# Prediction of Underlying Skin Type of AnEye & Percentage Using Machine Learning

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*Abstract-* In future, when the huge number of patientsneed to consult the eye doctor for any causeor if number of cases handled by the doctoris in high rate or if they want to know theireye problem and whom they want to consult. In these cases, if they are not in position to consult eyecare hospitals. For this They can use an application, and whichuses machine learning and gives aprediction. There are many parts like givingpicture of nerve system of an eye, color ofsclera, underlying skin of an eye, etc. As a part of this, here we are using the machine learning to predict the type of underlying skin of an eye, this is the one of the predictions that helps the doctor to know about the underlying skin of an eye and to suggest the person to whom they want to consult and what the problem they are undergoing. For this the person just need totake the picture of his and submit, that helpsus to identify his/her underlying skin of an eye using machine learning. The simplething is the doctors can be able understand easily by using this method that helps to clarifies that which type of category it belongs to [4].

Keywords: OpenCV, NumPy, Pandas, TensorFlow, Kera.... Etc.

## **1.** INTRODUCTION

In Human body the eyes are one of theimportant sensory organs which can be allows to see the world it consists an information what they can visualize then it will pass the information to the brain. Eyes are at work from the moment when the humans are waking up till the moment the humans go to the sleep it will observe a lot of things which are exist in the nature and proceesing it, then send information to the brain after that the brain knows what's going on outside. our eyes can see about 200 degrees in all directions.one of the lion's share vital awareness(sense) is sight because it captures the 80% of the information. By taking usually proper care for eyes, it can reduce the risk of becomingblind or losing vision, and also keeping an eye out for any developing eye conditions like glaucoma and cataracts. uttermostpeople faced eye diseases like this some may cure by taking care themselves and by taking some medicines which can be suggested by the doctor or it will be cure byhome itself. Basically, in major cases the identification of the cause of vision problems is either postpones or not done at all that corrective measures are either not done or done too late. If in case the eye diseases may un predict then it will be cause a major problem then it leads that to do a surgical process.

Commonly, the Optical disease isnot a life threating although it is a progressive over the time can have a significant effect on the patient's life. The symptoms will be observing by performing the physical examination that can be conducted by using ophthalmologicalinstruments and a comprehensive interpretation is used for diagnosis. There are many machine based solutions should concurrently observations, symptoms and systematized test results for the predictionsHence, the standard data and clinic data of test results can be a key of the success. To accurately diagnose eye illness, it consider to analyse a wide range of symptoms. In this paper, our suggested model analyses and collusive of an eye disease namely underlying skin And which type of categoryis it belongs to by using machine learning with digital image processing, This processis a one of the prediction to configure a eyerelated disease and for fast diagnosis, the systems of medical health have been focusing on a artificial intelligence and machine learning with different modules and algorithms.

# 2. PROPOSED WORK



Fig1: Evaluation of data

As of now different types of predictions arefound, for an eye disease that is Cataracts, ocular surface of an eye, nerve system, predicting based on retinal image. These are the eye diseases are predicted by using machine learning.

As work of this project that can be predicts the underlying skin type and which category it belongs to. it can be different for various persons. Its welfares that before consulting the optometric directly just by taking an image of an eye that image will

performs as of going to predict the categorywhich discussed before, the image can be analyzed first using augmenter package.

Machine learning model structure, with different algorithms those are Decision trees, Support vector machine (SVM), Multilayer perceptron, Bayes classifiers, K-Nearest Neighbours (KNN) Ensemble classifier techniques etc. Are used to determine various ailments. Using machinelearning methods can result in quick and accurate disease prediction. Prior to Prior techniques

## 1.EYE DISEASE PREDICTION:

For this, model comparing different classes of diseases like crossed eyes, bulging eyes, uveitis/conjunctivitis and cataract. The training is done for single-eye and two-eye images usingtwo separate models the other model predicts diseases like cataract and conjunctivitis/uveitis using single eye image. The other model predicts diseases like cataract and conjunctivitis/uveitis using single eye image. The other model predicts diseases like cataract and conjunctivitis/uveitis using single eye image [1]. An Efficient Approach to Predict Eye Diseases from Symptoms Using Machine Learning and Ranker-Based Feature Selection Methods: using a benchmark dataset, machine learning techniques are used to forecast five common eye diseases. The annotation or class labelling of an appropriate dataset for ML models is the most important problem. For our work, we have annotated the data byBioengineering 2023, 10, 25 18 of 20 practicingophthalmologist, which gives more accurate and validate data for the models. As a consequence, the ML models are producing very satisfactory accuracy values, with the majority of them achieving accuracy levels of over 90% and all of them exceeding 70%. The highest accuracy obtained is 99.11% from SVMwith cross-validation and without applying any feature selection methods [3].

with python, and that package consists various functions, that allows to generate different samples of that particular image for distortion.

The samples can produce as per ourrequirements.

The functions used to analyze the data of animage in details, those samples are generating at the path were the image existed, it will beeasy to observe.

These are performed by using a K-NN(Kth-NEAREST NEIGHBOUR) Algorithm.

#### **3.MODULES:**

To increase the datasets used as input for deep learning and machine learning algorithms, augmenor automates picture augmentation (artificial data generation). APython image augmentation tool called Augmentor is used for machine learning. It seeks to be a standalone library, which is more practical, control over augmentation, and implements the augmentationtechniques that are most pertinent to real- world situations. An augmentation pipeline built by gradually adding operations, such as rotations or transforms; once the pipeline is finished, it can be performed and an augmented dataset is produced [2].

#### **4.ALGORITHM:**

Users can instruct a computer on how to solve an issue by using algorithms. For aspiring software developers, knowing how to build five of the most popular algorithms essential knowledge.

#### **5.K-NEAREST-NEIGHBORALGORITHM:**

In this all aware that machine learning models use historical data to make predictions. Once a model is created, input values are used to generate predicted results. KNN can be used as a classifier because it is built on feature similarity. Theresult of the K-NN classification is a class membership. An object is classified by a plurality vote of its neighbours, with the object being assigned to the class most common among its k nearest neighbour if k=1 subsequently the object is just put in the class of that one closest neighbour [5].

In order to determine which of the k examples in the training dataset are most comparable to a new input, a distance measure is most frequently used for real valued input variables. popular distance measure is the Euclidean distance.



Fig 2: KNN Algorithm

K- Nearest Neighbours is a non-parametric means there is no assumption for underlying data distribution, this model isto determine by collecting the datasets. It does not need any training data point for model generation. All training data is used to predict the output for given datasets.

KNN-K Nearest Neighbours is one of the simplest supervised machine learning algorithms mostly used for classification, It classifies a data point based on its neighbors' classifications. It stores all available cases and classifies new cases based on similar features. It is called lazy Because it does no training at all when you supply the training data. At training time, all it is doing is storing the entire data set; no calculations are being made at this moment.

KNN is nothing but it will store allavailable cases and classifiers new casesbased on a similarly measure. Can choose the factor "k" using the KNN algorithmbased on how comparable the features are. The parameter K indicates how many closest neighbours should be included in the consensus voting process. To improve accuracy, a procedure known as parameter tuning entails selecting the appropriate value of K.

To choose a value of K

1. Sqrt(n), where n is the total number of data point.

Square Root Method is most common method is to take the square root value of the total number of training instance of yourdata set. The rule of thumb is to take an oddnumber. The method just works fine almostevery time.

2. odd value of k is selected to avoid confusion two classes of data

3. Hyperparameter Tuning k is a hyperparameter of the KNN algorithm. To determine the ideal number, you can use tuning techniques like a grid search. Use thesame data to fit a KNN model using a grid search to find the value of K that precisely resolves your problems.

#### **6.RESULT:**

The result of this project finally it will givewhat is the underlying type of eye whether it puffy eye or wrinkle, and how much percentage it is without presence of particular person.



Fig 3: Puffy Eyes with 83.337%



Fig 4: Dark spots with 90.337%



## Fig 5: Wrinkled Skin with 98.041%

Fig3 A common sign of allergy, infection, inflammation, and physical irritability is puffy eyes.

Fig4: Although some could decide have dark spots on their skin removed for cosmetic reasons, they are not harmful and do not require treatment.

Fig5: A fold, ridge,or crease in an otherwise smooth surface. Typical causes of skin wrinkling include ageing processes like glycation, habitual sleeping positions, loss of body mass, UVdamage, or momentarily as a result of extended submersion in water.

#### **CONCLUSION:**

This paper represents an effective approach of predicting the different eye types and how much percentage is whether is puffy or not, in the absence of person. Which gives accurate and validate data for models.

The ML methods are showing very satisfactory results in terms of accurate prediction.

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