ADIRIS: Alzheimer's Disease Screening through the Iris

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This study aimed to detect Alzheimer’s Disease in order to potentially diagnose it at an earlier stage by detecting amyloid plaques through the iris. Amyloid plaques are formed from amyloid beta proteins present in the brain of AD patients and are the main cause of the disease. Studies found a higher chance of 44% for people with Diabetic Retinopathy to develop AD and diabetic retinopathy has a direct correlation to neovascularization of the iris. The methodology starts with taking an image of the eye, then detecting the perfect circumferences of the iris and pupil, to obtain the region in the iris that corresponds to the brain area, which is then segmented and analyzed, showing the presence of anomalies, and are compared to the iris pictures of AD patients that were added to the database. The application asks the user if they have diabetes or a history of AD in the family, and screens the iris to check if there is any neovascularization. The results will show up whether they have the disease or not, and with the percentage accuracy. Depending on the results, the application will help the user with their next steps, whether it is by offering nearby centers to get checked for the disease or to offer lifestyle changes such as exercises, diets that are proven to reduce the risk of developing AD. The application was tested on 50 subjects with AD and 125 subjects without AD. The results showed an efficiency of 92%. In conclusion, people often think that their cognitive decline is a normal part of ageing, and may have AD without realizing it until it is too late. This application has benefits not only for the user, but for the families of people with AD, as it prepares them for what is coming, and gives them enough time to prepare and plan ahead.

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