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AN ANDROID APPLICATION FOR EYE TEST *DRISHTI CARE*

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ABSTRACT

DrishtiCare is an application designed for conducting vision tests to ensure the proper functionality of your eyes and identify any potential issues you may encounter. By doing survey we found that, the people who wear glasses gives some feedback that, they knew about their eye condition when eye related issues exceed and then they rush for eye test which is too late for them and they have to wear glasses all their lifetime.

The primary objective of our initiative is to raise awareness about eyesight among underserved populations, particularly those residing in slum areas with limited affordability. Additionally, it provides an eye score derived from the eye test, generating a personalized assessment of one's eye health status.

Drishti Care, an eye care application, assists individuals in addressing pre-existing eye issues and maintaining optimal eye health by offering personalized eye care exercises.

KEYWORDS:- Myopia, Hypermyopia, Pressbyopia, Cataract.

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INTRODUCTION

As we're all aware, eyes often receive insufficient attention in today's modern lifestyle. Why delay taking care of them until we need glasses?"

Drishti Care is an app which is used for vision test that your eyes are properly working or any issues you may faced. If you are facing any eye issues then you cancheck your eyes via our app which will help you by predicting eyes and advice accordingly prediction. This app offers a convenient method for individuals to assesstheir vision from the comfort of their

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homes, minimizing the requirement for frequent visits to an eye doctor for routine tests."

This application can enhance the accessibility of vision , especially for those residingin remote areas or facing limited healthcare resources, thereby promoting greater equity in overall healthcare.

Wearing glasses? Regular exercises can potentially aid in reducing dependency on them. Additionally, It also helps to find out the different types of disease such as Myopia, Hyper Myopia, and Cataract, prompting the advice to consult with a healthcare professional for personalized guidance.

LITERATURE REVIEW

Peek Acuity

Regarding visual acuity (VA) testing, a comprehensive analysis revealed a strong correlation between the Snellen chart results and a smartphone application named "peek acuity," suggesting its potential as an effective screening tool in the pediatric population.

Monocular logMAR visual acuity scores were measured for each test, including ETDRS chartlogMAR, Snellen acuity, and Peek Acuity.

Peek Acuity could be a valuable tool for vision assessments, providing an alternative to traditional chart-based methods.

The Snellen chart is widely employed in ophthalmic and general practice as the primary means of assessing visual acuity (VA). Nevertheless, its utility is constrained by the non-geometric progression in letter sizing from line to line and the inconsistent number of letters per line.

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“Smart optometry”

The study involved 100 children under 18 years, randomly assigned to begin with either conventional distance VA chart screening or the smartphone VA assessment using the "SmartOptometry" app by both clinicians and caregivers. The app was deemed a suitable home-basedtool for assessing visual acuity in young children, exhibiting good inter-rater reliability and sensitivity in detecting subnormal VA, while showing lower sensitivity in detecting amblyopia.Near VA scores were evaluated using the near vision E chart, and the accuracy and reliability values were subjected to analysis.

METHODOLOGY

Describing the methods of data analysis:

Myopia

If you click in this then firstly there are guidelines which help that how you have to move forward. Then you can easily test your eyesight. Myopia, commonly known as nearsightedness, is a vision condition where distant objects appear blurry while close objects remain clear. It occurs when the eyeball is slightly elongated or the cornea is too curved, causing light to focus in front of the retina instead of directly on it. This results in unclear vision for objects beyond a certain distance. Myopia can develop during childhood and typically worsens as the eye grows. Genetics play a significant role, but environmental factors like excessive screen time or reading in poor light can also contribute. Glasses, contact lenses, or refractive surgery are common treatments to correct myopia and improve vision. Regular eye exams are essential for early detection and management of myopia to prevent potential complications.

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Hypermyopia

If you click in this then firstly there are guidelines which help that how you have to move forward. Then you can easily test your eyesight. Hypermyopia, often referred to as high myopia, is a more severe form of nearsightedness where the eyeball is excessively elongated or the cornea is overly curved. This causes light to focus even farther in front of the retina than in regular myopia, resulting in extremely blurry vision for distant objects. Hypermyopia typically develops during childhood and tends to worsen over time, leading to significantly impaired vision without correction. Like regular myopia, genetics play a 12 significant role, but environmental factors such as excessive screen time or reading in poor light can also contribute. People with hypermyopia are at a higher risk of developing eye complications like retinal detachment, glaucoma, or macular degeneration. Corrective measures such as glasses, contact lenses, or refractive surgery may be necessary to improve vision and reduce the risk of complications. Regular eye exams are crucial for monitoring and managing hypermyopia effectively.

Pressbyopia

It is the composition of Myopia and Hypermyopia. If you click in this then firstly there are guidelines which help that how you have to move forward. Then you can easily test your eyesight. Presbyopia is a common age-related condition where the eye's natural lens loses flexibility, making it difficult to focus on close objects. It typically begins around age 40 and worsens with time. People with presbyopia may find it challenging to read small print, use digital devices, or perform close-up tasks without holding them at arm's length. It's a normal part of aging and affects nearly everyone to some degree. Reading glasses, bifocals, multifocal

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contact lenses, or surgery like LASIK can help correct presbyopia and improve near vision, allowing individuals to continue their daily activities comfortably.

Cataract Detector

It is used to detect the cataract which is like cloudy on eye. If you click in this then firstly there are guidelines which help that how you have to move forward. Then you can easily test your eyesight. Then u need to first click your hd eye image and then select it from your gallery and according to the image it will show you the result.

Color Blindness

If you click on this button then firstly there are guidelines which help that how you have to move forward. Then you can easily test your color vision. To test your eyes having color blindness or not, you need to place your phone 40 cm apart from you. This can be done with the help of one another person.After that there will be a screen showing a coloured circular image with a random number inside it which is of different color. The user need to identify the number in circle and click the button according to that in image. This process will be done 5 times for both left and right eye. And all data during the testing will get stored in our realtime database .At last result will be shown in another activity describing u have color blindness or not.

Astigmatism

If you click on this button then firstly there are guidelines which help that how you have to move forward. Then you can easily test your eyesight. Astigmatism occurs when the curvature of the eye's surface (cornea) or the eye's lens is uneven. Its surface is egg-shaped, not curved like a ball. This causes blinding vision at all distances. Often it is not obvious enough to require

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correction. If so, treatment options are contact lenses or surgery. In order to test for astigmatism, user need to place the mobile 40cm apart and then look at the density of lines on the screen and differentiate between them and result will be shown according to that.

Bracket & grading

This section substantially introduces conventional machine literacy styles for cataract bracket/ grading.

Support vector machine

Support vector machine(SVM) is a classical supervised machine learning fashion thathas been extensively used for bracket and direct retrogression tasks. It's a popular and effective literacy system for medical imaging operations. For the cataract grading task,Li etal.(5, 72) employed support vector machine retrogression(SVR) to grade the inflexibility position of cataracts and achieved good grading results grounded on slit beacon images. The SVM classifier is extensively used in different ophthalmic imagesfor the cataract bracket task. For illustration, Jiang etal.(76, 77) applied SVM to classify cataract inflexibility situations grounded on slit beacon images. For other ophthalmic image types, SVM also achieves good results grounded on uprooted features (17 −19).

Linear retrogression

Linear retrogression (LR) is one of the most well- known ML styles and has been usedto address different literacy tasks. The conception of LR is still a base for other advanced ways, like deep neural networks. Linear functions determine their model in LR, whose parameters are learned from the data by training. Li etal.(74) first studied automatic cataract grading with LR grounded on slit beacon images and achieved good grading results. Followed by

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(74), Xu etal.(10, 11) proposed the group sparsity retrogression(GSR) and similarity weighted direct reconstruction(SWLR) for cataract grading and achieved better grading results.

K- nearest neighbors.

K- nearest neighbors(KNN) system is a simple, easy- to- apply supervised machine literacy system used for bracket and retrogression tasks. It uses similarity measures toclassify new cases grounded on stored cases. Fuadah etal.(15) used the KNN to descry cataracts on digital camera images and achieved97.2 delicacy. Caxinha etal.(85) also used KNN for cataract bracket grounded on ultrasonic images collected fromthe beast model.

Ensemble literacy system

Ensemble literacy system uses multiple machine literacy styles to break the same problem and generally obtains better bracket performance. Yang etal.(18, 39, 92) have used several ensemble literacy styles for cataract bracket, similar as stack ekthan single machine literacy styles.

Ranking

Ranking denotes a relationship within the list in descending thrusting order. Huang etal.(9, 73) applied the ranking strategy to automatic cataract grading by calculating the score of each image from the learned ranking function similar as Rank Boost and Ranking SVM and achieved competitive performance. Other machine literacy styles. piecemeal from the below- mentioned conventional ML styles, other advanced ML styles are also proposed for automatic cataract bracket/ grading, similar as Markov arbitrary field(MRF), arbitrary

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timber(RF), Bayesian network, direct discriminant analysis.

RESULT

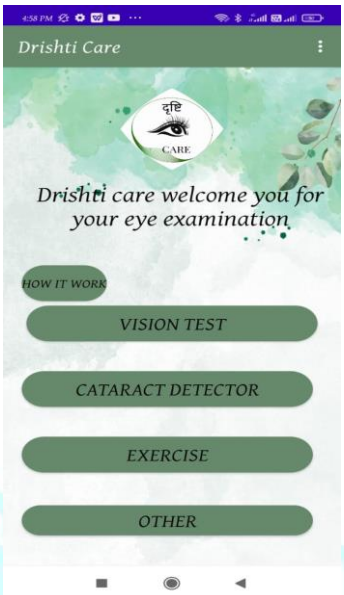

Fig.1

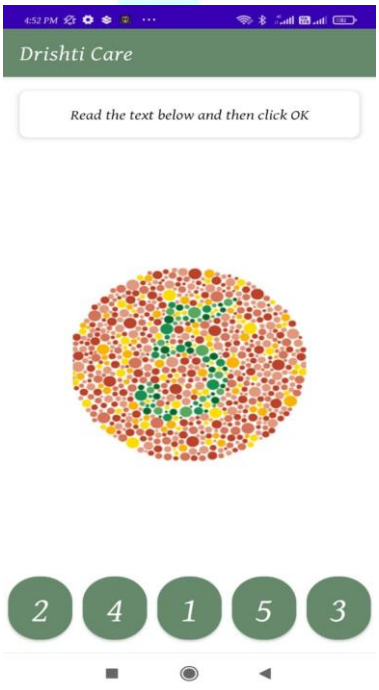

Fig.2

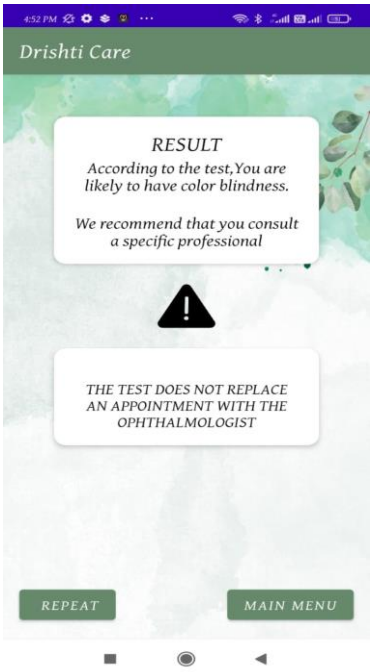

Fig.3

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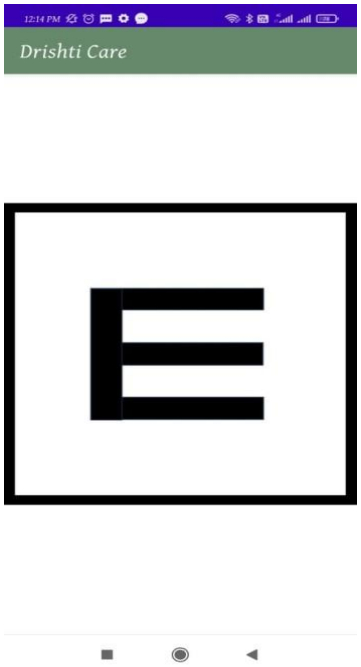

Fig.4

Fig.5

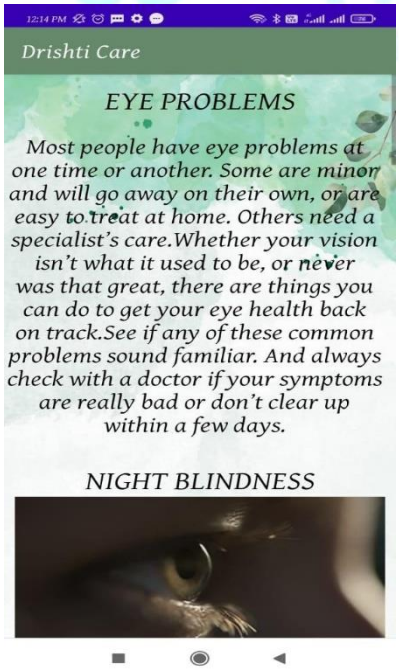

Fig.6

Fig.7

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DISCUSSION

We study the 3 or 4 Research paper which are related to our project and we found lots of features and we rise some questions and answers about that functionalities and we discussed about our future goals and use of our projects in future , we discussed that what can we add to our project so that people will use this app, and accordingly our discussion we add many features which help users a lot , one of the main reason to building of this application is that here we tried our best to provide solution for those who can't afford to travel and go for hospital for their regular checkup. There are various limitations of Drishti Care that our app require net to open this app and anyone can use this app who wanted to test their eye

CONCLUSION

The main advantage of this app is that anyone who follow the guidelines properly related to that tab can easily use this application for detecting vision power and cataract detection. This app is just a platform which provide measure of lens power but it is not that much accurate as the doctor prescription. This app can be used by remote area people, women and children to detect about their eye disease at an early stage so that they can reach doctor on time for the better fulfilment of their eye health care. Also this application provide exercise which can be performed to get strengthen the eye mussels.

REFERENCES

1. "Andrew Bastawrous ,MRCOphth , International Centre for Eye Health, London School of Hygieneand Tropical Medicine, Keppel Street, London WC1E 7HT, England (andrew.bastawrous@lshtm.ac.uk)." , "Peek Acuity", January 16, 2015; final revision received April 1,2015; accepted April 9, 2015.

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2. “X. Q. Zhang, Y. Hu, Z. J. Xiao, J. S. Fang, R. Higashita, J. Liu” , “Machine Learning for CataractClassification/Grading on Ophthalmic Imaging Modalities: A Survey” ,“vol.19, no.3, pp.184–208, 2022. http://doi.org/10.1007/s11633-022-1329-0”