EYE XPLORER

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### Abstract

Human Eye is the most complex part of the human body but it helps to reveal information about several diseases. Among these diseases are Anemia and Cataract. Anemia is a condition in which there is a deficiency of hemoglobin in the red blood cells, whereas cataract is an eye disease that causes clouding of the eye lens that causes permanent blindness if not treated in time. Anemia is diagnosed by measuring hemoglobin by drawing blood from the body and Cataract is diagnosed by first dilating the pupil and then examining the eye in the slit lamp. Both of the above methods are invasive that involve direct contact with the human body in one way or another. Computer Aided Diagnostic (CAD) systems with their mobility of usage in low resource settings can be very useful for the detection of Anemia and Cataract. We have put forward an idea in the form of mobile application named EYE XPLORER that determines the user’s risk of being anemic or having a cataract just by taking a picture from a smartphone camera. The user for the diagnosis of anemia first lowers his/ her conjunctiva and takes image and then our method first localizes the conjunctiva region from the image. Localization bins are formed to assess the hemoglobin value that further assesses the degree of anemia. For the diagnosis of Cataract, the user takes a picture of his/her eye with retina in focus. Then our proposed method localizes the iris and the pupil of the eye. Texture analysis of the obtained image is performed enabling us to tell whether the eye is normal or it has a cataract. The system is developed and tested using locally gathered dataset of anemia and cataract.