

Appendix for “CLIP-DR: Textual Knowledge-Guided Diabetic Retinopathy Grading with Ranking-aware Prompting”

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Table 1: Detailed Result of DG test. Quantitative results on AUC performance of Five Class in DG test setting. Our model performs better than other models and has statistical significance, where ours achieved the best AUC.

Class Normal’s AUC performance							
Source	APTOS	DeepDR	FGADR	IDRID	Messidor	RLDR	Average
GDRNet	94.3	88.7	87.6	85.7	73.6	71.4	83.55
OrdinalCLIP	96.5	86.65	85.93	82.9	71.59	77.5	83.51
CLIP-DR	97.51	94.25	89.89	90.07	73.16	75.8	86.78
Class Mild’s AUC performance							
Source	APTOS	DeepDR	FGADR	IDRID	Messidor	RLDR	Average
GDRNet	52.5	69.3	81.15	82.2	50.5	52.3	64.6
OrdinalCLIP	37.79	67.76	79.15	67.5	49.8	57.6	59.93
CLIP-DR	51.92	76.48	84.73	74.69	52.66	72.79	68.87
Class Moderate’s AUC performance							
Source	APTOS	DeepDR	FGADR	IDRID	Messidor	RLDR	Average
GDRNet	67.2	90.8	67.7	76.7	83.3	73.1	76.46
OrdinalCLIP	74.53	85.52	48.68	66.28	75.14	77.0	71.19
CLIP-DR	84.37	89.85	56.5	71.56	77.81	67.6	73.615
Class Severe’s AUC performance							
Source	APTOS	DeepDR	FGADR	IDRID	Messidor	RLDR	Average
GDRNet	83.3	81.9	71.5	83.3	95.4	79.4	82.4
OrdinalCLIP	85.83	90.65	76.17	82.7	89.6	84.9	84.975
CLIP-DR	89.04	91.26	69.2	80.88	92.6	83.80	84.46
Class Proliferative’s AUC performance							
Source	APTOS	DeepDR	FGADR	IDRID	Messidor	RLDR	Average
GDRNet	84.7	85.8	76.0	92.8	95.4	89.0	87.2
OrdinalCLIP	84.77	91.51	69.44	86.6	99.2	84.2	85.95
CLIP-DR	91.94	90.15	70.79	90.68	99.3	85.69	88.1

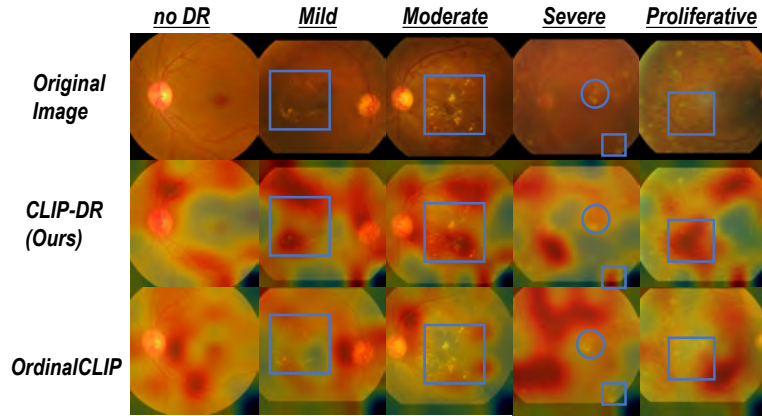


Fig. 1: Class Activation Map for CLIP-DR and OrdinalCLIP. The top line is the original image, the second line is CLIP-DR (Ours), and the last line is OrdinalCLIP. CLIP-DR and OrdinalCLIP use the same training data (DG test, ‘APTOS’ as target) and train 100 epochs. We highlighted the differences in class activation diagrams with blue boxes.

Table 2: Comparison with state-of-the-art approaches under the ESDG Test setting. The method, such as GDRNet, mainly focuses on the finite-domain transfer problem; thus, it fits the ESDG testing set; however, our proposed CLIP-DR does not apply additional special tricks to boost the performance. For the ESDG test setting, CLIP, OrdinalCLIP, and our CLIP-DR are all fine-tuned on a very small dataset (the ratio of the training set to the test set is about 1:50) and thus do not achieve the performance comparable to the state-of-the-art method GDRNet. Our CLIP-DR achieves the best average AUC and F1, compared with CLIP and OrdinalCLIP.

Source	APTOS	DeepDR	FGADR	IDRID	Messidor	RLDR	Average
Metrics	AUC F1	AUC F1	AUC F1	AUC F1	AUC F1	AUC F1	AUC F1
DRGen	69.4 35.7	78.5 31.6	59.8 8.4	70.8 30.6	<u>77.0</u> <u>37.4</u>	78.9 21.2	<u>72.4</u> 27.5
Mixup	65.5 30.2	70.7 33.3	58.8 7.4	70.2 32.6	71.5 32.6	72.9 27.0	68.3 27.2
MixStyle	62.0 25.0	53.3 14.6	51.0 7.9	53.0 19.3	51.4 16.8	53.5 6.4	54.0 15.0
GREEN	67.5 33.3	71.2 31.1	58.1 6.9	68.5 33.0	71.3 33.1	71.0 27.8	67.9 27.5
CABNet	67.3 30.8	70.0 32.0	57.1 7.5	67.4 31.7	72.3 35.3	75.2 25.4	68.2 27.2
DDAIG	67.4 31.6	73.2 29.7	59.9 5.5	70.2 33.4	73.5 35.6	74.4 23.5	69.8 26.7
ATS	68.8 32.4	72.7 33.5	60.3 5.7	69.1 30.6	73.4 32.4	75.0 23.9	69.9 26.4
Fishr	64.5 31.0	72.1 30.1	56.3 7.2	71.8 30.6	74.3 33.8	<u>78.6</u> 21.3	69.6 25.7
MDLT	67.6 32.4	73.1 33.7	57.1 7.8	<u>71.9</u> 32.4	73.4 34.1	76.6 <u>30.0</u>	70.0 <u>28.4</u>
GDRNet	<u>69.8</u> <u>35.2</u>	<u>76.1</u> 35.0	63.7 <u>9.2</u>	72.9 35.1	78.1 40.5	79.7 37.9	73.4 32.2
CLIP	60.3 28.0	64.7 27.1	59.0 7.7	59.8 21.8	65.4 27.7	69.3 25.6	63.1 23.0
OrdinalCLIP	61.6 27.4	66.9 28.4	60.4 8.1	61.6 23.8	67.6 29.5	70.1 26.3	64.7 23.9
CLIP-DR(Ours)	69.8 30.5	72.8 31.0	<u>60.5</u> 9.7	66.6 27.9	68.9 31.2	72.3 27.7	68.5 26.3