Supplementary Figures:

Highly accurate and precise automated cup-to-disc ratio quantification for glaucoma screening

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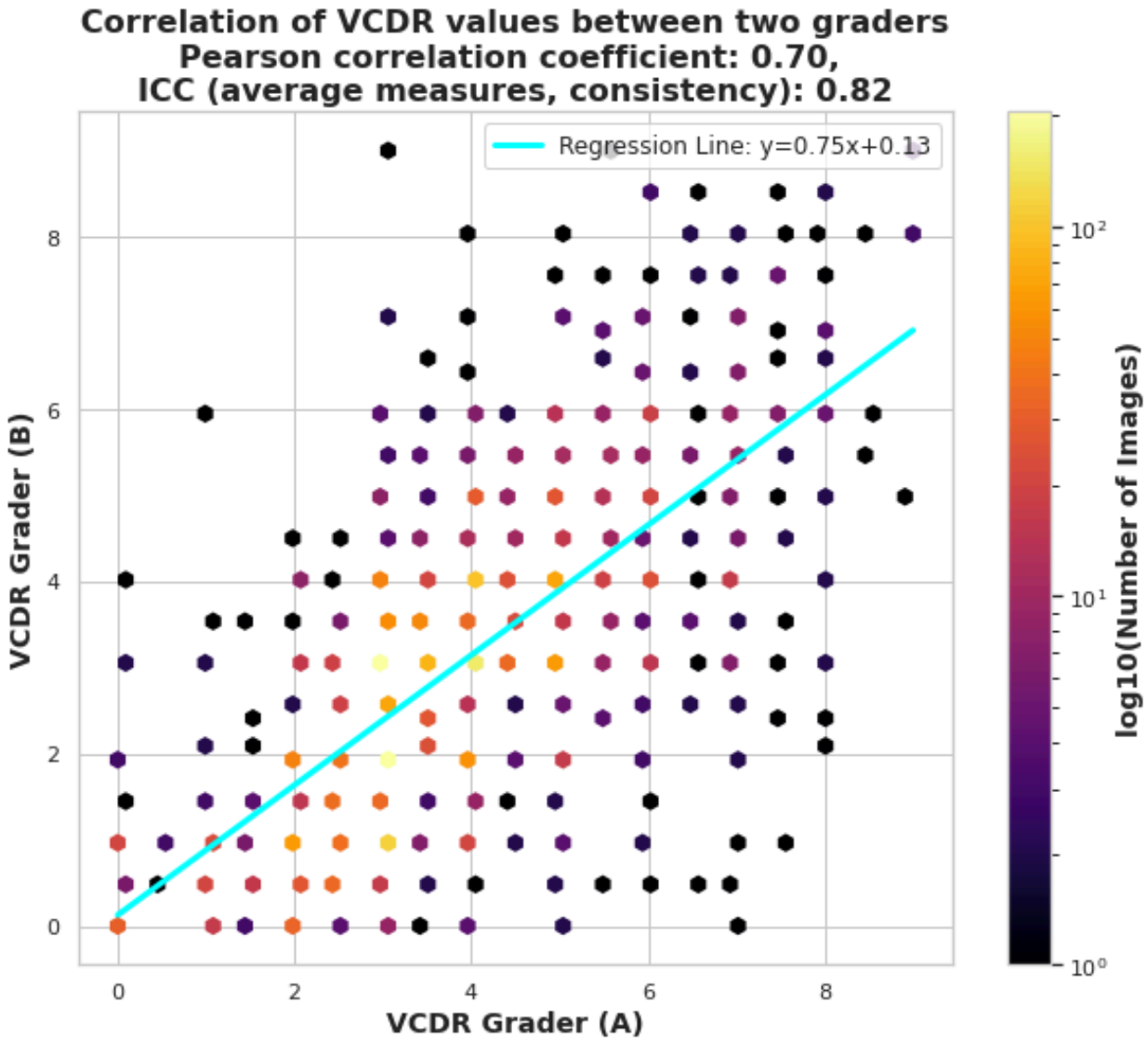

Figure S1: *Comparison of CDR grading between two graders: Correlation Analysis. The hexbin plot shows the distribution of CDR values determined by graders 'A' and 'B'. The regression line highlights the relationship between the two graders, with an ICC of 0.82 and a Pearson correlation coefficient of 0.70.*

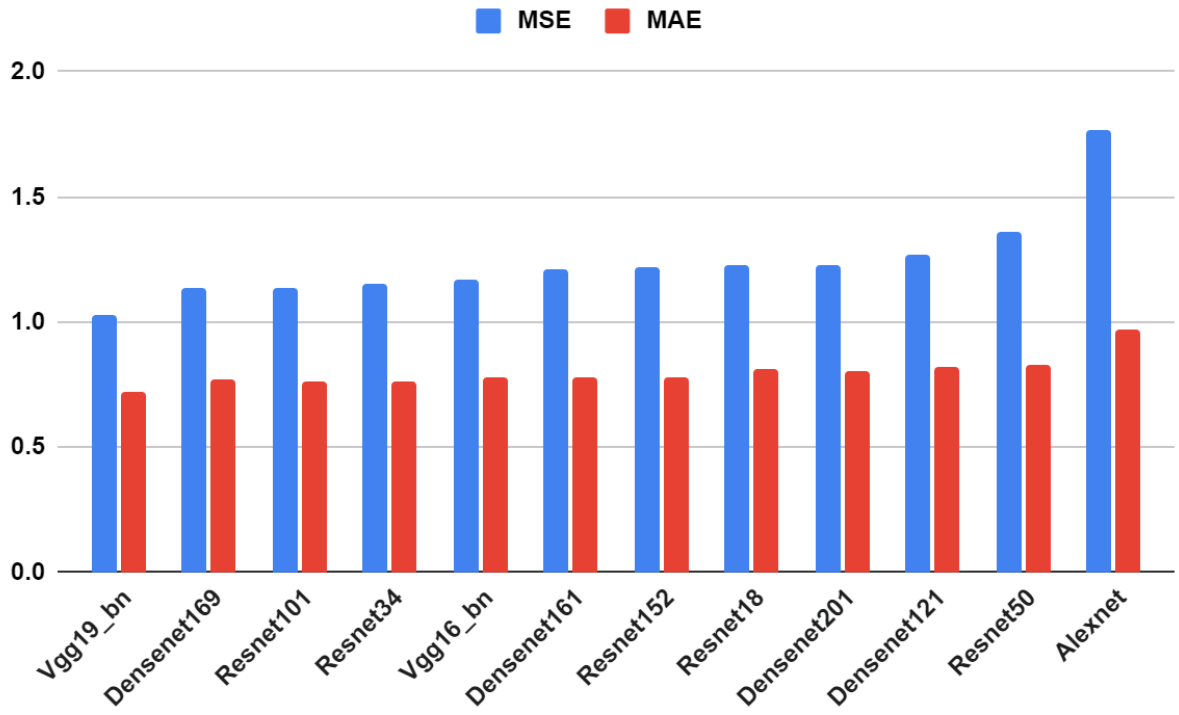

Figure S2: *All the models were tested on grader "A" data for determining the potential model based on Mean Squared Error (MSE) and Mean Absolute Error (MAE).*

Vgg19_bn is a variant of the original VGG19 model, enhanced with batch normalization (bn). This model retains the deep 19-layer architecture of Vgg19, known for its effectiveness in image recognition, but incorporates batch normalization layers immediately after each convolutional layer. Batch normalization standardizes the inputs to the next layer, which helps in accelerating the training process, improving model stability and reducing sensitivity to network initialization. Vgg19_bn was selected after evaluating over 12 pre-trained models. Vgg19_bn performed better in determining the cup-to-disc ratio (CDR).

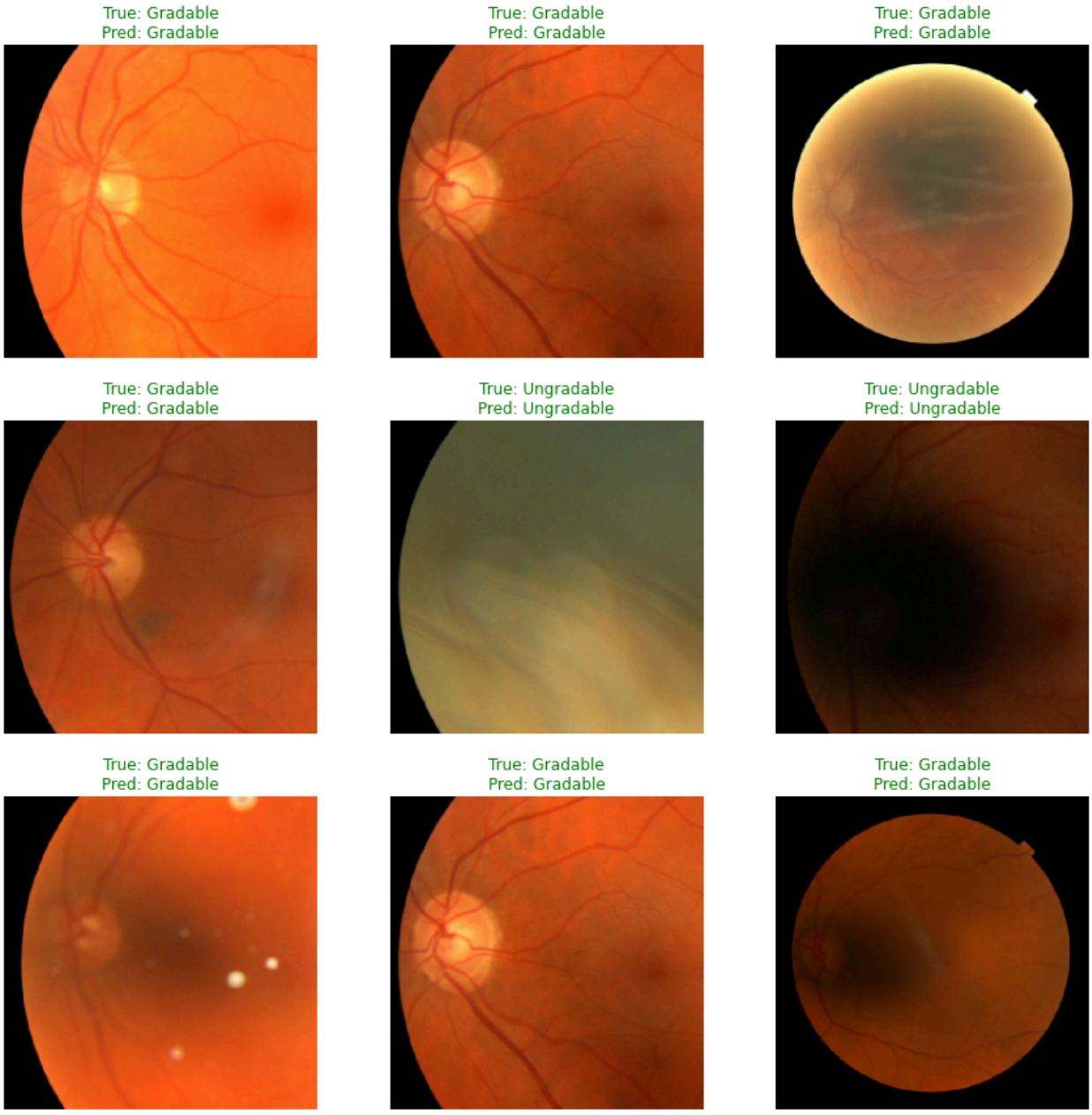

Figure S3: *Random prediction from the classification model (Model 1), gradable vs ungradable fundus images.*

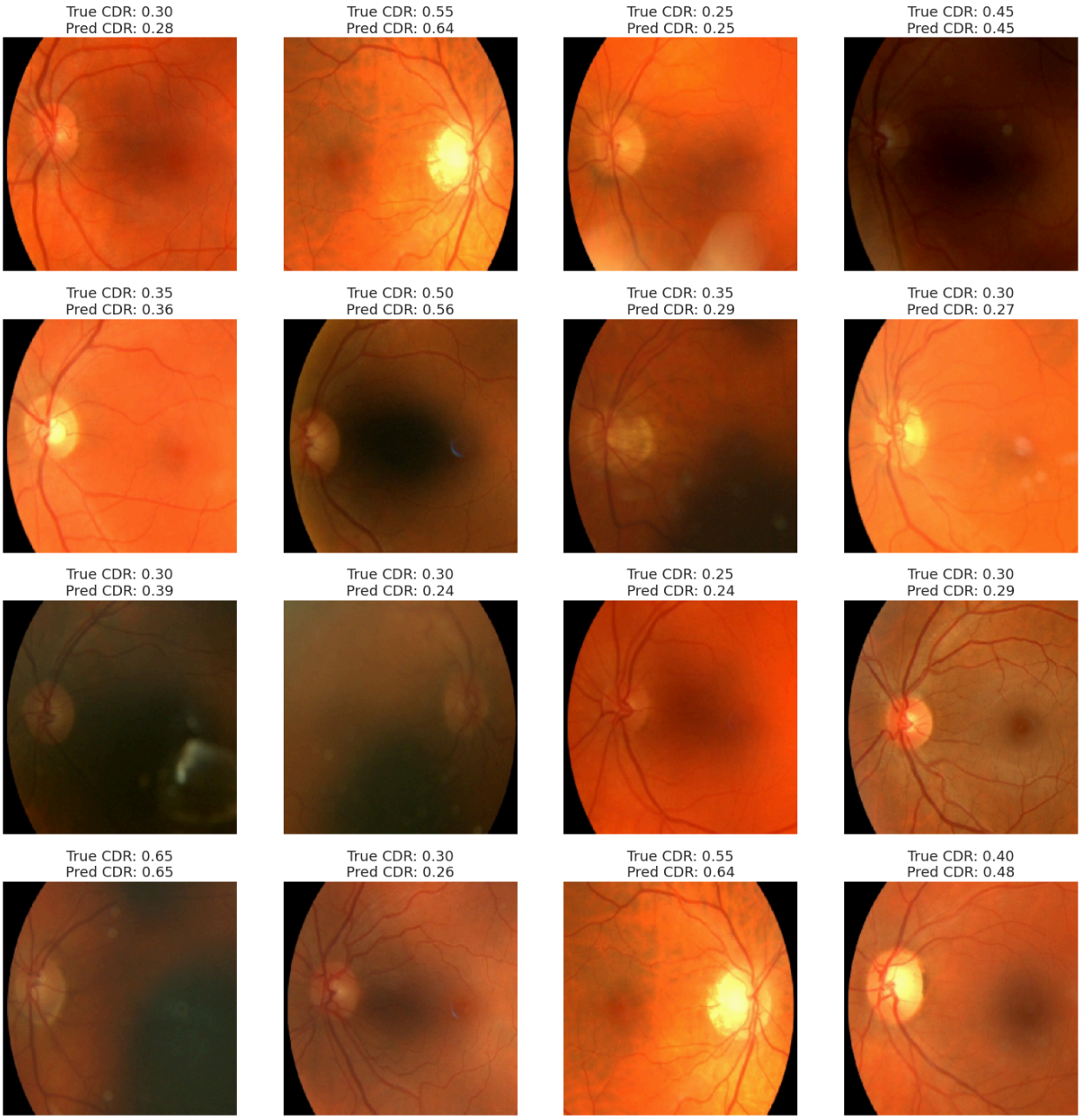

Figure S4: *Random prediction of CDR from the regression model (vgg19_bn) using fundus images.*

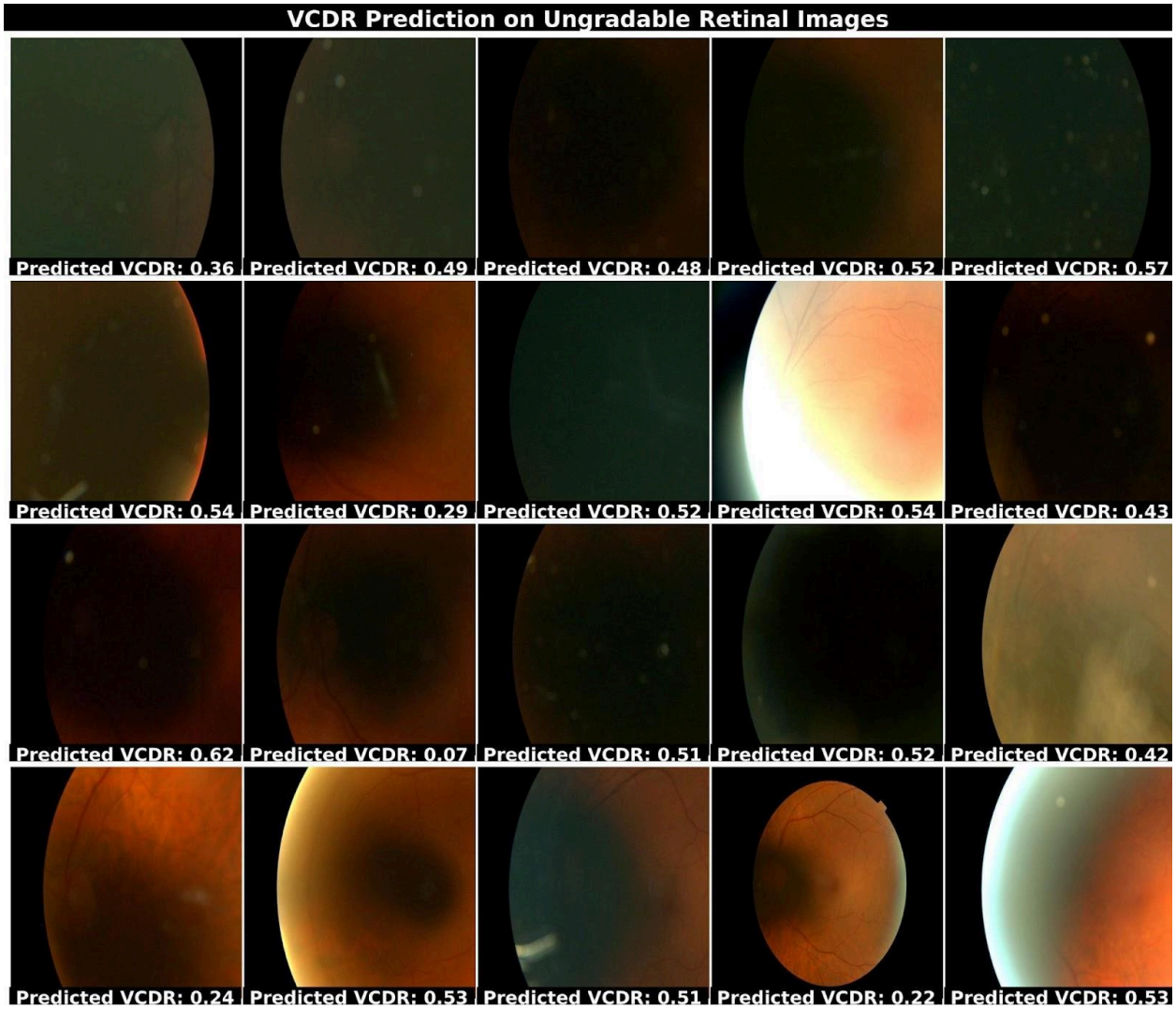

Figure S5: *VCDR prediction on ungradable fundus images.*

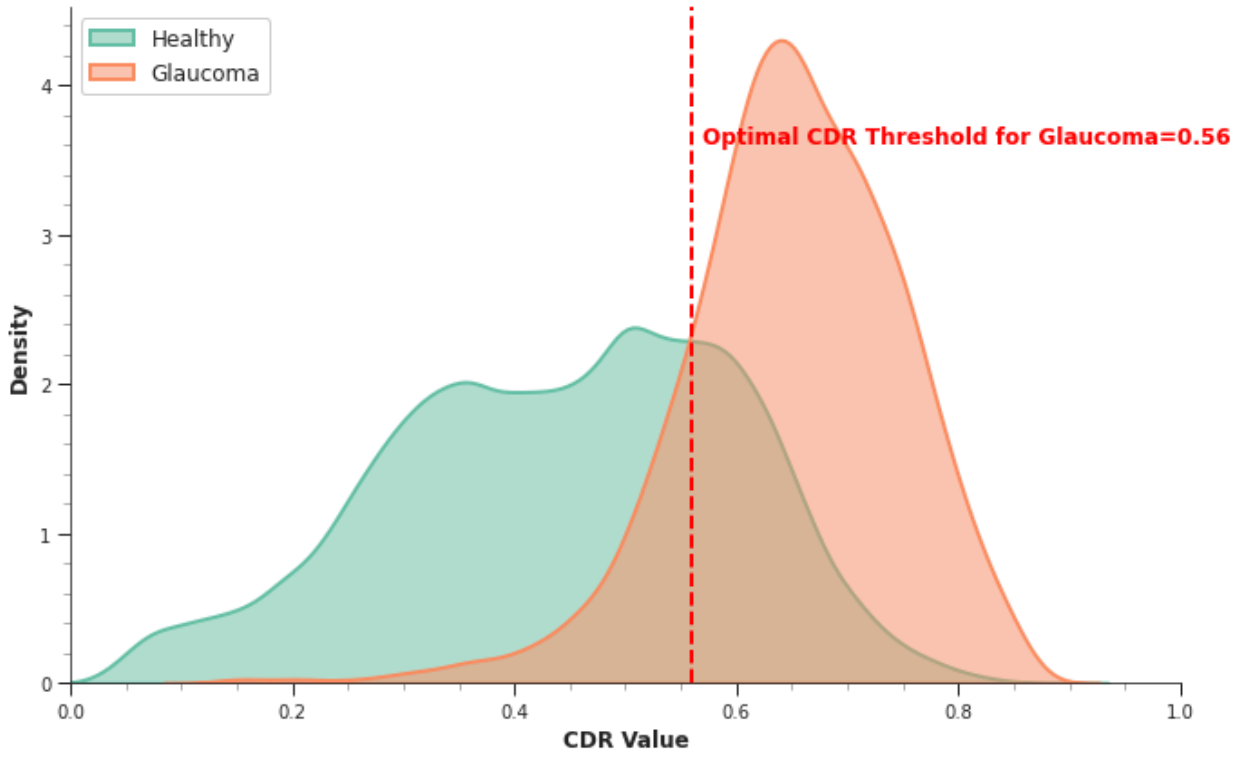

Figure S6: *Comparative distribution of CDR for glaucoma and healthy fundus images with optimal CDR threshold for diagnosing glaucoma.*

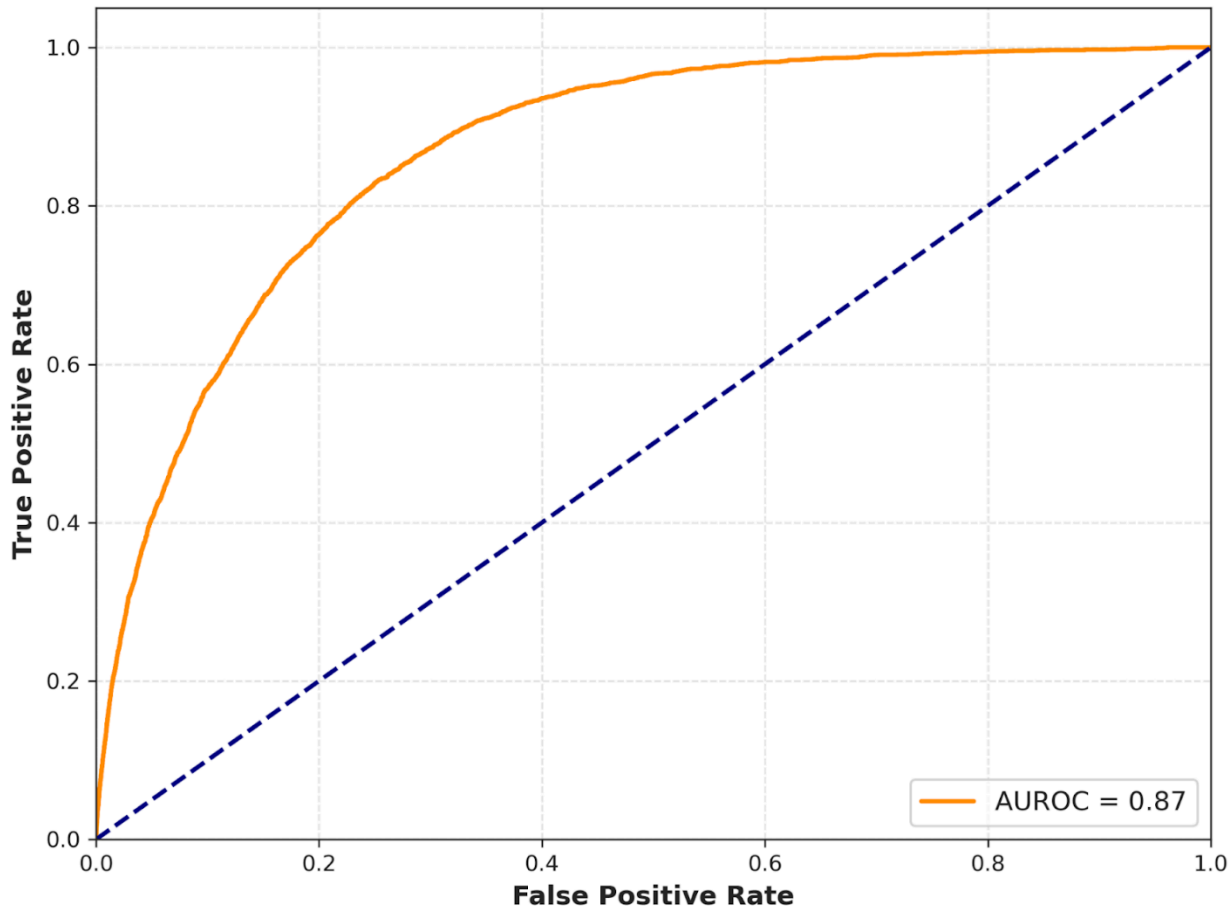

Figure S7: *Receiver operating characteristic (ROC) curve analysis for determining optimal CDR threshold for diagnosing glaucoma.*