Supplementary

Appendix 1

Deep learning architecture

The classical network consisted of encoding blocks, decoding blocks, an initial convolution layer, and a final convolution layer. Each dense block was composed of a convolution layer, batch normalization, rectified linear unit activation layers, and pooling layer or upsampling layer. The layers of each block were densely connected. The input to a dense block was also concatenated with the output to the block itself. The input of each decoding block contained the output of the upsampled activation values and a concatenation with the corresponding feature maps of the encoding path, which are also known as skip connections.

Appendix 2

Conceptions of ADC histogram parameters

Histogram analysis is a method used to provide images with more information that is often overlooked by the human eye. The grayscale distribution in the ROI of the obtained image data was evaluated by mathematical methods to quantify the heterogeneity of the pathological changes (33,34).

(I) The nth percentile: the point at which n% of the voxel values from the histogram are found on the left of the histogram.
(II) Inhomogeneity: the standard deviation divided by the mean signal intensity across all pixels.
(III) Skewness represents the asymmetry of deviation from the normal distribution of a histogram. If the majority of the data are concentrated on the left of the histogram, the skewness value is positive, while the value is negative if the majority of data are concentrated on the right of the histogram.
(IV) Kurtosis represents the peakedness of a histogram and is categorized as follows: values that are equal to 3 indicate the histogram is Gaussian, values greater than 3 indicate a sharper peak, and values less than 3 indicate a flatter top.
(V) Entropy reflects the irregularity of ADC value distribution within an ADC histogram.

References

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https://dx.doi.org/10.21037/qims-21-123

Table S1 Comparisons of ADC histogram parameters for different image acquisition parameters

Pelvic bony structures	MRI vendors (s/mm^2)	No. of patients	ADC_{10} (10^{-3} mm^2/s)	ADC_{mean} (10^{-3} mm^2/s)	ADC_{median} (10^{-3} mm^2/s)	ADC_{90} (10^{-3} mm^2/s)	Inhomogeneity	Skewness	Kurtosis	Entropy
Lumbar vertebra (n=632)	3.0 T Achieva (b=800)	81	0.32±0.16	1.01±0.33$^{\&}$	0.86±0.29$^{\$}$	3.36±1.13$^{\&}$	0.87±0.10*	1.30±0.34	2.11±1.42$^{\$}$	8.94±0.59$^{\$}$
	3.0 T Discovery (b=800)	305	0.30±0.03	1.06±0.09$^{\&}$	0.96±0.11$^{\&}$	2.99±0.47$^{\$}$	0.71±0.08$^{\&}$	1.44±0.40*	3.51±1.92*	10.64±0.25*
	1.5 T Avanto (b=800)	126	0.30±0.08	0.93±0.12	0.81±0.14$^{\$}$	2.07±0.39$^{\$}$	0.67±0.11$^{\&}$	1.42±0.42*	2.92±1.69$^{\&}$	10.06±0.44$^{\&}$
	3.0 T Intera (b=1,000)	120	0.50±0.18*	1.52±0.16*	1.29±0.20*	4.52±0.75*	0.85±0.09*	1.40±0.32*	2.41±1.24$^{\$}$	10.07±0.54$^{\&}$
Sacrococcyx (n=693)	3.0 T Achieva (b=800)	111	0.38±0.14$^{\&}$	0.74±0.24$^{\$}$	0.58±0.19$^{\$}$	2.87±0.88$^{\&}$	0.95±0.08*	1.27±0.25$^{\$}$	2.02±1.19$^{\$}$	8.49±0.57$^{\$}$
	3.0 T Discovery (b=800)	308	0.24±0.02$^{\$}$	0.80±0.07$^{\&}$	0.68±0.08$^{\&}$	2.45±0.31$^{\$}$	0.74±0.06	1.18±0.31	2.25±1.56$^{\$}$	10.55±0.21*
	1.5 T Avanto (b=800)	142	0.19±0.04	0.63±0.09	0.51±0.08	1.87±0.34	0.78±0.11$^{\$}$	1.79±0.45*	5.37±2.47*	10.05±0.31$^{\&}$
	3.0 T Intera (b=1,000)	132	0.49±0.18*	1.13±0.14*	0.84±0.13*	3.83±0.71*	0.93±0.07$^{\&}$	1.40±0.32$^{\&}$	2.64±1.60$^{\&}$	9.71±0.67$^{\&}$
Ilium (n=1,386)	3.0 T Achieva (b=800)	111	0.28±0.10$^{\&}$	0.49±0.17	0.38±0.15	2.09±0.65$^{\&}$	1.01±0.09*	1.22±0.20	1.80±1.03$^{\$}$	7.15±0.77
	3.0 T Discovery (b=800)	308	0.23±0.02$^{\$}$	0.63±0.07*	0.51±0.07*	2.22±0.22$^{\&}$	0.83±0.08$^{\&}$	1.34±0.24$^{\&}$	2.68±1.26$^{\&}$	10.01±0.34*
	1.5 T Avanto (b=800)	142	0.15±0.03	0.47±0.08	0.40±0.08	1.36±0.15$^{\$}$	0.70±0.15$^{\$}$	1.11±0.24 $^{¥}$	1.47±0.86$^{\$}$	9.59±0.46$^{\&}$
	3.0 T Intera (b=1,000)	132	0.32±0.11*	0.60±0.12*	0.47±0.1^{1*}	2.62±0.44*	1.00±0.11*	1.71±0.35*	4.48±2.07*	8.23±0.91$^{\$}$
Acetabulum (n=1,378)	3.0 T Achieva (b=800)	111	0.25±0.08*	0.51±0.19$^{\&}$	0.40±0.17$^{\$}$	1.94±0.62*	1.01±0.09*	1.17±0.19$^{\$}$	1.51±0.77	6.96±0.68
	3.0 T Discovery (b=800)	304	0.19±0.03$^{\&}$	0.67±0.08*	0.56±0.08*	1.78±0.18$^{\&}$	0.79±0.08$^{\$}$	1.19±0.30$^{\$}$	2.19±1.56$^{\$}$	9.76±0.31*
	1.5 T Avanto (b=800)	142	0.12±0.03$^{\$}$	0.41±0.09$^{\$}$	0.34±0.09	1.20±0.18$^{\$}$	0.89±0.18$^{\&}$	1.37±0.35$^{\&}$	2.60±1.67$^{\&}$	8.70±0.70$^{\&}$
	3.0 T Intera (b=1,000)	132	0.25±0.08*	0.66±0.12*	0.52±0.11$^{\&}$	2.31±0.41*	0.98±0.09*	1.50±0.26*	2.85±1.14*	8.18±0.72$^{\$}$
Femoral head (n=1,378)	3.0 T Achieva (b=800)	111	0.23±0.08*	0.40±0.15$^{\$}$	0.25±0.13$^{\$}$	1.72±0.54$^{\&}$	1.16±0.10*	1.24±0.19$^{\$}$	1.37±0.75$^{\$}$	5.87±0.49$^{\$}$
	3.0 T Discovery (b=800)	304	0.16±0.03$^{\&}$	0.53±0.10$^{\&}$	0.40±0.12$^{\&}$	1.73±0.21$^{\&}$	1.03±0.16$^{\&}$	1.55±0.48$^{\&}$	3.67±2.95*	8.70±0.60*
	1.5 T Avanto (b=800)	142	0.08±0.02$^{\$}$	0.26±0.05	0.15±0.07	1.00±0.15$^{\$}$	1.24±0.17*	1.69±0.33*	3.42±1.76$^{\&}$	7.08±0.80$^{\&}$
	3.0 T Intera (b=1,000)	132	0.24±0.07*	0.56±0.11*	0.45±0.10*	2.09±0.43*	1.01±0.09$^{\&}$	1.50±0.29$^{\&}$	3.36±1.63$^{\&}$	7.43±0.72$^{\&}$
Femoral neck (n=1,352)	3.0 T Achieva (b=800)	110	0.24±0.08*	0.44±0.16$^{\&}$	0.33±0.13$^{\&}$	1.87±0.64*	1.07±0.08	1.26±0.20$^{\$}$	1.86±0.94$^{\$}$	6.49±0.41
	3.0 T Discovery (b=800)	293	0.18±0.02$^{\&}$	0.50±0.08*	0.36±0.09*	1.96±0.24*	1.07±0.12	1.64±0.33$^{\&}$	3.94±2.14*	8.81±0.64*
	1.5 T Avanto (b=800)	141	0.11±0.01$^{\$}$	0.26±0.06$^{\$}$	0.14±0.09$^{\$}$	1.13±0.13	1.27±0.21*	1.61±0.44$^{\&}$	3.40±2.30$^{\&}$	6.83±0.90$^{\$}$
	3.0 T Intera (b=1,000)	132	0.23±0.08*	0.47±0.07$^{\&}$	0.36±0.07*	2.02±0.39*	1.06±0.08	1.67±0.33*	4.57±2.45*	7.40±0.73$^{\&}$
Ischium (n=1,318)	3.0 T Achieva (b=800)	101	0.18±0.06*	0.44±0.16$^{\&}$	0.35±0.14$^{\&}$	1.51±0.49*	1.01±0.10*	1.06±0.20$^{\$}$	1.04±0.91$^{\$}$	6.59±0.63$^{\$}$
	3.0 T Discovery (b=800)	286	0.16±0.02*	0.54±0.08*	0.44±0.07*	1.56±0.18*	0.87±0.10	1.31±0.27$^{\&}$	2.36±1.42*	9.31±0.40*
	1.5 T Avanto (b=800)	140	0.08±0.02	0.27±0.07$^{\$}$	0.20±0.10$^{\$}$	0.90±0.12	1.07±0.22*	1.30±0.32$^{\&}$	1.87±1.32$^{\&}$	7.42±0.94$^{\&}$
	3.0 T Intera (b=1,000)	132	0.18±0.06*	0.46±0.09$^{\&}$	0.36±0.09$^{\&}$	1.64±0.33*	1.03±0.10*	1.38±0.31*	2.61±1.82*	7.32±0.78$^{\&}$
Pubis (n=1,316)	3.0 T Achieva (b=800)	100	0.19±0.07	0.49±0.18$^{\&}$	0.43±0.18$^{\&}$	1.40±0.48$^{\&}$	0.84±0.13*	0.85±0.25$^{\&}$	0.80±1.14$^{\&}$	6.84±0.73
	3.0 T Discovery (b=800)	286	0.21±0.07*	0.61±0.10*	0.56±0.10*	1.21±0.14$^{\&}$	0.58±0.11$^{\$}$	0.80±0.37$^{\$}$	1.33±1.61*	9.41±0.32*
	1.5 T Avanto (b=800)	140	0.24±0.07*	0.50±0.08$^{\&}$	0.45±0.08$^{\&}$	0.88±0.12$^{\$}$	0.45±0.10	0.88±0.27$^{\&}$	0.99±0.86$^{\&}$	8.64±0.25$^{\&}$
	3.0 T Intera (b=1,000)	132	0.23±0.08*	0.63±0.12*	0.57±0.12*	1.56±0.29*	0.74±0.11$^{\&}$	0.92±0.30*	1.33±1.37*	7.82±0.86$^{\$}$

All pairwise Kruskal-Wallis one-way ANOVA (k-samples) were used for multiple comparisons of the 4 scanners for the ADC parameters. The symbols "*", "&", and "$" represent the values from high to low with significant difference (*, indicates the significantly highest value among the 4 groups; &, indicates the second highest value; $, indicates the third highest value, and no symbol indicates the lowest value). Data with the same symbol indicates that the difference was not significant.

https://dx.doi.org/10.21037/qims-21-123