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(57) Abstract :
Cataracts are one of the leading causes of vision impairment and blindness globally, particularly among the aging population. Early and accurate detection is critical for effective treatment and prevention of vision loss. This project presents a deep learning-based approach for automated cataract detection using the VGG19 convolutional neural network architecture. VGG19, a pre-trained deep convolutional model known for its robustness in image classification tasks, is fine-tuned on a dataset of ocular images labeled for cataract presence. The proposed method leverages transfer learning to enhance performance despite limited medical image data. Experimental results demonstrate high accuracy, precision, recall and F1 score in distinguishing between normal and cataract-affected eyes. The findings suggest that VGG19 offers a reliable and efficient tool for aiding ophthalmologists in early cataract diagnosis, potentially contributing to large-scale screening programs and telemedicine applications.

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