Retinal Fundus Glaucoma Challenge

Member
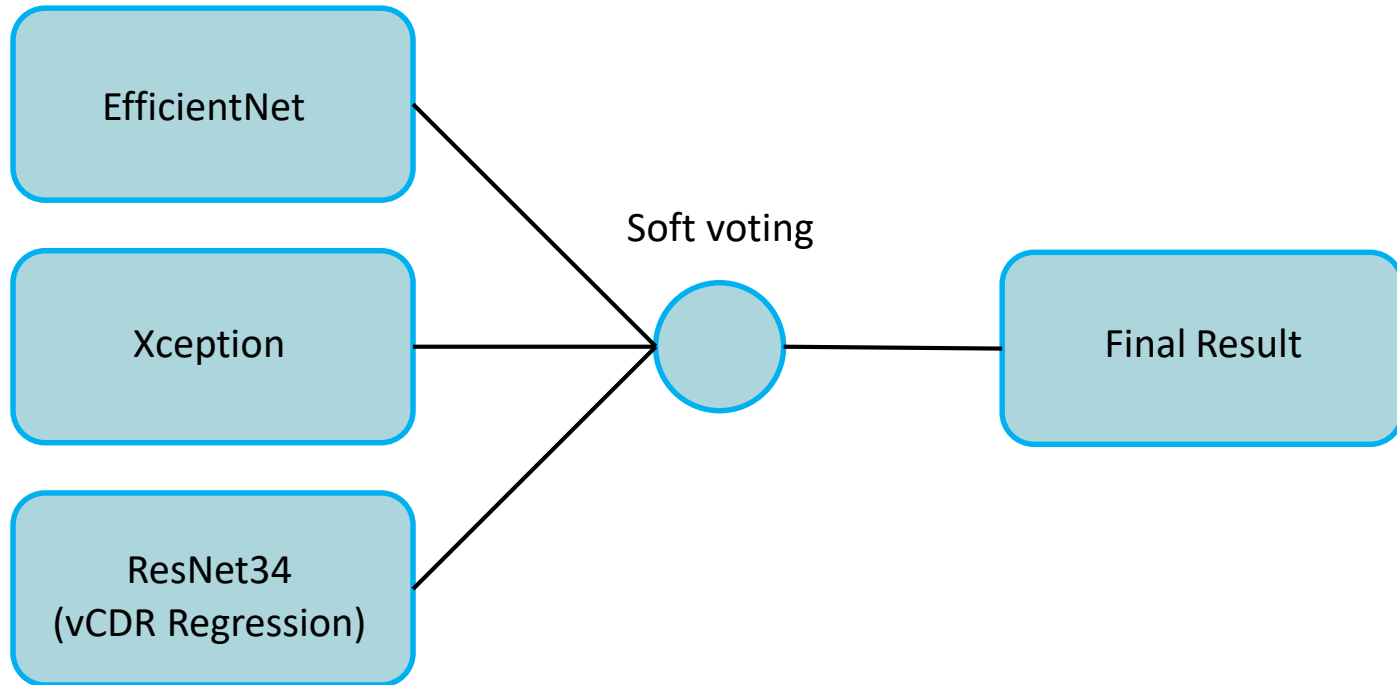Chia-Yen,LEE
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Hung,YEH
Yi-En,Cheng

MICCAI 2020

Task1

Classification of Glaucoma

Pre-train Model

Training data

Data Augmentation
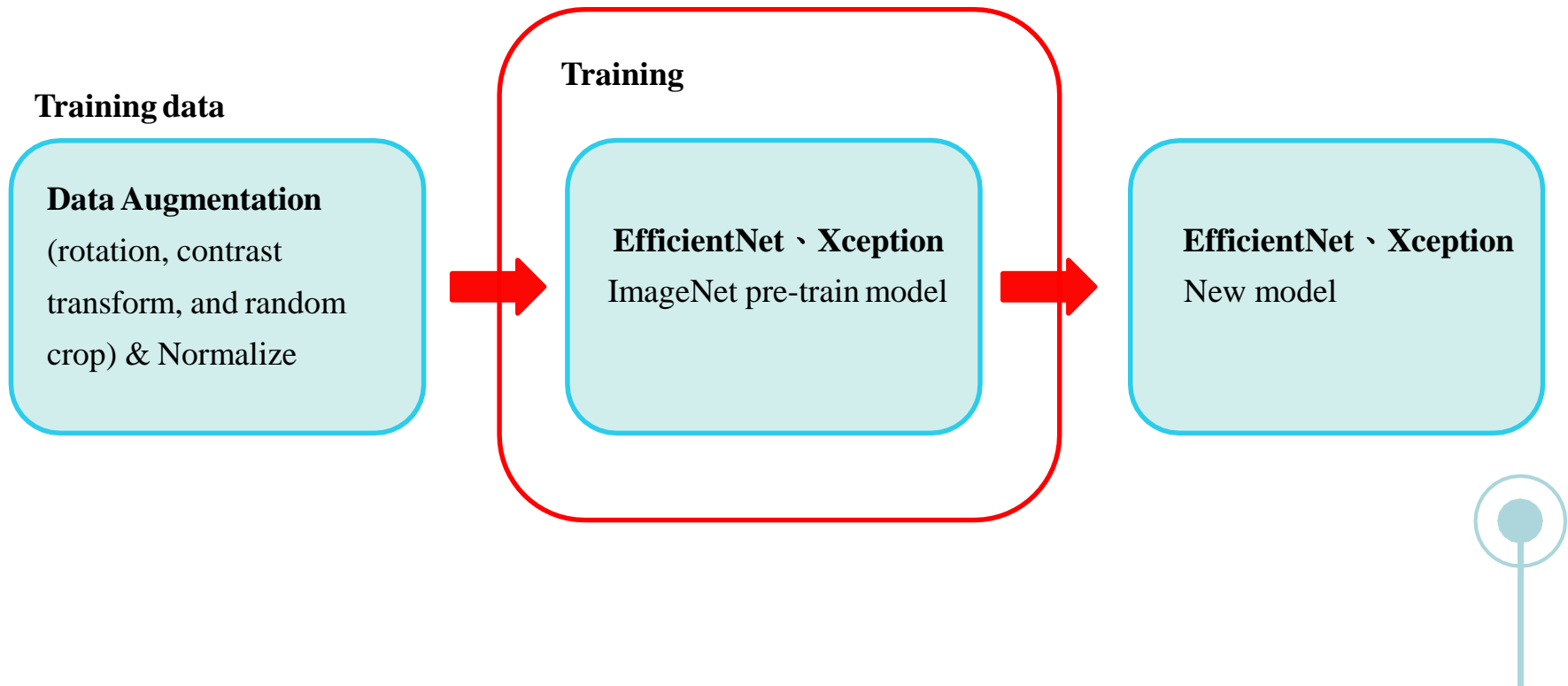(rotation, contrast transform, and random crop) & Normalize

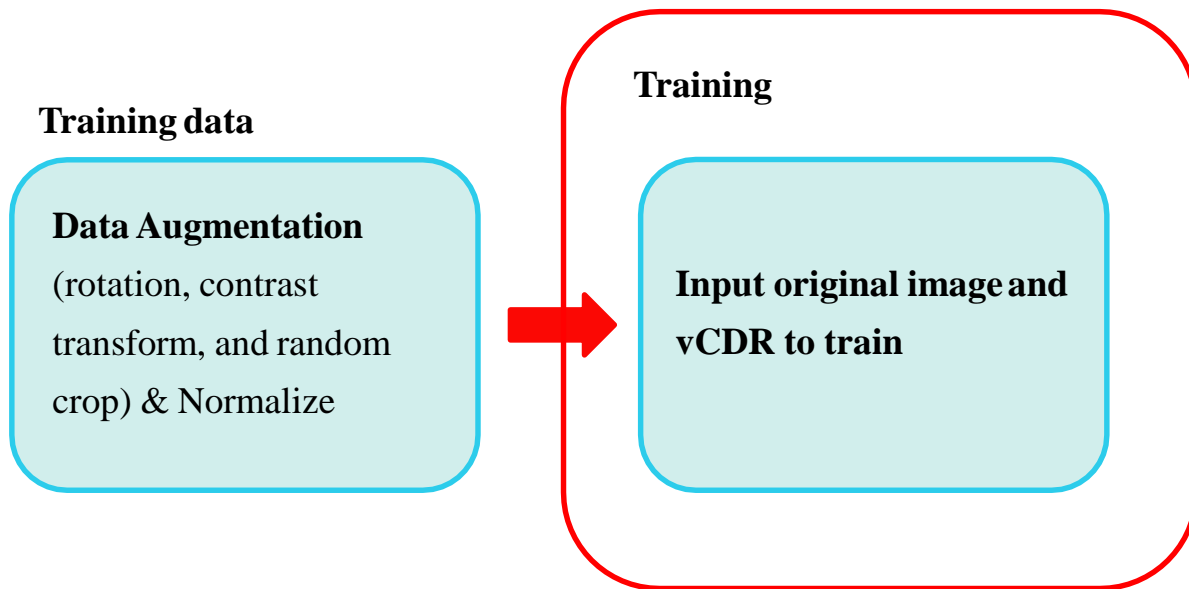**Training**

EfficientNet、Xception
ImageNet pre-train model

EfficientNet、Xception
New model

vCDR Regression

Training data

Data Augmentation
(rotation, contrast transform, and random crop) & Normalize

Training

Input original image and vCDR to train

Testing

Testing

Predict
Predict original images on testing data

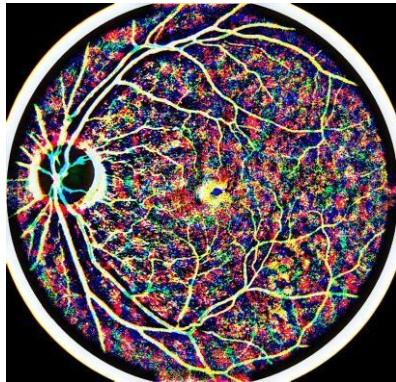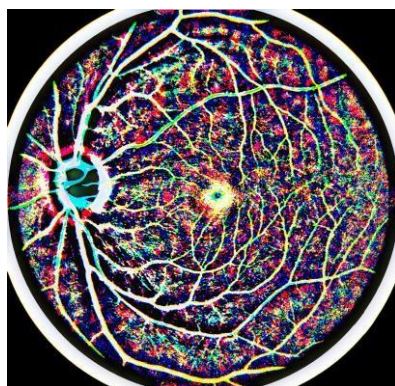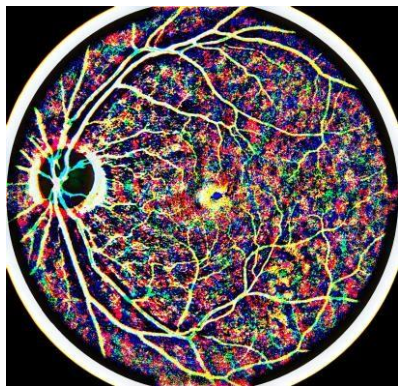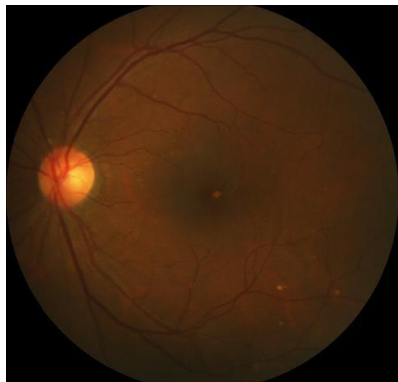**Ensemble**
Make soft voting to be our final anser
(EfficientNet、Xception、Regression vCDR)

Task2

Optic disc segmentation Model
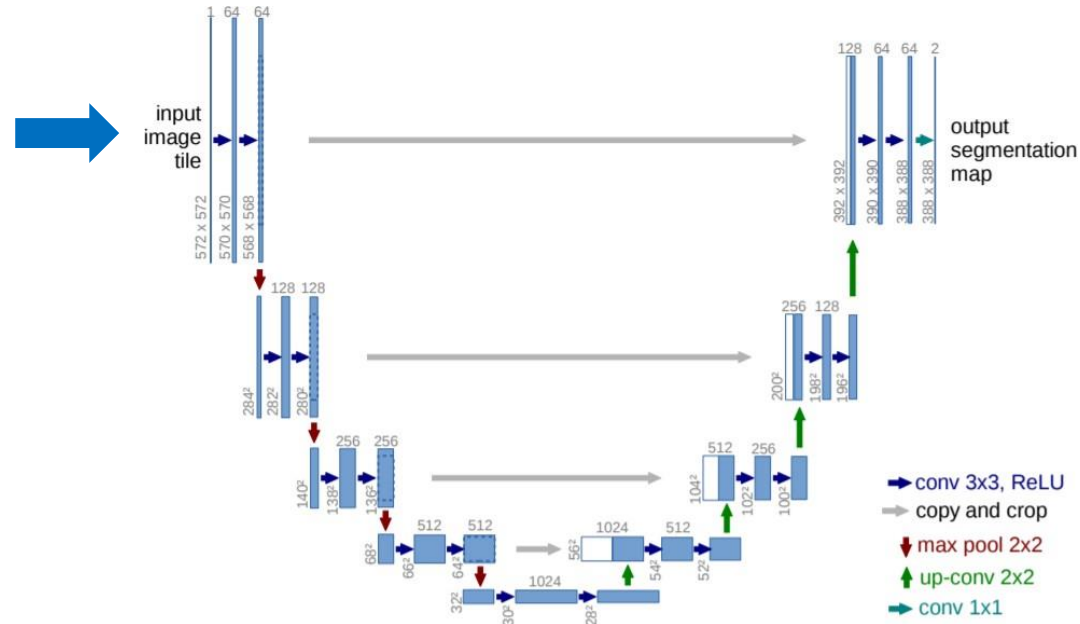
Local differential filter (LDF)

$$LDF = G(I) - M(I)$$

G(I) = original image after Gaussian Filter
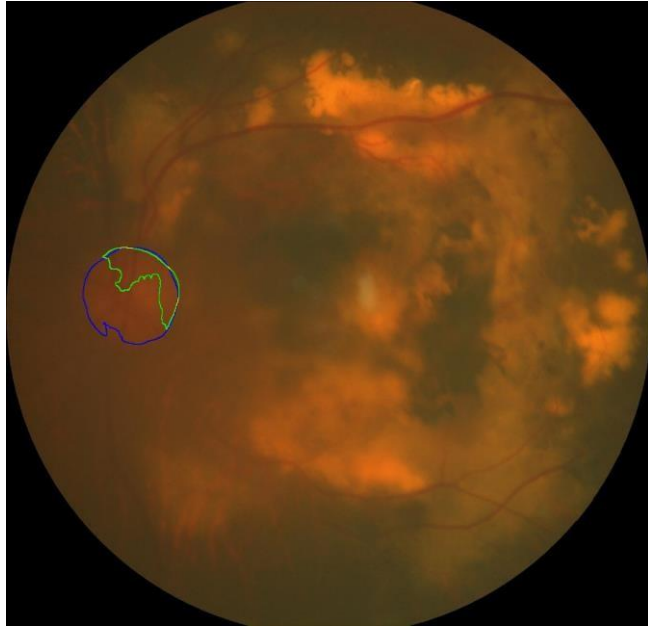
M(I) = original image after Mean Filter

I = original image

Gaussian filter σ = 1

Gaussian filter and Average filter mask size = 121*121

Local differential image compare with original image segment result
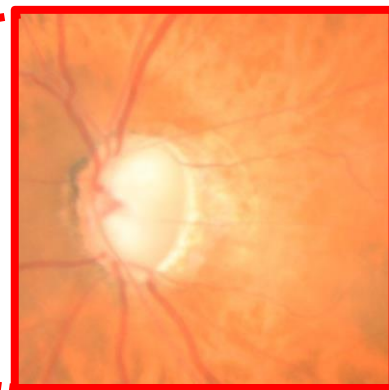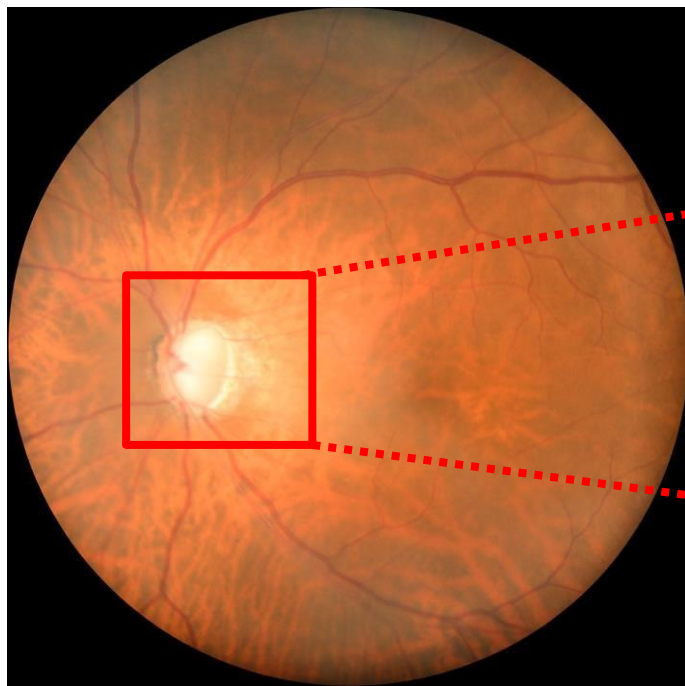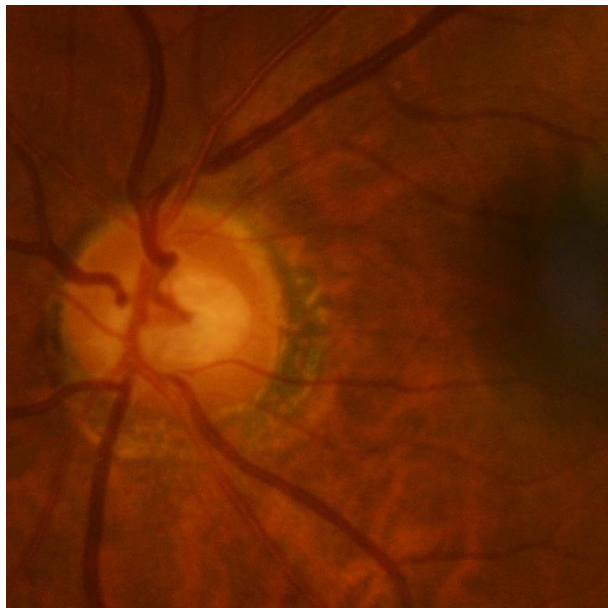

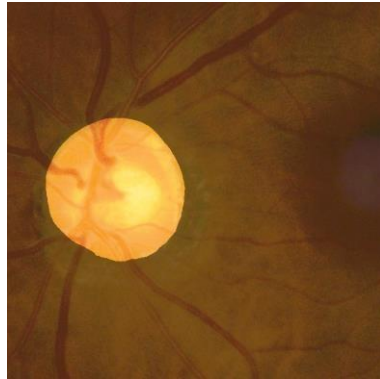Original image segment

Local differential image segment

Crop

CLAHE
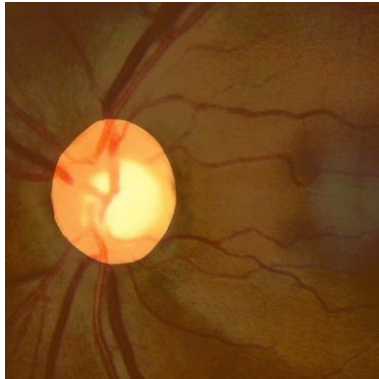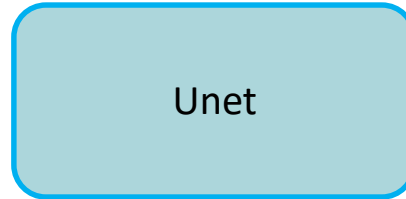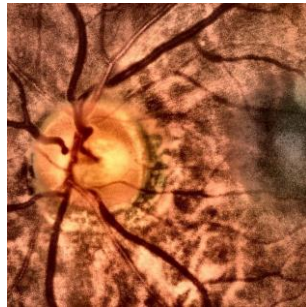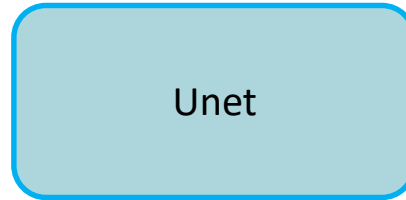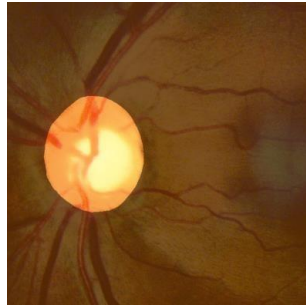
Local histogram equalization

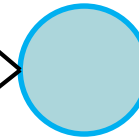
Predict the area with the optic disc and do histogram equalization

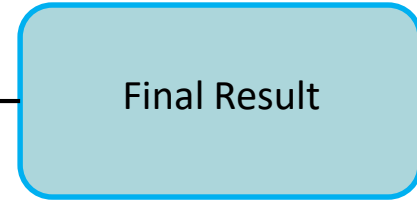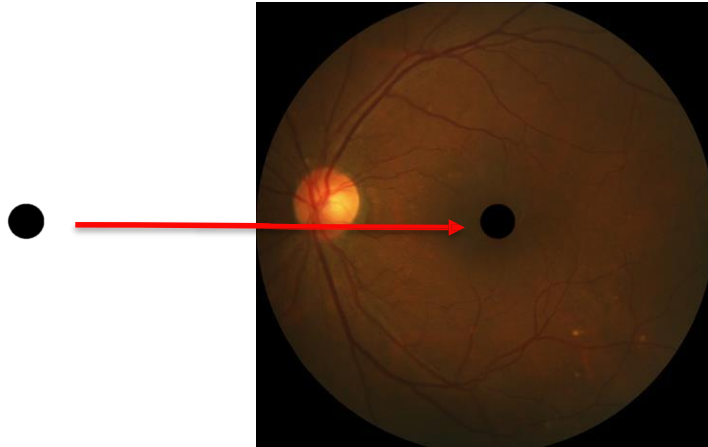# Optic cup segmentation Model

Task3

Segmentation

Ground truth dilate:

Model :

1. U-Net (original image)
2. U-Net (Local differential image)
3. U-Net (Blood remove histogram matching image)
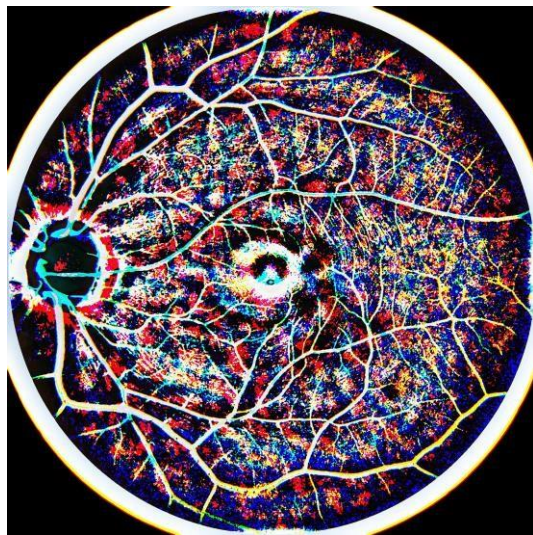
Dilate structuring element radius = 80,disk
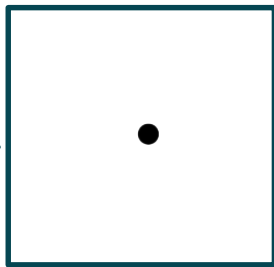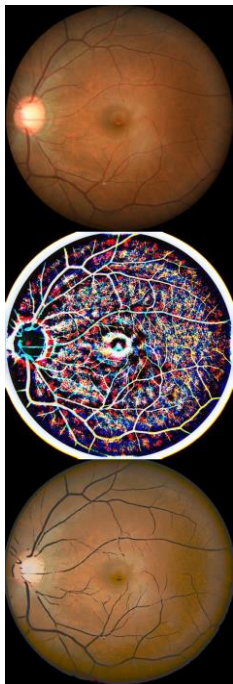
Segmentation

Original image

LDF image

Blood remove
histogram matching image

Models fusion

center of mass

(Fovea_X, Fovea_Y)

Thanks for listening

[WWW]

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