

Deep attentive convolutional neural network for automatic grading of imbalanced diabetic retinopathy in retinal fundus images: supplement

FENG LI,^{1,*} SHIQING TANG,¹ YUYANG CHEN,¹ AND HAIDONG ZOU^{2,3}

¹*School of Optical-Electrical and Computer Engineering, University of Shanghai for Science and Technology, Shanghai 200093, China*

²*Shanghai Eye Disease Prevention & Treatment Center, Shanghai 200040, China*

³*Ophthalmology Center, Shanghai General Hospital, Shanghai 200080, China*

**lifenggold@163.com*

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Table S1. The DR grading result variability under different hyper-parameter k in DACNN using ResNet-50 as backbone on DDR dataset. The best results were shown in bold.

	k=4	k=5	k=6	k=7	k=8	k=9
Acc	0.878	0.889	0.868	0.870	0.878	0.859
Kappa	0.924	0.930	0.903	0.921	0.925	0.913

Acc: accuracy

Table S2. The DR grading performance of our DACNN with ResNet-50 backbone using different imbalanced ratios in DDR dataset. #M was the number of samples in the union of DR 0 and DR 2, and #L denoted the number of samples in the union of DR 1, DR 3, and DR 4. We used samples in the union of DR 1, DR 3, and DR 4 at 100%, 80%, and 60% ratios, respectively.

#M/#L	Ratio	Methods	Acc	Kappa
5/1	100%	baseline	0.858	0.905
		DACNN	0.889	0.930
6/1	80%	baseline	0.838	0.903
		DACNN	0.870	0.911
7/1	60%	baseline	0.823	0.893
		DACNN	0.864	0.901

Acc: accuracy

Table S3. The DR grading results of recent cutting-edge category networks integrating the presented sASPP, GAM, CAM, and LCM on DDR dataset.

Method	Acc	Kappa
(No.1) Baseline (MobileNet-1.0)	0.798	0.835
(No.2) Baseline+GAM	0.809	0.847
(No.3) Baseline+GAM+CAM	0.817	0.856
(No.4) Baseline+GAM+CAM+LCM	0.849	0.901
(No.5) Baseline+GAM+CAM+LCM+sASPP	0.851	0.891
(No.1) Baseline (Inception-v3)	0.863	0.918
(No.2) Baseline+GAM	0.872	0.915
(No.3) Baseline+GAM+CAM	0.874	0.925
(No.4) Baseline+GAM+CAM+LCM	0.863	0.903
(No.5) Baseline+GAM+CAM+LCM+sASPP	0.876	0.918
(No.1) Baseline (DenseNet-121)	0.732	0.755
(No.2) Baseline+GAM	0.747	0.769
(No.3) Baseline+GAM+CAM	0.751	0.778
(No.4) Baseline+GAM+CAM+LCM	0.835	0.881
(No.5) Baseline+GAM+CAM+LCM+sASPP	0.845	0.906

Acc: accuracy