

Final Project Progress Update

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- Title: Glaucoma Multi-class Classification for Detection of Glaucoma and Glaucomatous Progression
- Data: Harvard Glaucoma Detection and Progression with 1000 Samples (Harvard-GDP1000)

I have started exploring the 1000 sample data glaucoma OCT scan image set. Each sample appears to have 200 patches, or 200 independent OCT scan images. These images appear to not be able to be patched together and the paper that discusses the data set never actually discusses the 200 patches per sample, so I believe these patches are the OCT scan through time. Because the images are not able to be patched together, I believe it is most wise to use each patch almost as if it is an independent data point, which will give us 200,000 images in the dataset! When testing for the sample, since there will be 200 test images for each sample, a voting mechanism will be developed with the most common prediction to give the final result. I will start with basic binary classification experiments for determining if the patient has glaucoma or not and hopefully get to some of the multiclass-progression classification experiments as well. In terms of algorithms to be utilized for this, I believe it will be interesting to incorporate a couple of the state of the art CNN classification infrastructures and compare and contrast their results. Some of the infrastructures that I am considering are: VGG16, ResNet, and YOLOv8. This will not only let us know if the state of the art CNNs can be utilized for the classification of glaucoma, and glaucomatous progression, it will also let us know which model is strongest for this type of problem.

Here is an example image:

