Paper No: SC-12 **Smart Computing**

An Efficient Deep Learning Model for Eye Disease Classification

Archana Saini[1], Kalpna Guleria[2*], Shagun Sharma[3]

[1] *Chitkara University Institute of Engineering and Technology, Chitkara University, Rajpura 140401, Punjab, India, saini.archana@chitkara.edu.in*

[2] *Chitkara University Institute of Engineering and Technology, Chitkara University, Rajpura 140401, Punjab, India, guleria.kalpna@gmail.com*

[3] *Chitkara University Institute of Engineering and Technology, Chitkara University, Rajpura 140401, Punjab, India, shagunsharma7098@gmail.com*

Early detection of eye diseases is crucial, particularly for individuals with a family history of eye diseases, people over 60 years of age, individuals with diabetes, and those who have a history of eye injuries or surgeries, as they are at a higher risk of developing eye diseases. Early detection and timely treatment are crucial in treating eye diseases and preventing permanent vision loss. Detecting eye diseases early on is crucial in preventing or slowing down the progression of vision loss and blindness. Unfortunately, many eye diseases, including diabetic retinopathy, glaucoma, and cataracts, do not have early warning signs or symptoms. Therefore, regular eye checkups and early detection of these diseases can be essential in preventing vision loss and improving the quality of life for those affected. Retinal fundus image screening is a commonly used technique for diagnosing eye disorders, but manual detection is time-consuming and labour-intensive. To address this issue, various researchers have turned to deep learning methods for the automated detection of retinal eye diseases. In this work, a convolutional neural network model has been developed for classifying eye diseases, demonstrating an impressive accuracy rate of 99.85%. This suggests that the model can correctly classify eye diseases in nearly 4 out of 5 cases. These findings have the potential to significantly improve the accuracy and efficiency of diagnosing eye diseases using retinal fundus images.

Keywords: *eye disease, deep learning, multi-class classification, image processing*