



Research on AI-Based System for COVID-19 Prevention

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Abstract: Since the first report of coronavirus sickness (caused by a novel severe acute respiratory syndrome) in Wuhan in December 2019, it has become a public health issue in China and even around the world. On January 30, 2020, the World Health Organization designated the outbreak as a Public Health Emerging of International Concern. This pandemic is wreaking on societies. The significant number of cases raises concerns about the spread of the pandemic, which may lead to the idea of bringing it to prevent further infection. Taking extreme precautions, on the other hand, may be effective in preventing this pandemic. Therefore, this research paper focuses on implementing a prevention measures like Face Mask and Social Distancing Detection model as an embedded vision system (The pretrained models such as the CNN, and YOLO). And the Arduino Uno Board is used as a microcontroller, in on Temperature sensor and hand sanitizer dispenser.

Index Terms: Mobile net, ResNet classifier and Arduino Uno board.

I. INTRODUCTION

End of 2019, "Coronavirus Disease" first found in Wuhan, and it rapid have emerge as a public health concern in China. This pandemic is taking a toll on societies and economies all around the world, culminating in a worldwide fitness disaster.

[1] it's associates emerging, communicable disease caused by Severe Acute metastasis Syndrome Coronavirus a pair of (SARS-CoV-2)

[2] everywhere the globe, particularly within the third wave, COVID-19 has been a major aid challenge

[3] several shutdowns in several industries are caused by this pandemic. In addition, many sectors akin to infrastructure construction and maintenance comes haven't been suspended owed to their significant result on people's routine life. By now, the virus has apace unfolded to the bulk of the countries worldwide.

[4] The statistics (26/03/2022) provided by the WHO show 480,333,071 confirmed cases, 6,144,279 deaths and 414,641,868 Recovered.

[5] per the centres for unwellness management and bar (CDC), coronavirus infection is transmitted preponderantly by metastasis droplets made once individuals breathe, talk, cough, or sneeze and painfully will increase aerosol emission when human speak and shout (loudly).

[6] Therefore, to forestall speedy COVID-19 infection, several solutions, akin to confinement and lockdowns, are instructed by the bulk of the world's governments.

[7] argued that as a result of strict stay-at-home will greatly impact people's means, the price of staying domestic can turn out to be outweighing the threat of contamination from going out.

[8] In precis, COVID-19 dealing with could contain a gratitude of the numerous elements that calibrate payoffs in order that each person and governmental selections coin closer to safety. It is genuine Nevertheless, it created a route for researchers in Engineering technologies. We have visible many studies topics, together with developing new Automated detection techniques and Detecting human beings with or without mask. Considering that there are a few mistakes with inside the outcomes of the early laboratory assessments and their delays, researchers targeted on specific options

[9] Therefore, the software of superior synthetic intelligence (AI) strategies coupled with CNN body paintings and microcontroller board radiological can result in a greater correct detection of the COVID-19 and might assist to manipulate the hassle of lack of specialised physicians in remoted villages.

[10] In this context, authors cautioned a unique convolutional neural network (CNN)-primarily based totally approach for detecting COVID-19, with person photographs. This approach lets in to locate sufferers with COVID19 which have, respectively, accuracy values of 93.15%. The accuracy of YOLO is the best one in comparison to different models. The approach is a well-prepared model, that's beneficial for doctors, mainly in mass screening.

In [11], the authors intention to locate and delimit clinical face mask in actual photographs. In the checking out phase, through utilising photographs from the BAO dataset and from a personal photograph dataset, above 95% of genuine tremendous and under 5% of fake tremendous quotes are achieved. In precis and without forgetting the prison facet of AI, the Deep getting to know method inherently touches upon a complete spectrum of law. While in practise, Artificial Intelligence is simply starting to come into its personal in phrases of its use through law and AI method-primarily based totally answers are nevertheless an open window for improvement and felony interpretation.

II. LITERATURE SURVEY

In this segment, we are able to speak, studies papers, reading Covid -19 prevention measuring machine & the primary aim is to interrupt chain response and create fitness toward society. This approach benefits, face detection the usage of Framework capture, social distance measuring machine the usage of pedestrians' footpopularity and sensor for Temperature in on sanitizer dispenser. In this paper we referred.

[3] A International Conference on Automatic Face was proposed by Stem H., Efros B.Katarya .

[4] A International Conference on Pattern Recognition was proposed by Toth D., Stuke L., Wagner A., Aach T.

[5] P. Campadelli, F. Cusmai, R. Lanzarotti, A colour-based data for face detection, (IST2003), 2003, 186–190.

[6] Tu J., Fu Y., Huang T.S. Locating nose-lips and head poses view by tensor poses. IEEE Trans. Circuits Syst. Video Technol. 2009;19(1):90–102.

[7] A Noncontact Body Temperature Measurement: Uncertainty Evaluation and Screening Decision Rule to Prevent the Spread of COVID-19 Giovanni Battista Dell'Isola 1, Elena Cosentini 2, Laura Canale 3, Giorgio Ficco 4 and Marco Dell'Isola.

[8] Social Distancing Detection with Deep Learning Model, All This technique used to solve prevention strategy.

III. RESEARCH METHODOLOGY

3.1 Our proposed system

System architecture is the conceptual model that defines a system's structure, behaviour, and viewpoints. A system architecture consists of an integrated component that work together to implement the overall structure. as shown in Fig. 1.

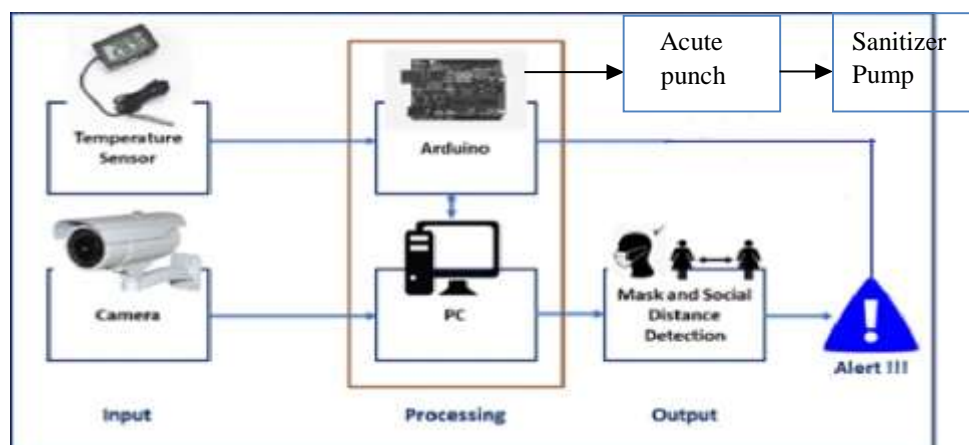


Fig. 1. The Model Architectures

According to our research, keeping a safe social distance, sanitizing and wearing a protective mask in public places can help in reduce Corona Virus transmission. In our proposed model, we used an object detector cascade to obtain the features of human faces. And data is then split up into four models: one for mask identification, temperature sensor, sanitization and the other for social distancing simulation.

[1] The first model is used to detect masks, and it also provides a percentage of how successfully the person is wearing the mask.

[2] In the second model, the distance between people is calculated using the Euclidean distance formula. A safe social distancing distance between people, according to popular notion, should be at least 2 meters. An alert will be sent if a person commits a crime two of these conditions.

[3] According to medical experts, if a person's body temperature increased, they are infected with the Corona Virus. To generate an alert of an infected person, we used an LM35 three-pin connected to an Arduino microcontroller board.

[4] Here the Arduino Uno (microcontroller board) is used, since it is easy to programme and operate all the controllers.

[a] To actuate the servo (to press the sanitizer tap), When a person's hand comes below the sanitizer obstructs the sensor line-of-sight (at low distance).

[b] And the Arduino board receives a low distance reading and instructs the servo motor to actuate and dispense.

IV. OVERALL SURVEY.

Our version is primarily based totally on varieties of facts: Using framework and sensor. [1] The Proposed body gadget makes use of all the facts to generate face recognition, social distance measuring. [2] Sensor outlet Temperature and hand sanitizer dispenser for every consumer action. [3] CNN, YOLOv2 used for framework and Arduino UNO board for 2d version.

4.1 The algorithms are as follows.

Step 1: Apply CNN set of rules to evaluate consumer photo and classify.

Step 2: Apply Decision tree to institution unmask and masked person.

Step 3: Apply Yolov2 record to identifies pedestrians' foot reputation after which undertaking pedestrians the usage of educated version the educated version the usage of the category ion of DaBirdseyerds eye concept

V. RESULTS AND DISCUSSION

Due to the urgency of controlling COVID-19, the utility price and significance of Engineering generation is a must. These paintings reviewed, the fundamental standards of face features. And social distances reproduced the education and trying out of the maximum used deep pretrained-primarily based totally CNN fashions at the framework after evaluated the results, this version is examined on an embedded imaginative and prescient device consisted of webcam wherein green real-time deep learning-primarily based totally strategies are implemented. Secondly in on sensor, temperature sensor the use of buzzer alert message and get in touch with much less sanitizer dispenser. The cause Our proposed device may be used, on top of things of COV19 unfold and create fitness environment.

VI. ACKNOWLEDGEMENT

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