Guided Soft Attention Network for Classification of Breast Cancer Histopathology Images (Supplementary Material)

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TABLE I

PARAMETERS OF THE PROPOSED GUIDED SOFT ATTENTION NETWORK

Layers	**Output Size**	**Input Layers**	**Filters**
C1	192 x 256 x 64	Input image (384x512x3)	7 x 7 conv, stride 2
P1	96 x 128 x 64	C1	3 x 3 max pool, stride 2
C2_DB (1)	96 x 128 x 256	P1	$\begin{bmatrix} 1 \times 1 \text{ conv} \\ 3 \times 3 \text{ conv} \end{bmatrix} \times 6$
C2_T	96 x128 x 128	C2_DB	1 x 1 conv
	48 x 64 x 128		2 x 2 average pool, stride 2
C3_DB (2)	48 x 64 x 512	C2_T	$C\begin{bmatrix} 1 \times 1 \text{ conv} \\ 3 \times 3 \text{ conv} \end{bmatrix} \times 12$
C3_T	48 x 64 x 256	C3_DB	1 x 1 conv
	24 x 32 x 256		2 x 2 average pool, stride 2
C4_DB(3)	24 x 32 x 1280	C3_T	$\begin{bmatrix} 1 \times 1 \text{ conv} \\ 3 \times 3 \text{ conv} \end{bmatrix} \times 32$
C4_Reduction	24 x 32 x 512	C4_DB	1 x 1 conv
Concat	24 x 32 x 1344	Concatenation [C1(avg pool, stride 8), C2_DB (avg pool, stride 4), C3_DB (avg pool, stride 2), C4_Reduction]	
C5_Reduction (bifurcation point (***bp***))	24 x 32 x 512	Concat	1 x 1 conv
RoI_map (sigmoid)	24 x 32 x 1	C5_Reduction	1 x 1 conv
C6	24 x 32 x 4	dot product [RoI_map, C5_Reduction]	1 x 1 conv
Classification Layer (global average pool, softmax)	4	C6	

TABLE II

DETAILS OF DIFFERENT NETWORK ARCHITECTURES

Base line	FA	GuRoI		GuSA		RGA[29]	
Input (384 x 512 x3) C1 (192 x 256 x 64) P1 (96 x 128 x 64) C2_DB (96 x 128 x 256) C2_T (48 x 64 x 128) C3_DB (48 x 64 x 512) C3_T (24 x 32 x 256) C4_DB (24 x 32 x 1280)							
C4_T (12 x 16 x 640)	C4_Reduction (24 x 32 x 512)	C4_Reduction (24 x 32 x 512)		C4_Reduction (24 x 32 x 512)		C4_Reduction (24 x 32 x 512)	
	Concat (24 x 32 x 1344)	Concat (24 x 32 x 1344)		Concat (24 x 32 x 1344)		Concat (24 x 32 x 1344)	
C5_DB (12 x 16 x 1664)	C5_Reduction (24 x 32 x 512)	C5_Reduction (24 x 32 x 512)		C5_Reduction (24 x 32 x 512)		C5_Reduction (24 x 32 x 512)	
			RoI mask (24x32x1)	Soft attention (24 x 32 x 512)	**RoI mask** (24x32x1)		
	C6 (24x32x4)	C6 (24x32x4)		C6 (24 x 32 x 4)		C6 (24 x 32 x 4)	
GAP (1664x1)	GAP (4x1)	GAP(4x1)		GAP(4x1)		GAP(4x1)	Region attention (24 x 32 x 4)
FC 1 (1664 x 4)							
Output: Classification Layer (4)							