MACHINE LEARNING BASED COVID-19 DETECTION FROM CONTENT BASED IMAGES

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ABSTRACT:

In This Paper review the general characteristics of the novel coronavirus (SARS-CoV-2) and provide a better understanding of the coronavirus disease (COVID-19) in people with diabetes, and its management. In this project we are using COVID-19 dataset to train machine learning algorithms and then predict whether person has type diabetes and if type 2diabetes detected in person test record then he will be more vulnerable to COVID-19 disease, heart or kidney disease. To implement this project we build two machine learning model where first model detect person has diabetes or not and if diabetes detected then application will use his CT SCAN LUNG images to detect COVID or other diseases. The proposed learning method has enabled users to improve their search results based on the performance of CBIR system.

KEYWORDS: COVID-19, diabetes, SARS-CoV, CBIR.

INTRODUCTION

Scarce data exist regarding glucose metabolism and development of acute complications of diabetes (e.g., ketoacidosis) in patients with COVID-19. Infection of SARS-CoV-2 in those with diabetes possibly triggers higher stress conditions, with greater release of hyperglycemic hormones, e.g., glucocorticoids and catecholamines, leading to increased blood glucose levels and abnormal glucose variability. On the other hand, a retrospective study from Wuhan reported that around 10% of the patients with T2DM and COVID-19 suffered at least one episode of hypoglycemia (<3.9 mmol/L). Hypoglycemia has been shown to mobilize pro-inflammatory monocytes and increase platelet reactivity, contributing to a higher cardiovascular mortality in patients with diabetes. Yet it remains largely unknown how exactly the inflammatory and immune response occurs in these patients, as well as whether hyper- or hypoglycemia may alter the SARS-CoV-2 virulence, or the virus itself interferes with insulin secretion or glycemic control. Furthermore, the impact of usual diabetes drug treatment on

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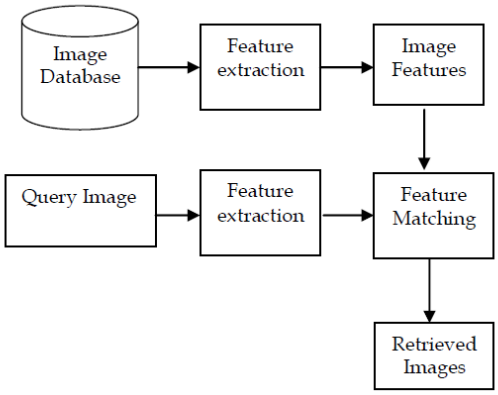
COVID-19 outcomes, as well as therapeutic approaches for COVID-19 on glucose regulation remains unspecified.



PROPOSED APPROACH

This proposal statement focuses on an application that can be patient under observation, who is suffering from heart stroke, kidney, or any disease attacks, diabetics etc.

According to **WHO** out of 10 members 6 members are suffering with Diabetes. Diabetes causes comorbidites suggest Atherosclerosis, partial blindness, myocardial infarction (**MI**), hypertension etc..

Diabetes is a disease that occurs when the blood glucose level becomes high, which ultimately leads to other health problems such as heart diseases, kidney disease, retinopathy, etc. Diabetes is caused mainly due to the consumption of highly processed food, bad consumption habits, etc.

Patients with complications like nephropathy, retinopathy, cardiovascular and other endocrinal disorders and patients already on antioxidant supplementation or on antiresorptive therapy were excluded from the study.

LITERATURE SURVEY

1. Clinical Characteristics of Coronavirus Disease 2019 in China

Guan W.J., Ni Z.Y., Hu Y., Liang

Since December 2019, when Covid illness 2019 (Covid-19) arose in Wuhan city and quickly spread all through China, information have been required on the clinical attributes of the influenced patients.

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METHODS

We extricated information in regards to 1099 patients with lab affirmed Covid-19 from 552 medical clinics in 30 areas, self-sufficient districts, and regions in territory China through January 29, 2020. The essential composite end point was admission to an emergency unit), (the utilization of mechanical ventilation, or passing.

RESULTS

The common age of the affected person is forty seven years. 41.9% of sufferers are women; The very last operation befell in sixty seven sufferers (6.1%), five.0% of whom have been admitted to the ICU, 2.3% used incoming ventilators and 1.four% died; most effective 1.9% died. records of direct touch with wildlife. She has been homeless for seventy two years.3% contacted Wuhan residents, 31.3% visited Wuhan. The maximum not unusual place signs and symptoms have been fever (43.8% at hospitalization, 88.7% at hospitalization) and cough (sixty seven.8%). Diarrhea is rare (3.8%). The common incubation length is four days (relying at the habitat, 2-7). Upon receipt, frosted glass mild have become the maximum not unusual place locating in radiology on computed tomography (CT) (56.157 of 877 sufferers with slight to excessive illness (17.9%) and five of 173 seriously unwell sufferers (2.9%) did now no longer hit upon detectable radiation or recurring CT, and 83.2% of hospitalized sufferers had leukopenia. Less blood turned into found.

2. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak – an update on the status

Guo Y.R., Cao Q.D., Hong Z.S

The 2019 Acute Respiratory Coronavirus (COVID-19), caused by a new type of coronavirus (formerly 2019-nCoV), has spread throughout China and is attracting worldwide attention. It was declared a global public health emergency, and in 2002 there was SARS-CoV-2, including the coronavirus that causes acute respiratory syndrome (SARS-CoV) and the Chinese respiratory syndrome. Eastern (MERS-CoV) 2012 is the third most common disease. People of the 20th century.

The new coronavirus, which acts as a natural modulator, uses the same receptors as the angiotensin-converting enzyme (ACE2) SARS-CoV and is still widely distributed in the glucose respiratory tract. ..

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Patients with clinical symptoms COVID-19 include a small number of patients with fever, cough, nausea, intestinal infections, and cytokine symptoms.

Alternatives are still under consideration.This review summarizes the latest Corona 19 device research and development, treatment causes and symptoms, and describes current therapeutic and scientific advances in the fight against the coronavirus.

IMPLEMENTATION

Dataset

The dataset contains the information about patients. This dataset is given by doctors. By using this dataset we predict the diabetes and covid diseases.

Upload Covid & Diabetes Dataset:

In this module User can upload the dataset. The dataset contains the information about covid patients. This dataset is given by doctor, we can used this dataset to train and predict diabetes and covid diseases.

Build context based image diabetes model:

After uploading the dataset the dataset is loaded, after loading successful we generate build context based image diabetes model to build machine learning model, after that it shows the accuracy results.

Upload Test data and predict disease:

Uploadthe Dataset file and then click on ‘Open’ button to load that dataset data and this dataset data contains patients records and we will get the prediction for all patients.

ALGORITHMS:

Convolution Neural Networks (CNN) and Support vector machine (SVM)

CNN: A Convolutional Neural Network (ConvNet/**CNN**) is a **Deep Learning algorithm** which can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image and be able to differentiate one from the other.

SVM: SVM is a supervised machine learning algorithm which can be used for classification or regression problems. It uses a technique called the kernel trick to transform your data and then based on these transformations it finds an optimal boundary between the possible outputs.

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Step 1: There are number of images present in image database and first step is to extract the features from images present in database.

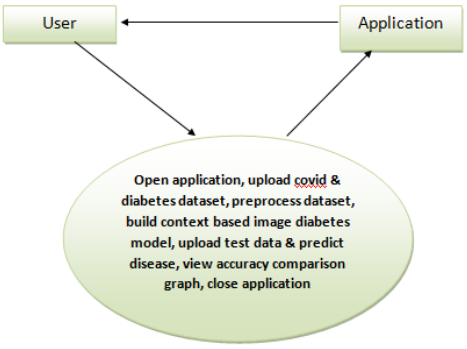
Step 2: The performance of Context Based Image Processing Using Machine Learning Approaches is depend on shape, texture and color or other features of image. For this feature extraction CNN algorithm is used.

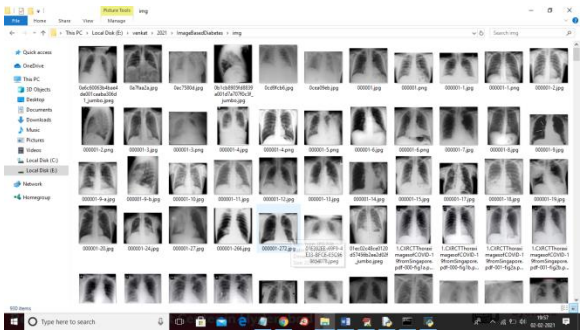
Step 3: The shape, texture and color information low level features of images are extracted. And in feature database these features are stored as feature vector.

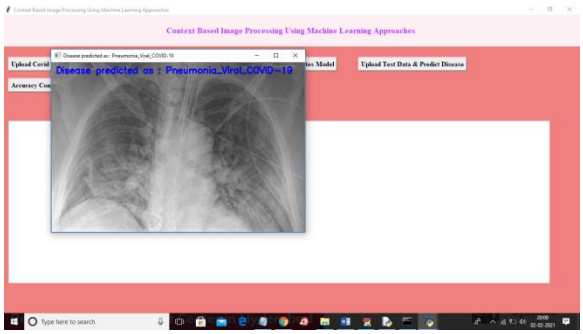
Step 4: A query image is enters into the system. After extraction of query image features a feature vector is generated which is further compared with all vector stored in database.

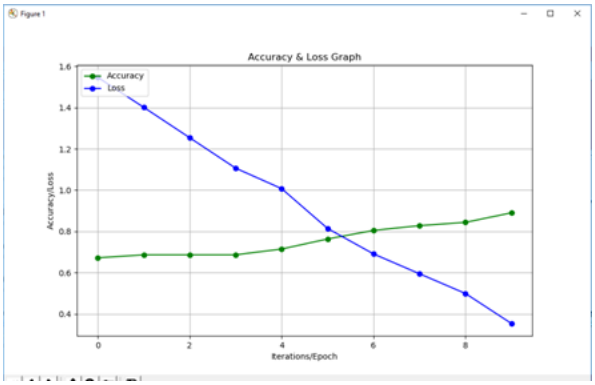
Step 5: In high dimensional feature space firstly the image data is represented in terms of features and then images similarity is stored in the database which is further compared with query image. For the comparison of image features and query features SVM algorithm is used.

SAMPLERESULTS









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In above graph x-axis represents epoch/iterations and y-axis represents accuracy and loss values. In above graph green line represents accuracy and blue line represents loss and in above graph we can see with each further iteration accuracy get increase and loss get decrease

CONCLUSION

COVID-19 has rapidly spread since its initial identification in Wuhan and has shown a broad spectrum of severity. Early isolation, early diagnosis, and early management might collectively contribute to a better control of the disease and outcome. Diabetes and other comorbidities are significant predictors of morbidity and mortality in patients with COVID-19. Future research is urgently needed to provide a better understanding regarding potential differences in genetic predispositions across populations, underlying pathophysiological mechanisms of the association between COVID-19 and diabetes, and its clinical management

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