	1.7% (6)	0.3% (1)	–
Q3 (% , N)	0.8% (3)	13.5% (48)	4.5% (16)	0.3% (1)	–
Q4 (% , N)	0.3% (1)	13.2% (47)	9.6% (34)	1.7% (6)	–
Q5 (% , N)	0.6% (2)	10.7% (38)	14.4% (51)	3.7% (13)	–
FOC (mean ± SD)	0.997 ± 0.004	0.990 ± 0.008	0.977 ± 0.017	0.977 ± 0.017	–
Q1 (% , N)	6.5% (23)	3.7% (13)	0.6% (2)	0% (0)	–
Q2 (% , N)	7.9% (28)	9.9% (35)	0.3% (1)	0% (0)	–
Q3 (% , N)	3.1% (11)	15.2% (54)	1.4% (5)	0% (0)	–
Q4 (% , N)	0.3% (1)	23.4% (83)	2.5% (9)	0.3% (1)	–
Q5 (% , N)	0.6% (2)	15.8% (56)	8.2% (29)	0.6% (2)	–

V0–V4, consensus visual score 0 to 4; Q1–Q5: Quintile range 1–5; HOC, hippocampus occupancy index; TOC, medial temporal lobe occupancy index; FOC, frontal lobe occupancy index; POC, parietal lobe occupancy index; SD, standard deviation.