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Eye disease multiclassification based on fundus images

Sense of sight is fundamental in one's life and one can hardly imagine living without it yet in modern times eye diseases can develop relatively early and without timely reaction can lead to severe eyesight degradation or even loss. A means widely used in ophthalmology is fundus photography which can be obtained with relativaly low effort. Their analysis can reveal symptoms of various diseases, however it is a tedious and nontrivial process that must be performed by a specialist which increases method's cost, complexity and becomes a major hurdle in developing countries. Various works have proposed the usage of convolutional neural networks (CNNs) as a way of automatic detection of eye diseases and while one-class classification approaches bring in satisfying results the multi-class problems are much more challenging. Subject paper explores transfer learning with various CNN architectures with goal of creating an effective model for multi-class classification of ophthalmic diseases. Due to the nature of medical data, where ceratin diseases are much rarer than other, much effort was put into data augmentation .

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