

Supplementary Table 3. The Structures of the Deep Learning Algorithms Used in This Study

A							
Layer name	Type	Activation	Filter			Output	
			Size	Depth	Stride	Size	Depth
Conv1	Conv3D	ReLU	3×3×3	32	1	32×32×32	32
Conv2_x	BottleNeck Block ×2	ReLU	1×1×1	8	1	32×32×32	32
	Conv3D	ReLU	3×3×3	8	1		
	Conv3D	-	1×1×1	32	1		
	Residual	ReLU	-	-	-		
	BottleNeck Block	ReLU	1×1×1	8	1	16×16×16	32
	Conv3D	ReLU	3×3×3	8	2		
	Conv3D	-	1×1×1	32	1		
	Residual	ReLU	-	-	-		
Conv3_x	BottleNeck Block ×3	ReLU	1×1×1	16	1	16×16×16	64
	Conv3D	ReLU	3×3×3	16	1		
	Conv3D	-	1×1×1	64	1		
	Residual	ReLU	-	-	-		
	BottleNeck Block	ReLU	1×1×1	16	1	8×8×8	64
	Conv3D	ReLU	3×3×3	16	2		
	Conv3D	-	1×1×1	64	1		
	Residual	ReLU	-	-	-		
Conv4_x	BottleNeck Block ×5	ReLU	1×1×1	32	1	8×8×8	128
	Conv3D	ReLU	3×3×3	32	1		
	Conv3D	-	1×1×1	128	1		
	Residual	ReLU	-	-	-		
	BottleNeck Block	ReLU	1×1×1	32	1	4×4×4	128
	Conv3D	ReLU	3×3×3	32	2		
	Conv3D	-	1×1×1	128	1		
	Residual	ReLU	-	-	-		
Conv5_x	BottleNeck Block ×3	ReLU	1×1×1	64	1	4×4×4	256
	Conv3D	ReLU	3×3×3	64	1		
	Conv3D	-	1×1×1	256	1		
	Residual	ReLU	-	-	-		
Output	Average pool	Sigmoid	-	-	-	1×1×1	1
B							
Layer name	Type	Activation	Filter			Output	
			Size	Depth	Stride	Size	Depth
Contracting path							
Conv1_x	Conv3D	ReLU	3×3×3	32	1	16×16×16	32
	Conv3D	ReLU	3×3×3	32	1		
	Max Pool	-	2×2×2	-	2		
Conv2_x	Conv3D	ReLU	3×3×3	64	1	8×8×8	64
	Conv3D	ReLU	3×3×3	64	1		
	Max Pool	-	2×2×2	-	2		
Conv3_x	Conv3D	ReLU	3×3×3	128	1	4×4×4	128
	Conv3D	ReLU	3×3×3	128	1		
	Max Pool	-	2×2×2	-	2		
Conv4_x	Conv3D	ReLU	3×3×3	256	1	4×4×4	128
	Conv3D	ReLU	3×3×3	128	1		
Expansive path							
Conv5_x	Concat	-	-	-	-	8×8×8	256
	Conv3D	ReLU	3×3×3	128	1		64
	Conv3D	ReLU	3×3×3	64	1		
Conv6_x	Concat	-	-	-	-	16×16×16	128
	Conv3D	ReLU	3×3×3	64	1		32
	Conv3D	ReLU	3×3×3	32	1		
Conv7_x	Concat	-	-	-	-	32×32×32	64
	Conv3D	ReLU	3×3×3	32	1		32
	Conv3D	ReLU	3×3×3	32	1		
Output	Conv3D	Sigmoid	-	-	-	32×32×32	1

(A) The structure of the 3D ResNet algorithm used in this study. Several changes have been made to the original 2D ResNet algorithm. Conv2D was replaced with conv3D. Also, the number of pooling and the depth of convolution filters were reduced, since the input was a 32×32×32-sized patch. Finally, the 1000-d fc was removed, since the task in this model was binary classification. (B) The structure of the 3D Unet algorithm used in this study. Similar changes have also been made to the original 2D Unet algorithm.