IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 2, September 2025
Impact Factor: 7.67

AI-Powered Eye Disease Identification Using Deep Learning algorithm

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Abstract: *Early and accurate diagnosis of ocular conditions is vital for preventing vision loss. This study proposes a Convolutional Neural Network (CNN)-based system for automated classification of red eye diseases—including conjunctivitis, blepharitis, keratitis, and uveitis—using retinal and external eye images. The model categorizes conditions into normal, moderate and severe classes. Trained on a publicly available dataset with extensive preprocessing including normalization, scaling and augmentation, the system employs architectures such as VGG16 and ResNet50 for feature extraction and classification. Evaluation using accuracy, precision, recall and F1-score demonstrates the model's effectiveness, achieving up to 96% accuracy with just one eye images. A user-friendly interface further provides diagnostic feedback and connects patients to nearby specialists. This approach improves diagnostic accuracy, reduces clinician workload and enhances accessibility to eye care, particularly in isolated or underprivileged areas.*

Keywords: Convolutional Neural Network

DOI: 10.48175/IJARSCT-29043