Analysis of Retinal Fundus Images to Detect Macular Degeneration Using Machine Learning Methods

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This project uses the “Bag of Visual Words” computer vision algorithm to automatically detect age-related macular degeneration in retinal fundus images. Macular degeneration is the most prevalent cause of blindness in the elderly. Early detection of the disease can substantially decrease the progress of this disease, making it important for treatment. Currently, manual methods of detection are slow and inefficient, and automated methods to detect the disease from images have low accuracies. An approach was developed to identify macular degeneration in an easier and more efficient way. First, key points of training images were extracted and split into clusters which were categorized as diseased or normal. A decision line was created between the diseased and normal clusters, and was then used to predict the class of test images. The designed method of this project, which is the first time it has been applied to the detection of macular degeneration, is faster than the manual methods today and more accurate the automated methods. It gives doctors a faster way to discover if patients have age-related macular degeneration, allowing them to prepare for treatment earlier.

Awards Won:

Third Award of $1,000