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# Eye Diseases Detection using ML

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***Abstract:*** ***This paper presents a systematic recent advancement in the application of machine learning (ML) techniques for the detection of eye diseases. With the increasing prevalence of ocular conditions worldwide, there is a growing need for automated and accurate diagnostic tools to assist clinicians in early detection and intervention. Early detection of eye diseases is critical, as individuals who have a higher risk of developing eye diseases include those with diabetes, those over 60, those with a family history of eye diseases, and those who have had eye surgery or injuries. Treatment of eye diseases and the avoidance of irreversible vision loss depends heavily on early detection and prompt intervention. The prevention or deceleration of vision loss and blindness is largely dependent on the early detection of eye diseases. Many eye diseases, such as glaucoma, cataracts, and diabetic retinopathy, unfortunately, have no early warning signs or symptoms.***
***Keywords: Eye disease, Keras, Machine learning, Convolution neural network***

## I. INTRODUCTION

Machine learning is being used to detect diseases, and this is the purpose of the Eye disease detection project. In our project we categorized the disease in 3 phase that is normal images which has no disease and second is glaucoma and third is retinopathy. Eyes are essential part of human life, each and every person rely on the eyes to see and sense the world around them. s. Eventually, most people will have eye problems. Certain mild eye conditions can be treated easily at home and resolve themselves, while more serious conditions require professional medical attention.

## II. LITERATURE SURVEY

Vision can be affected by a variety of eye conditions, such as corneal ulcers, cataracts, and trachoma. Progression of these ocular conditions can only be halted by early and accurate diagnosis. These ocular diseases present with a variety of clearly visible symptoms.

To accurately diagnose eye illnesses, it is required to analyze a wide range of symptoms. Therefore, utilizing machine learning techniques like deep convolution neural network (DCNN) and support vector machine.[1]

“Multiple eye disease detection using Deep Neural Network” the author have used a deep neural network model to discriminate between different diseases like diabetic retinopathy, which aids in the early detection of glaucoma and diabetic retinopathy, and high-resolution retina images taken under a variety of imaging settings.[2]

“Support Vector Machine Based Method for Automatic Detection of Diabetic Eye Disease using Thermal Images” in this paper author describes review information on an object is a non-invasive procedure has been offered to assess if diabetic diseases are present in the eyes. Using a variety of combinations of texture and statistical features, the Support Vector Machine classifier classifies infrared images of normal and diabetic eye disease. [3]

The process of identifying eye diseases using retinal images is broken down into several smaller processes, including feature extraction, classification, and picture pre-processing. This paper offers a summary of deep learning, its algorithms, how convolution neural networks work, and how these are applied to image processing, machine learning, and deep learning methods that are utilized for retinal image-based eye disease identification. [4]

Medical health systems have been concentrating on artificial intelligence technologies for prompt diagnosis. Health data must still be reported in a consistent format for machine learning to account for various features and become more accurate and reliable. A general architecture for storing diagnostic data in an international database will let machine learning algorithms more easily predict the diagnosis of diseases based on symptoms. A general architecture for storing diagnostic data in an international database will let machine learning algorithms more easily predict the diagnosis of diseases based on symptoms.[5]

 

## III. FLOW CHART FOR SYSTEM

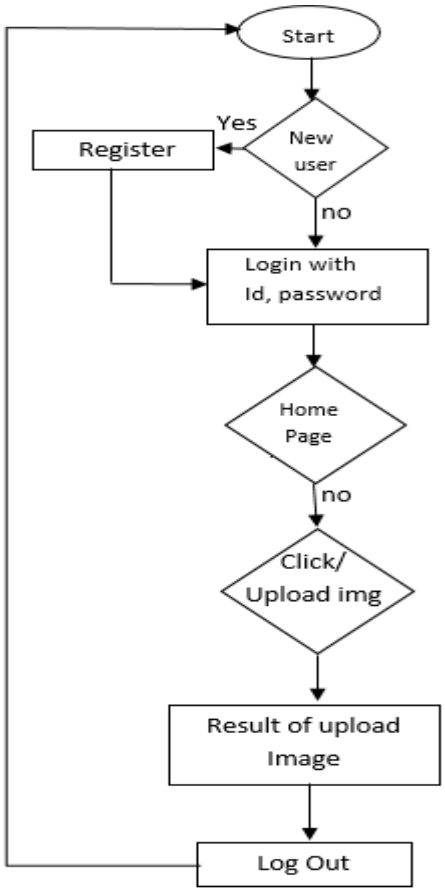


Fig. System Flow Chart

## IV. RELATED WORK

We can accurately classify medical pictures into several categories using our multi-stage technique. pathologies. First, we carefully analyze the dataset to ensure that each pathology is correctly represented. Next, we develop algorithms for processing the images, which are then fed into deep learning networks capable of handling these. We incorporate a data augmentation module that introduces variability to the photos in order to correct data imbalances.

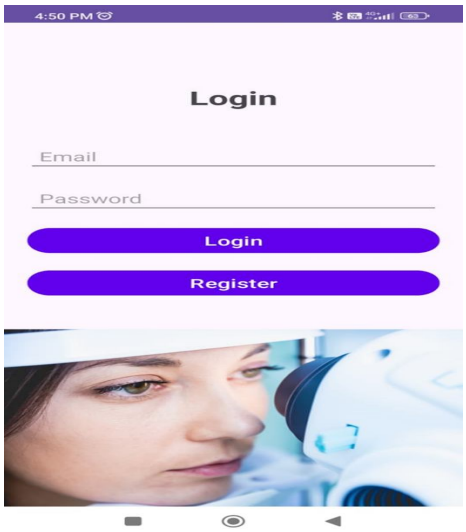


Fig. Login Page

*A. Login Page*

*1)* Username/Email field: Allows user to input their username or email address.
*2)* Password Field: Securely captures user passwords.
*3)* Login button: Initiates the authentication process.

*B. Registration Page*

*1)* Username field: Allows users to choose a unique username.
*2)* Email field: Capture user email address.
*3)* Password field: Allows users to setup a secure password.
*4)* Confirm Password Field: Ensures password accuracy.
*5)* Registration button: Submit user details for account creation.

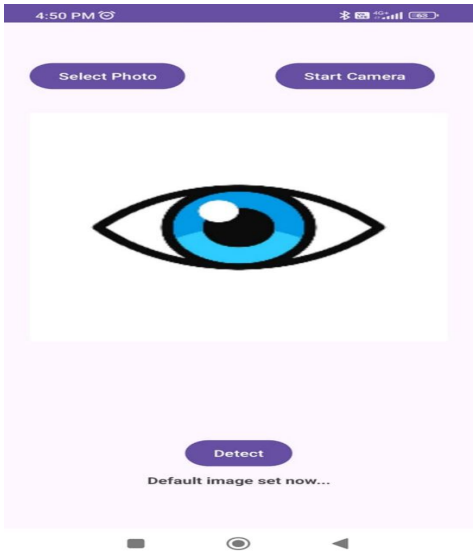


Fig. Home page

Welcome to our Eye Disease Detection platform, where advanced technology meets eye health. Our platform utilizes cutting-edge machine learning algorithms to analyze eye images and detect various diseases accurately and efficiently.

Have an eye image you'd like to analyze? Simply select a photo from your device's gallery. Whether it's a recent snapshot or an archived image, our platform can process it to provide valuable insights into your eye health.

Prefer to capture a fresh image? With our camera feature, you can take a photo directly from your device. It's quick, easy, and ensures that you're getting the most up-to-date analysis of your eye condition.


Fig. Capture Page

*C. Capture Page:*

*1)* Capture a new image using your device's camera directly from our platform.

*2)* This feature ensures real-time analysis and enables you to obtain immediate insights into your eye health status.

*D. Detect Page:*

*1)* Click the "Detect" button to initiate the analysis process after selecting or capturing your image.

*2)* Our advanced machine learning model will swiftly examine the image, accurately detecting any potential eye diseases.

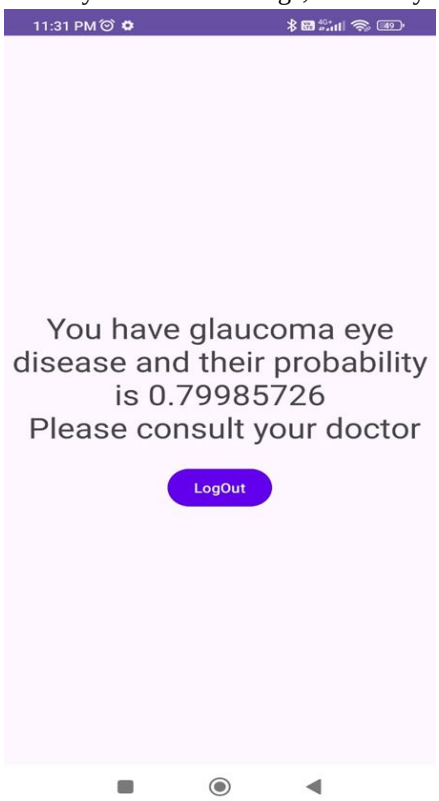


Fig. Result Page

## V. CONCLUSION AND FUTURE SCOPE

Continuously improving our machine learning algorithms to enhance accuracy and expand the range of detectable eye conditions. Integrating telemedicine features to enable remote consultations with eye care specialists for further diagnosis and treatment planning. Collaborating with medical research institutions to contribute to the development of new diagnostic techniques and treatments for eye diseases. Exploring the integration of wearable technology for real-time monitoring of eye health and early detection of abnormalities.

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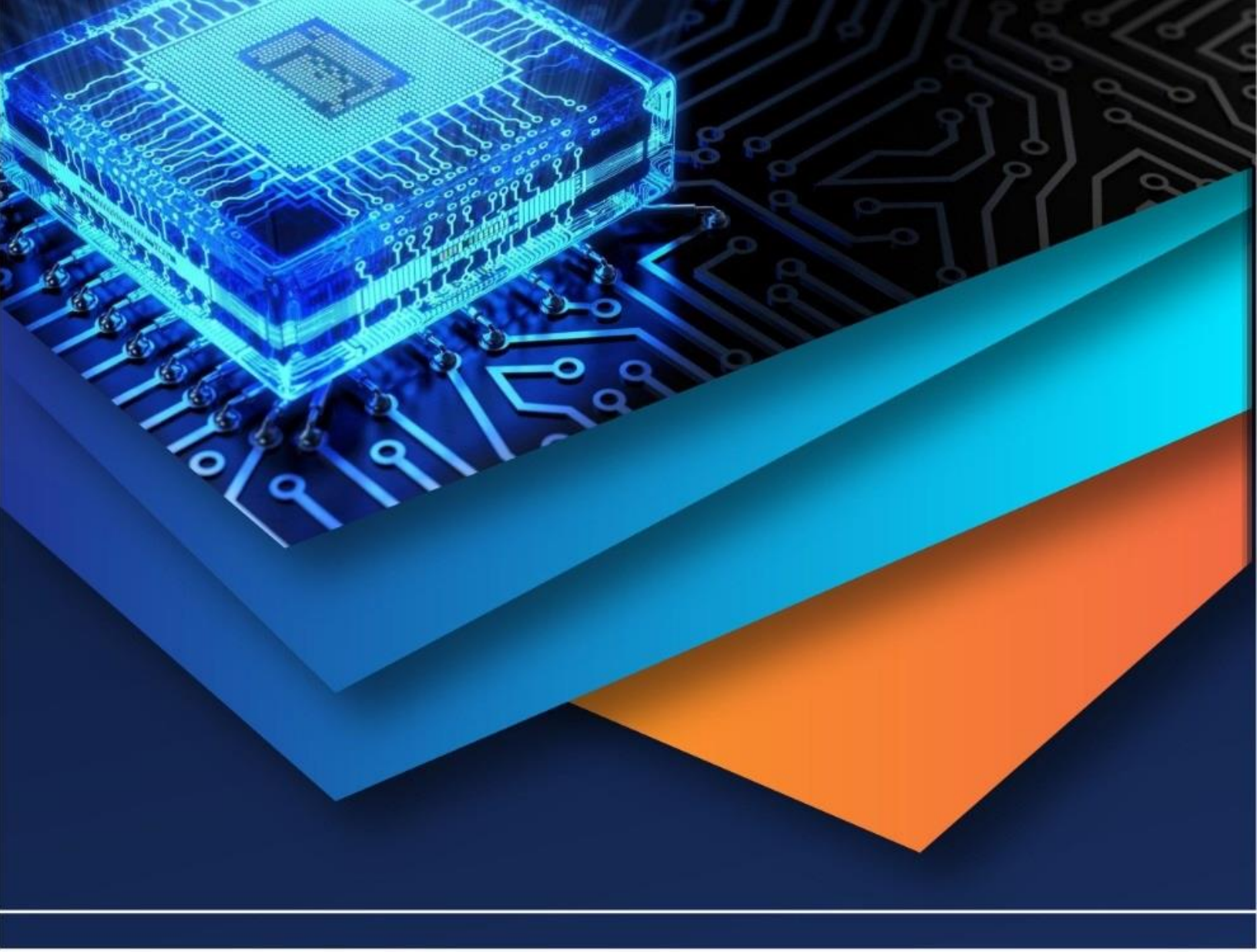

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