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A Survey on Prediction of COVID-19 Using Machine Learning

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Abstract: ***Coronavirus (COVID-19) is an irritation infection from another infection. The infection causes respiratory disease (like flu) with indications, for instance, cool, hack and fever, and in logically genuine cases, the issue in relaxing. COVID-2019 has been seen as an overall pandemic and a couple of assessments are being driven using distinctive numerical models to foresee the presumable headway of this epidemic. These numerical models subject to various components and examinations are needy upon likely tendency. Here, we introduced a model that could be helpful to foresee the spread of COVID-2019.Foreseen the expected examples of COVID-19 impacts in India reliant on information accumulated from Kaggle. With the regular information about affirmed, demise and recuperated cases across India for over the time length helps in foreseeing and assessing the not all that removed future. Prior to creating the models, a correlation coefficient analysis between various dependent and independent features was performed to establish the strength of the association between each dependent and independent feature of the dataset. The training dataset was used to train the models 80% of the time, while the testing dataset was used to test the models 20% of the time.***

Keywords: Covid-19, pre-processing, classifier algorithm, feature extraction, SVM etc.

I. INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. Coronavirus or COVID-19 show early symptoms of Disease and hence this is where our project (CORONAVIRUS DETECTION USING MACHINE LEARNING) come into use. This Model of Coronavirus Detection uses a sophisticated use of Android and Machine Learning to Predict weather a Person has a Chance of having corona virus or is this early symptom of the same.

II. RELATED WORK

A. Supervised Machine Learning Models for Prediction of COVID-19Infection using Epidemiology Dataset

Author, L. J. Muhammad, Ebrahem A. Algehyne

Utilizing epidemiology labelled dataset for positive and negative COVID-19 cases in Mexico, supervised machine learning models for COVID-19 infection were created using learning methods such as logistic regression, decision tree, support vector machine, naive Bayes, and artificial neutral network. Prior to creating the models, a correlation coefficient analysis between various dependent and independent features was performed to establish the strength of the association between each dependent and independent feature of the dataset.

B. CoviNet: Automated COVID-19 Detection from X-rays using Deep Learning Techniques

Author: Samira Lafraxo, Mohamed El Ansari

In the medical field, the use of machine learning approaches for automatic diagnostics has recently become an important tool for clinicians. Several recent deep learning-based studies have been widely used on chest X-rays to detect the novel coronavirus. Coronavirus has killed thousands of people worldwide due to its ease of transmission. As a result, developing new systems for accurate and fast COVID19 detection is becoming increasingly important. X-ray Radiology professionals use imaging to diagnose coronavirus. However, this procedure takes a long time.

C. Early detection of COVID19 by deep learning transfer Model for populations in isolated rural areas

Author: M. Qjidaa, Y. Mechbal, M. Maaroufi

To combat the spread of COVID 19, the World Health Organization recommends widespread use of COVID 19 tests. Unfortunately, these tests are prohibitively expensive and are not available to people living in rural or remote areas. Furthermore, many rural and remote areas cannot afford the large-scale implementation of COVID-19 tests, which are extremely expensive, so having parallel diagnostic / test procedures that use artificial intelligence and machine learning and also take advantage of historical data will be extremely useful. It can also aid in the selection of those who will be tested first.

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D. A Novel Deep Convolutional Neural Network Model for COVID-19 Disease Detection
Author: Emrah Irmak
The most significant effect of this novel coronavirus is its tremendous contagiousness, which brings life to a standstill. COVID-19 diagnosis research has started to gather a lot of traction as soon as data on the nature of this hazardous virus is collected. Currently, the gold standard for diagnosing COVID-19 disease is based on swabs from the nose and throat, which is time-consuming and prone to human error.
These tests' sensitivity is insufficient for early detection. These drawbacks highlight the importance of developing a fully automated COVID-19 disease diagnostic system based on deep learning approaches and widely available X-ray procedures.

E. A Survey of Medical Image Analysis Using Deep Learning Approaches
Author: Aasia Rehman, Dr. Muheet Ahmed Butt
Medical Image Analysis has become a burgeoning topic of study, thanks to the advancement of Deep Learning algorithms.
Medical image analysis typically refers to the use of a variety of image modalities and techniques to obtain images of the human body, which may then be used by medical professionals to diagnose and treat patients.
This paper covers numerous improvements in Medical Image Analysis that have been made utilising DL approaches for various pattern recognition applications.

F. A New Classification Model Based on Stacknet and Deep Learning for Fast Detection of COVID 19 Through X Rays Images
Author: Jalal RABBAH, Mohammed RIDOUANI
With over seven million verified cases, the Coronavirus (COVID-19) is still spreading over the world. The findings could be significant if lockdown limitations are eased, and they underscore the need for the development of increasingly effective tools to combat the spread of illnesses and help successfully identify new infections more rapidly, at a reasonable cost, and with a low error rate.

G. Towards Framework for Edge Computing Assisted COVID-19 Detection using CT-scan Images
Author: Amit Kaul, Uttam Ghosh
The growing COVID-19 pandemic has shown the limitations of our current medical systems. Automated diagnostic research is needed to speed up the procedure while preserving accuracy and lowering processing needs.
Using Deep Learning approaches, an IoT and edge computing based architecture is suggested in this work to automatically diagnose COVID-19 from CT images of patients.

H. Rapid Implementation of COVID-19 AI Assisted Diagnosis System Based on Supercomputing Platform
Author: Bo Kang , Jia Guo, Xiangfei Meng
Aiming at the needs of large-scale training and computing of high performance problems on deep learning, the platform uses resource management and task scheduling as means to analyze and study the limitations of power-aware resource management methods, task scheduling models, and current scheduling algorithms to develop refined resource management scheduling technology, combined with fine scheduling under multidimensional constraints such as authority and function, to meet the efficient scheduling of operations and achieve efficient use of resources

I. A review on the mobile application Developed for COVID-19: An exploratory analysis 7 August 2020
Author: Muhammad Nazrul lslam,lyolitalslam,kazi Md munim
Systematic search criteria and selection, Data analysis, noticing- collecting-thinking approach, inclusion and exclusion process flowchart used. future scope can use multiple methods To collect and analyse data to investigate the validity of our Findings

J. QuantifyingCOVID-19 content in the online Health opinion warusing machine learning 11 may 2020
Author:, Richard Sear,Nicholas Johnson Restrepo, Nicolás Velásquez Sara El Oud
LatentAllocation(LDA),coherencealgorithms(CA), coherencemetric (CV), mechanistic model
Further research is also required to formulate the results across all platforms into Detailed, actionable consequences for policy makers. These Limitationswill be addressedin future work.

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K. COVID-19 Outbreak Predictionwith Machine Learning 23 April 2020
Author: Sina F. Ardabili, Amir Mosavi ,Pedram Ghamisi
Genetic Algorithm (GA), Particle Swarm Optimization (PSO), Multi-layered perceptron (MLP),Adaptive neuro fuzzy inference system (ANFIS) difficulty of infection areas, and the slight discrepancy between COVID-19 and other viral pneumonia in chest CT.

III. METHOD

The first step in the machine learning process is to collect data separately, from a range of sources.
The following stage is to correct the pre-processed data in order to resolve data-related difficulties and save storage space by eliminating invalid file data in order to choose useful data. However, the value of the dataset may be too high for the system to make a decision, so machine learning algorithms are designed to analyse data and extract useful and novel knowledge or hidden patterns or information from past experiences using other concepts such as statistics, theory control, and probability, among others.

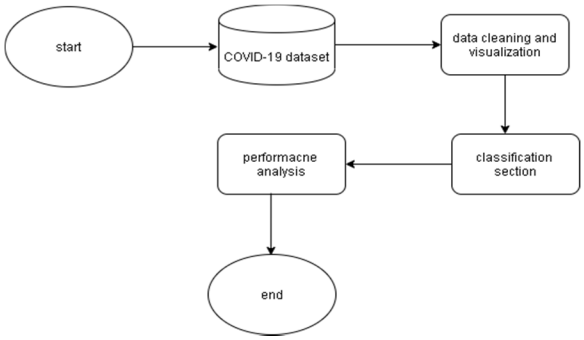


Figure: Advance System Architecture

Supervised machine learning techniques are used in this study to develop predictive models for COVID-19 infection using an epidemiology labelled dataset for positive and negative COVID-19 cases in Mexico, as well as supervised learning algorithms such as decision tree, logistic regression, and naive Bayes, support vector machine, and artificial neural network.
Much work has already been done to diagnose and predict COVID-19 infection and recovery using artificial intelligence. Data mining predictive models for COVID-19 patients' recovery were constructed using four data mining methods, however the model based on the decision tree had the highest accuracy of 99.85 percent. Convolutional neural networks were used to build innovative coronavirus predictors using x-ray pictures. For the automatic prediction of 2019-nCoV patients, the deep learning technique, which is one of the sub-branches of ML and is inspired by the structure of the human brain, is applied. This method included genome analysis using ML-controlled digital signal analysis, augmented decision-making, and Spearman's rank correlation coefficient analysis for validation. The study's findings support the scientific theory that the 2019-nCoV pandemic is caused by a bat, and the pandemic is classified as Sarbecovirus within the beta coronavirus family. The study's findings revealed that the RestNet pre-trained model had the best accuracy of the three models, at 98 percent. As a result, the model can assist health workers in making high-performance decisions in clinical practise, and it can also detect 2019-nCoV in the early stages of infection.

IV. CONCLUSION AND FUTURE WORK

Hence, we can conclude that the application building for the coronavirus detection can be successfully implemented and all the modules in the plan can be easily used to build a platform that runs on a Machine Learning algorithm. We plan to implement this module as soon as possible and can promise a application that is reliable and free from bugs, which can show great results for the better of a individual health and also the mankind. Not only corona virus but all the diseases can be added into the application so that the person can add symptoms and it can tell the current illness of the user. This app can be integrated with many physical devices like fitness band and many other devices to track proper health and fitness of a person and provide them with a better living This approach aids in addressing the issue of societal imbalance by dramatically reducing crime while also reducing the workload of police officers. In light of the current Covid-19 scenario, the system is also tested for accuracy when masks are made mandatory in public locations. This section yielded encouraging findings as well. Inside the campus, the system is installed and tested. With cloud architecture, a wide network of this system may be developed in the future by connecting several cameras into this system, and the accuracy and speed of tracing criminals can be checked at any location and time.

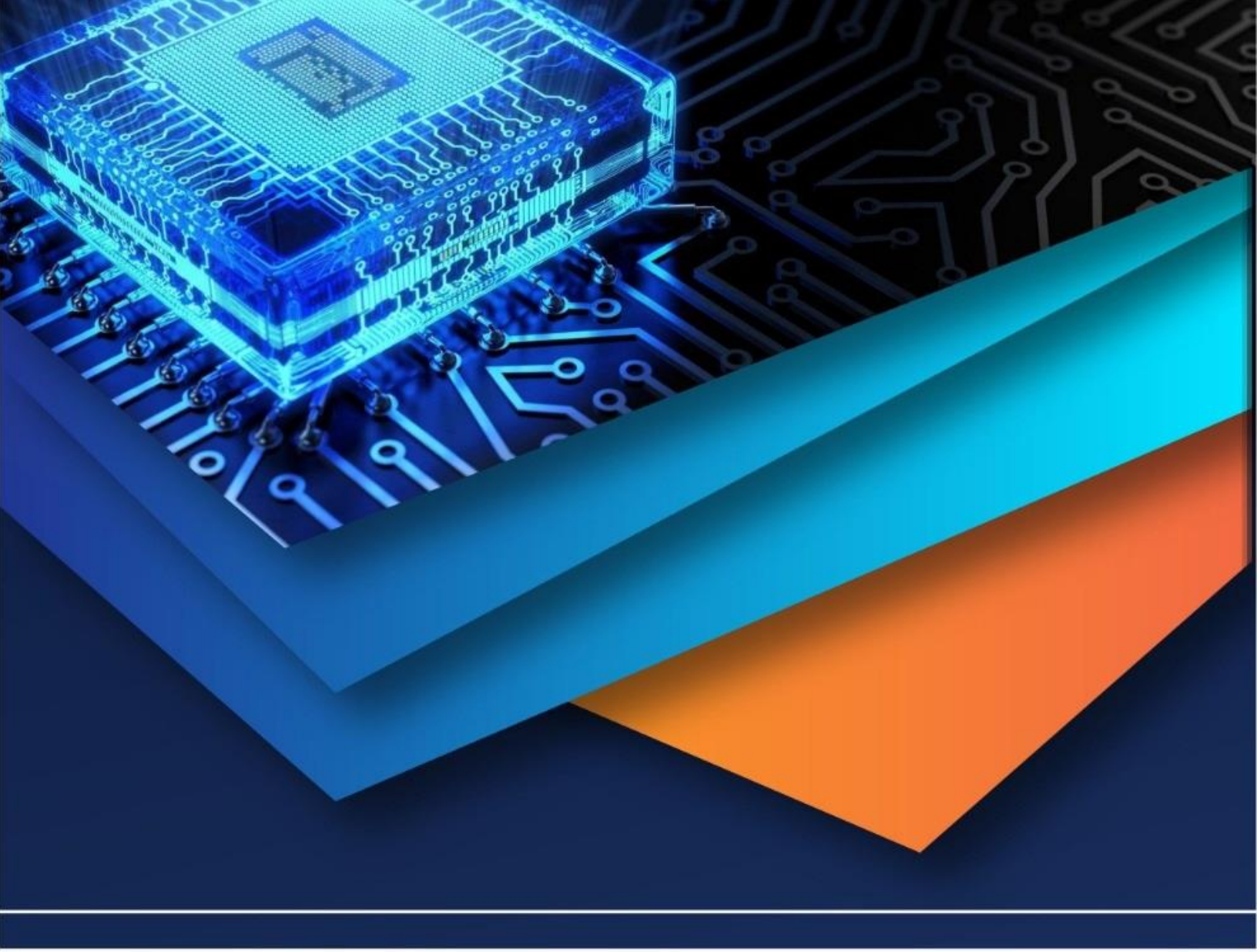
V. ACKNOWLEDGMENT

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