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GRAY-LEVEL CO-OCCURRENCE MATRIX WITH ORIENTED FAST AND ROTATED BRIEF ALGORITHM FOR DIABETIC RETINOPATHY PREDICTION

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Abstract. One of the eye parts is retinopathy which is generally called ophthalmology. In India lot of diabetic patients (Diabetic retina and Diabetic Mellitus) normally affect optic disc (OD) blood vessels of the eye. GO algorithm is nothing but the combination of GLCM (GRAY-LEVEL CO-OCCURRENCE MATRIX) and ORB (ORIENTED FAST AND ROTATED BRIEF) algorithm. Without early detection, it is very difficult to predict it, which may cause blindness. Many supervised classifiers have been processed and many datasets checked for performance evaluation. Second-order statistical algorithm GRAY-LEVEL CO-OCCURRENCE MATRIX performed well to achieve features and in addition to that, ORB was processed. The extracted features and their derivative calculations are attached in the experimentation section of this paper. Therefore, it is very essential to implement a prediction model in order to check the accuracy with the help of hybrid algorithm for segmentation, feature extraction with many classifiers and identified best prediction classifier along this GO algorithm has evaluated based on already existing KAGGLE datasets. Proposed system outperforms existing results and finally significant journals also compared.

Keywords: diabetic retinopathy, optic disc, hybrid classifiers, KAGGLE dataset.

AIMS AND BACKGROUND

The eye is the most important part of our body and it can give vision not only to us but also to animals. The eye is naturally made up of many delicate soft tissues. The lens carries the footage to the brain as electrical waves through the nerves. The retina plays a significant job, and the optic disc, macula, fovea and nerves associated with the retina are connected to the brain. The retina is mainly affected by disease or accident; disease is diabetes also causes the disease to increase[1]. Affected regions are commonly retinal nerves and optic disc. WHO (World Health Organisation) estimated that 70 million people were affected by diabetic retinopathy in 2015, WHO has expected 79.4 million people affected in 2030 by the same disease[2].

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Fully convolutional neural networks for LIDAR–camera fusion for pedestrian detection in autonomous vehicle

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Abstract
Pedestrian detection appears to be an integral part of a vast array of vision-based technologies, ranging from item recognition and monitoring via surveillance cameras to, more recently, driverless cars or autonomous vehicles. Moreover, due to the rapid development of Convolutional Neural Networks (CNN) for object identification, pedestrian detection has reached a very high level of performance in dataset training and evaluation environment in autonomous vehicles. In order to attain object identification and pedestrian detection, a sensor fusion mechanism named Fully Convolutional Neural networks for LIDAR–camera fusion is proposed, which combines Lidar data with multiple camera images to provide an optimal solution for pedestrian detection. The system model proposes a separate algorithm for image fusion in pedestrian detection. Further, architecture and framework are designed for Fully Convolutional Neural networks for LIDAR–camera fusion for Pedestrian detection. In addition, a fully functional algorithm for Pedestrians detection and identification is proposed to precisely locate the pedestrian in the range of 10 to 30 m. Finally, the proposed model's performance is evaluated based on multiple parameters such as Precision, Sensitivity, Accuracy, etc.; hence the proposed system model has proven to be effective comparatively.

Keywords Convolutional neural networks · LIDAR–camera · Fusion for pedestrian · Detection in autonomous · Vehicle

1 Introduction

Pedestrian detection is the foundation for behavior assessment and target acquisition in various industries, from self-driving automobiles to surveillance cameras. Pedestrian detection seems to be a critical activity that must be completed precisely and consistently in terms of enhancing levels of automation. A pedestrian detection system employs cutting-edge computer sensors to

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A collaborative and adaptive cyber défense strategic assessment for healthcare networks using edge computing

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ABSTRACT

The Internet of Things (IoT) is a massive network connecting various devices and computer systems. This technology makes prototyping and distributing cutting-edge software and services easier. Through specifically created healthcare networks, the IoT makes it simple to link digital and tangible devices. Disputes continue to arise in the industry due to the absence of uniformity and the rapid growth of products, services, and methods. This study seeks to provide a birds-eye perspective of the technologies and protocols that support the IoT's foundation. We start by introducing an elaborate process to examine the function of healthcare networks in creating and disseminating IoT-based software and some solutions to the current problems. We then discuss and formulate future challenges and the unanswered concerns surrounding the IoT's support for healthcare networks. The primary focus of this research is to dissect the IoT, or horizontal network, into its constituent parts. These elements are essential for creating secure and robust mobile applications.

1. Introduction

Over the last two decades, the Internet of Things has been one of the most transformative technology paradigm shifts. (IoT). Since all IoT devices contain sensors, processors, and the capacity to connect with the wider web. Anyone unfamiliar with the IoT may mistake them for ordinary computers. At its core, this fast-growing sector is predicated on the concept of interaction between humans and computers. The term "Internet of Things" is used to describe a network that enables a large number of sensors and actuators to communicate with one another and share data. (IoT). Numerous industries, including commerce, logistics, healthcare networks, smart cities, transportation, and emergency management, have begun using IoT technologies and software. While significant technical progress has been achieved across the board, the challenges posed by the diversity of IoT devices and the lack of standardization remain. How the "Things" function may be determined by the implementation circumstances, which might vary from non-critical to mission-critical (Khan et al. 2019) [1].

The consequences of unrestrained growth in the number of IoT-connected devices are enormous. By 2025, there are expected to be 80 billion internet-connected gadgets, greatly surpassing the present 70 billion inhabitants on Earth. If they want their IoT systems to be dependable, versatile, and interoperable, they must learn about the underlying architecture of the technology that powers it. It is easy to see where technology issues originate and what has to be solved before the process can be called stable. One of the biggest challenges is finding an efficient way to transmit data between the billions of devices that need to be able to receive it. (Khan et al. 2019) [1]. It is obvious how important it is to have an Internet Protocol (IP) addressing system that can rapidly adapt to changing situations, given the present usage rate and the predicted exponential increase of Internet-connected items. IPv4 has been used for a long time for internet redirection and rerouting due to its ability to detect millions of devices globally. IPv4 has several private and secure mechanisms to protect individual IP addresses. Examples of such infrastructures abound, and they include Classless Inter-Domain Routing, Healthcare Network Address Conversion, and

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Facial Expression Recognition Using Transfer Learning with ResNet50

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Abstract

Facial expression recognition mimics human coding abilities and delivers non-verbal human–robot communication cues. Machine learning and deep learning techniques enable real-world computer vision applications. Deep learning-based facial emotion recognition models have under-fitted or over-fitted due to inadequate training data. They are using FER2013's 7 picture categories. Face

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Diabetic Retinopathy Prediction using Modified Inception V3 Model Structure

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Abstract: The analysis of clinical findings revealed that more than 10% of diabetic individuals have an elevated risk of eye issues. Diabetic Retinopathy (DR) is a type of eye illness that impacts 80-85% of persons suffering for more than 10 years from diabetes. In hospitals, retinal fundus images are commonly employed for the identification and study of diabetic retinopathy. The unprocessed retinal fundus images are difficult for machine learning approaches to analyze. Original retinal fundus images are pre-processed utilizing green channel separation, histogram equalization, contrast enhancement, and scaling procedures. For statistical analysis, 14 attributes are additionally collected from preprocessed images. Technique for the detection of retinal lesions can aid in the earlier identification and treatment of a frequently found condition, diabetic retinopathy. We introduce a new criterion for the identification of the optic disc in which we initially identify the significant blood vessels and then utilize their intersection to estimate the position of the optic disc. Future localized utilizing color characteristics. We also demonstrate that a set of attributes, including blood vessels, mucus, micro aneurysms, and hemorrhages, may be recognized with high precision utilizing different morphological techniques applied suitably.

Keywords: *Diabetic Retinopathy (DR), Retinal Fundus Images, Histogram Equalization, Contrast Enhancement, Optic disc, Morphological Techniques.*

1.Introduction

Diabetic Retinopathy is a consequence of diabetes impacts person's eyesight may decline progressively owing to injury to the retinal blood vessels. Initially, diabetic retinopathy may produce no signs or just mild vision issues. However, it can cause blindness. Patients having forms of type 1 or type 2 diabetes can get the disease. In past few years, increase in patients having diabetic dealing from diabetic retinopathy has risen exponentially (DR). DR is among the commonly found serious conditions and the biggest reason for loss of vision in average-aged persons in affluent countries. DR manifests as minute alterations in the retinal capillaries. The earliest noticeable abnormalities are micro aneurysms, which are small capillary disturbances. Micro aneurysms that are distorting produce intraregional hemorrhage. Therefore rises in the early phase of DR, often termed as moderate non-proliferative diabetic retinopathy. Owing to the susceptibility of the eye fundus to certain muscles disorders, fundus imaging is ideally suited for non-invasive visibility. The effectiveness of the testing procedure is straight proportional to the effective and precision of the images of fundus collection methodology and the image processing technologies used to identify anomalies.

Intermediate non-proliferative diabetic retinopathy is characterized by the appearance of exudates, which are essentially greasy deposits oozing from the bad end of blood vessels. If these secretions begin to grow in the central vision region, the condition is known as diabetic maculopathy. Later with specific period of duration, when retinopathy progresses, the micro infarcts in the retina block the blood arteries. These little infarcts are referred to as delicate exudates. When all three of the above irregularities are present, this type of diabetic retinopathy is referred to as serious non-proliferative diabetic retinopathy. The Classification of the advancement of DR within the patient is done into one of the categories: 0 - No DR , 1 – Mild, 2 – Moderate, 3 – Severe, 4 - Proliferative DR. Typically, DR is detected manually by a qualified physician by interpreting Fundus Images, which frequently leads to confusions and ultimately, prolonged therapy. Thus, we aim to provide an automated and sophisticated approach to detect DR as early as possible so that the situation can be controlled before it exacerbates. The aim is to provide an easy to use and maintainable UI to the Prediction Model in the form of a Web Application, so that users can obtain their results with minimal efforts and confusions. Hence, a complete system which enables users to upload their Fundus Images and receive results with minimal errors will be established.

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