Visvesvaraya Technological University

Jnana Sangama, Belagavi - 590018

A Project Work Phase-I (18CSP77)
Report on

"FACE MASK DETECTION"

Project Report submitted in partial fulfilment of the requirement for the award of the degree of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

Submitted by

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2021 - 2022

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CERTIFICATE

Certified that the Project Work Phase-I (18CSP77) entitled **"FACE MASK DETECTION"** is a bonafide work carried out by:

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in partial fulfilment for VII semester B.E., Project Work in the branch of Computer Science and Engineering prescribed by **Visvesvaraya Technological University, Belagavi** during the period of October 2021 to January 2022. It is certified that all the corrections and suggestions indicated for internal assessment have been incorporated. The Project Work Phase-I Report has been approved as it satisfies the academic requirements in report of project work prescribed for the Bachelor of Engineering degree.

……	…….	…….
Signature of the Guide	**Signature of the HOD**	**Signature of the Principal / Director**
[Mrs. Sougandhika Narayan]	[Dr. Rekha B. Venkatapur]	[Dr. Dilip Kumar K]

DECLARATION

We, the undersigned students of 7th semester, Computer Science & Engineering, KSIT, declare that our Project Work Phase-I entitled "**FACE MASK DETECTION**", is a bonafide work of ours. Our project is neither a copy nor by means a modification of any other engineering project.

We also declare that this project was not entitled for submission to any other university in the past and shall remain the only submission made and will not be submitted by us to any other university in the future.

Place:
Date:

Name and USN	**Signature**
YASHWANTH K (1KS18CS121)	**…….**
SUDHAKAR YASWANTH (1KS18CS101)	**…….**
PRATEEK HAVALE (1KS18CS070)	**…….**
VINOD H MALALI (1KS18CS118)	**…….**

ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task will be incomplete without the mention of the individuals, we are greatly indebted to, who through guidance and providing facilities have served as a beacon of light and crowned our efforts with success.

First and foremost, our sincere prayer goes to almighty, whose grace made us realize our objective and conceive this project. We take pleasure in expressing our profound sense of gratitude to our parents for helping us complete our Project Work Phase-I successfully.

We take this opportunity to express our sincere gratitude to our college **K.S. Institute of Technology,** Bengaluru for providing the environment to work on our project.

We would like to express our gratitude to our **MANAGEMENT,** K.S. Institute of Technology, Bengaluru, for providing a very good infrastructure and all the kindness forwarded to us in carrying out this project work in college.

We would like to express our gratitude to **Dr. K.V.A Balaji, CEO**, K.S. Institute of Technology, Bengaluru, for his valuable guidance.

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We like to extend our gratitude to **Dr. Rekha.B.Venkatapur**, **Professor and Head**, Department of Computer Science & Engineering, for providing a very good facilities and all the support forwarded to us in carrying out this Project Work Phase-I successfully.

We also like to thank our Project Coordinators, **Dr. K Venkata Rao, Professor, Dr.Vaneeta M, Associate Professor, Mr. Raghavendrachar S, Asst. Professor, Department of Computer Science & Engineering** for their help and support provided to carry out the Project Work Phase-I successfully.

Also, we are thankful to **Mrs. Sougandhika Narayan, Assistant Professor**, for being our Project Guide, under whose able guidance this project work has been carried out Project Work Phase-I successfully.

We are also thankful to the teaching and non-teaching staff of Computer Science & Engineering, KSIT for helping us in completing the Project Work Phase-I work.

YASHWANTH K
SUDHAKAR YASWANTH
PRATEEK HAVALE
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ABSTRACT

From the past Dec 2019 we all are fighting against the virus called Coronavirus (COVID-19). Still (2022) we are fighting against this virus. This virus is becoming new variant frequently like Delta, Omicron and Covariant, causing people all over the world. This virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, sing or breathe. To prevent from this virus all of us need to take precautions like by wearing a mask, sanitizing frequently and maintaining social distance. Because of negligence or carelessness some of people will not wear a mask. So need to alert people to wear mask. To overcome this problem come up with this project "FACE MASK DETECTION". It will distinguish people who are not wearing mask properly and give an alert message to concerned authorities.

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Chapter 1

INTRODUCTION

1.1 Overview

From the past Dec 2019 we all are fighting against the virus called Coronavirus (COVID-19). Still (2022) we are fighting against this virus. This virus is becoming new variant frequently like Delta, Omicron and Covariant, causing people all over the world. This virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, sing or breathe.

To prevent from this virus all of us need to take precautions like by wearing a mask, sanitizing frequently and maintaining social distance. Because of negligence or carelessness some of people will not wear a mask. So need to alert people to wear mask. In order to protect ourselves from the COVID-19 Pandemic, almost every one of us should wear a face mask. It becomes necessary to check if the people wear face mask in most public gatherings such as School, College, Malls etc.

Our project is used to detect whether person wearing the mask properly or not, and sends an alert message to the concerned authorities based on the alert message the authorities can take the required action, to implement our project to the real world usage we are using fast R-CNN and YOLO-V4-TINY model, We have chosen these two algorithms because these have fast training and testing rate and works for low end devices, we will select any one of these algorithm based on best performance and accuracy, first we train and test the model using the collected dataset after this our project is ready for deployment.

1.2 Purpose of the project

During this pandemic situation all of us wants to stay safe and healthy without affecting to these types of dangerous diseases, to stay safe we need to follow precautionary methods like wearing mask and maintaining social distancing. Some people wear the mask for the sake of government rules, to ensure that people are wearing mask properly or not our developing model is used to detect mask with percentage, and our model is also capable of detecting face mask in a motion.

1.3 Scope of the project

During this pandemic situation all of us wants to stay safe and healthy without affecting to these kind of harmful diseases, to stay safe we need to follow precautionary methods like wearing mask and maintaining social distancing. Some people wear the mask for the sake of government rules, to ensure that people are wearing mask properly or not our developing model is used to detect mask with percentage, and our model is also capable of detecting face mask in a motion, It can be used in public gatherings, schools, colleges, Theaters, Malls etc.

Chapter 2

LITERATURE SURVEY

2.1 Covid-19 Face Mask Detection Using TensorFlow, Keras and OpenCV:

The authors of this paper are Arjya Das, Mohammad Wasif Ansari and Rohini Bask, published in the year of 2020. The proposed method consists of a cascade classifier that is dataset with mask and without mask and a pre-trained CNN which contains two 2D convolution layers. They have used Machine Learning packages such as TensorFlow, Keras, OpenCV and Scikit-Learn. This paper only detects if a person wearing a mask or not, but It can be extended to detect if a person is wearing the mask properly or not.

2.2 Detection of Face Mask using Convolutional Neural Network:

The authors of this paper are Riya Chiragkumar Shah and Rutva Jignesh Shah, The publication year of this paper is 2021, They have Used the MobileNetV2 of convolutional neural network for detection of mask. According to this paper the project has 99% precision and recall this may lead to overfitting problem, because of this problem the algorithm loses its generalization power which leads to poor performance on new data

2.3 Face Mask Detection on Real-World Webcam Images:

The authors of this paper are Eashan Adhikarla and Brian D. Davison, published in the year of 2021. Here They used Yolo V5 Model to detect mask, Yolo V5 Model requires high computational devices to train and predict the images. It implements state of the art object detection algorithms, It demonstrated that existing object and face detection algorithm do not perform well for face detection task has it becomes more difficult for the algorithm to detect faces with partial facial visibility.

2.4 MobileNetV2 model for image classification:

The authors of this paper are Ke Dong, Yihan Ruan, Chengjie Zhou and Yuzhi Li, the publication year of this paper is 2020. They have used MobileNetV2 for detection of mask. This paper mainly focused on the performance of MobileNetV2 model for image classification,

MobileNet's model is efficient for mobile, embedded vision and other applications. MNV2 achieves higher accuracy rate then MNV1, large dataset can eliminate errors to the largest extent because the majority of possibility will be tested on large dataset.

2.5 Real Time Face Mask Detection and Recognition using python:

The author of this paper are Roshan M Thomas, Motty Sabu and Tintu Samson, The publication year of this paper is 2021. They have used CNN to detect face mask. According to the paper this project uses classification not object detection. This model is built on using Principal Component Analysis (PCA) and HAAR Cascade Algorithm, this application works very well in biometrics and surveillance.

2.6 The Face Mask Detection for preventing the spread of COVID-19 at Politeknik Negeri Batam:

The author of this paper are Susanto, Febri Alwan Putra, Riska Analia and Ika Karlina Laila Nur. Published in the year of 2020, here they have used YOLO V4 to detect face mask. It consists of two stages of detector, the first-stage detector consists of backbone, neck, input and dense prediction and the second stage consists of sparse prediction it predicts the object by detecting the boundary box and class of the object. The YOLO V4 has deep learning method that helps to detect object properly, this algorithm is able to distinguish people wearing mask or not but this Yolo V4 is heavy weight model and not computable to low end devices.

2.7 Face Mask Detection in real-time using MobileNetv2:

The authors of this paper are Mohamed Almghraby and Abdelrady Okasha Elnady. The publication year is 2021. Here they have used MobileNet V2 to detect face mask. This project is resource-efficient when it comes to real world implementation, therefor this model is used for safety purpose. Thus this model can be merged with embedded application systems at public gathering places like schools, colleges, malls etc. In this project they have used version 2 of mobile net that is compatible with both IP and non-IP cameras.

Chapter 3

PROBLEM IDENTIFICATION

3.1 Problem Statement

To detect people wearing mask and not wearing mask and generate an alert to the concerned authorities. During this pandemic situation all of us wants to stay safe and healthy without affecting to these types of dangerous diseases, to stay safe we need to follow precautionary methods like wearing mask and maintaining social distancing. Some people wear the mask for the sake of government rules, to ensure that people are wearing mask properly or not our model is used to detect mask with percentage, and our model is also capable of detecting face mask in a motion.

3.2 Project Scope

Our project is implemented in public gatherings to make sure that all people are wearing mask properly. This helps to avoid people getting affected from covid.

Chapter 4
GOALS AND OBJECTIVES

4.1 Project Goals:

The goal of this project is to detect whether a person is wearing a mask properly or not, and it detect mask with percentage, this method will also detect a face along with a mask in motion, and generate an alert for concerned authorities if people not wearing mask.

4.2 Project Objectives:

Using the light weight models to detect people wearing mask and not wearing mask and generate an alert to the concerned authorities.

- Determining light weight model using fast RCNN and YOLO V4-tiny algorithms.
- Using large dataset to get better accuracy.
- Predict if person wearing mask or not and generate an alert based on it.

Chapter 5

SYSTEM REQUIREMENT SPECIFICATION

5.1 Software Requirements:

- ✓ **Operating system:** Windows (7 or above) or Linux
- ✓ **IDE:** Anaconda
- ✓ **Language:** Python3.2 or above

5.2 Hardware Requirements:

- ✓ Webcam
- ✓ RAM 4GB
- ✓ ROM 512GB

Chapter 6

METHODOLOGY

6.1 Working-Flow

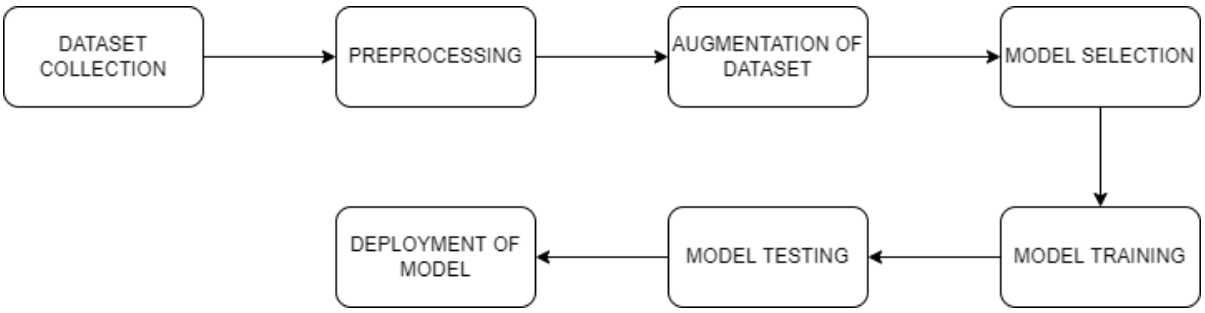

Fig 6.1 Block diagram

Fig 6.1 shows the working of our project, it consists of Dataset collection, Preprocessing, Augmentation of dataset, Model selection, Model training, Model testing, Deployment of model.

6.1.1 Data Collection:

With and without mask dataset as been collected from kaggle and google.

6.1.2 Data Preprocessing:

This phase is performing before training and testing of the data. In this there are four steps to perform that is resize, converting to an array, labeling, one hot encoding. First is converting all images uniformly with respect to size for the effectiveness of the model. Next step is to process all the images into an array. Then labeling all with or without mask images. And the last step is performing one hot encoding because many machine learning algorithms will not be performed directly on labeled data.

6.1.3 Data Augmentation:

Data Augmentation will help to increase our data by making alterations to already existing data. Such that by rotating angle, zooming etc.

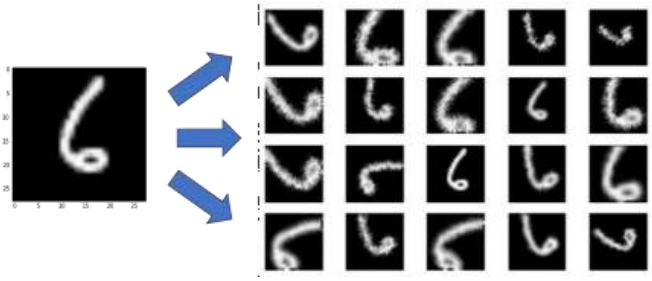

Fig 6.2 Shows example for data augmentation

6.1.4 MODEL SELECTION:

It is the process of selecting one model as final model for our project from the collection models. We will be choosing YOLOv4-tiny and Fast R-CNN algorithms because faster training and testing rate and works for low end devices. Size of YOLOv4-tiny is dramatically reduced. The number of convolutional layers in the CSP backbone are compressed. The number of YOLO layers are two instead of three and there are fewer anchor boxes for prediction.

Split Data:

From the dataset split data to 80% to train and 20% to test the model.

6.1.5 Model Training:

Training the model by feeding 80% of split data. It consists of the sample output data and the corresponding sets of input data that have an influence on the output.

6.1.6 Model Testing:

Testing of the fully build model by feeding 20% of split data. By checking result of this we will conclude about the model.

6.1.7 Deployment of the model:

Creating a Machine Learning model is not enough until we make it available to public use or to specific client use. After building and testing the model now it is ready to use.

Chapter 7

APPLICATIONS

This model is designed in such a way that detects the people who are not wearing masks in social gatherings. Concerned person will be alerted if a person is not wearing a mask or not wearing properly.

This application can be installed mainly in places like:

- ✓ Malls
- ✓ Schools / Colleges
- ✓ Pubs
- ✓ Function Halls
- ✓ Resorts
- ✓ Hospitals
- ✓ Transport Stations

Chapter 8

CONTRIBUTION TO SOCIETY AND ENVIRONMENT

● To detect whether a person is wearing a mask properly or not, and report to the concerned authority.

● To make sure everyone is wearing the mask in all the places.

REFERENCES

[1] Arjya Das, Mohammad Wasif Ansari, Rohini Basak "Covid-19 Face Mask Detection Using TensorFlow, Keras and OpenCV", IEEE 17th India Council International Conference (INDICON), 2020. (978-1-7281-6916-3/20/$31.00).

[2] Riya Chiragkumar Shah, Rutva, "Detection of Face Mask using Convolutional Neural Network", arXiv, 10th June 2021.

[3] Eashan Adhikarla Brian, D. Davison "Face Mask Detection on Real-World Webcam Images" ACM ISBN 978-1-4503-8478- 0/21/09, 2021, pp 139-144.

[4] Ke Dong, Chengjie Zhou, Yihan Ruan and Yuzhi Li, "MobileNetV2 model for image classification" 2nd International Conference on Information Technology and Computer Application (ITCA), 2020, pp 476-480 https://ieeexplore.ieee.org/document/9 422058.

[5] Roshan M Thomas, Motty Sabu, Tintu Samson, Shihana Mol B, Tinu Thomas "Real Time Face Mask Detection and Recognition using Python", IJERT, 2021, pp 57-62.

[6] Susanto, Febri Alwan Putra, Riska Analia and Ika Karlina Laila Nur Suciningtyas "The Face Mask Detection For Preventing the Spread of COVID-19 at Politeknik Negeri Batam" 3rd International Conference on Applied Engineering (ICAE), IEEE, 2020.

[7] Mohamed Almghraby and Abdelrady Okasha Elnady, "Face Mask Detection in Real-Time using MobileNetv2", IJEAT, Volume-10 Issue-6, August 2021, pp 104- 108.

APPENDIX – I

SURVEY PAPER

FACE MASK DETECTION

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ABSTRACT: From the past Dec 2019 we all are fighting against the virus called Coronavirus (COVID-19). Still (2022) we are fighting against this virus. This virus is becoming new variant frequently like Delta, Omicron and Covariant, causing people all over the world. When an infected person coughs, sneezes, sings, or breathes, the virus spreads in little liquid particles from their mouth or nose.

To avoid contracting the virus, we must all take precautions such as wearing a mask, cleaning hands frequently, and keeping social distance. Some people will not wear a mask due to carelessness or negligence. So need to alert people to wear mask.

To overcome this problem come up with this project "FACE MASK DETECTION". It will distinguish people who are not wearing mask properly and give an alert message to concerned authorities.

Keywords: Coronavirus (COVID-19)

INTRODUCTION

The SARS-CoV-2 virus causes Coronavirus (COVID-19) disease, which is an infectious disease. Fever, throat ache, cold, cough, and body pain are common symptoms of COVID-19 infection. People over the age of 65, as well as those with underlying medical disorders such as diabetes, cancer, or respiratory disease, are at risk for serious illness. COVID-19 can affect anyone of any age group and cause death at any age.

When an infected person breathes, speaks, sneezes, coughs, or sneezes, the virus spreads in little liquid particles from their mouth or nose. If infectious particles come into direct contact with the eyes, nose, or mouth, the virus spreads through the air. People can also become infected by touching their eyes, nose, or mouth after coming into contact with virus-infected things.

This paper comes with solution to find people wear mask properly or not using YoloV4-tiny and Fast R-CNN algorithms to achieve less weight model. By detecting we can alert the concerned authorities to take actions against them.

The remainder of this paper will be organized in the following manner: Section two is literature survey. Section three is Dataset. Section four is Hardware Requirements. Section five is Methodology.

LITERATURE SURVEY

[1] Arjya Das, Mohammad Wasif Ansari and Rohini Basak, uses some fundamental machine learning programmes like Tenserflow, Keras, OpenCV, and scikit-Learn to offer a simplified technique to achieve this goal. This accurately recognises the face in the image and then determines whether or not it has a mask on it. A cascade classifier and a pre-trained CNN with two 2D convolution layers are used in this method. This method can be expanded to determine whether or not a person is wearing the mask correctly.

[2] Riya Chiragkumar Shah and Rutva Jignesh Shah used 2911 images and Collected dataset from kaggle and RMFD. They proposed face mask detection utilising the MobileNetV2 convolutional neural network for face mask detection. Transfer learning was used. Transfer learning is the process of training a current model with a previously taught model. Precision and recall were both 99 percent.

[3] Eashan Adhikarala and Brian D. Davison provides a new real-world face mask identification dataset based on webcam photos collected from various places. There are eight object detection models and four face detection models in total. All eight models' performance characteristics were listed.

[4] MobileNetV2 Model for Image Classification In this paper Ke Dong, Yihan Ruan, Chingji Zhou and Yuzhi Li concentrated more on comparing MobileNetV1 and MobileNetV2 model than image classification. Results demonstrated that MobileNetV2 model achieved higher accuracy rate compared to MobileNetV1.

[5] Roshan M Thomas, Tintu Samson, Motty Sabu and Shihana Mol proposed face detection model using Convolution Neural Network(CNN) and Deep Learning for Real time detection and Recognition. In single and multiple face photos, this model can distinguish human faces. Noise removal and hole filling in colour photos, as well as augmentation, were done as part of the preprocessing.

[6] Susanto, Febri Alwan Putra, Riska Analia, Ika Karlina Laila Nur, Face mask detection was proposed using the YOLO V4 deep learning method. The YOlO V4 is capable of running twice as quickly as the other deep neural network for object detection. Politeknic Negeri Batam has deployed this real-time face mask programme. It's a model with a lot of muscle. Low-end gadgets are unable to compute.

[7] Mohamed Almghraby, Abdelrady Okasha Elnady, Face mask detection was implemented using deep learning, Tenser flow, Keras, and OpenCV. The classifier uses the MobileNetV2 architecture as a foundation to do real-time mask identification. Using 1800 photos with and without a mask, it was trained on a smaller dataset. 1000 photos were utilised for training and 800 for testing from the dataset. Due to the limited dataset, there is a risk of underfitting.

[8] Samuel Ady, Sanjaya and Surya Adi Rakhmawan, MobileNetV2 is a proposed machine learning algorithm that uses the picture classification approach. Google has created MobileNetV2, which has enhanced performance. The steps for implementing the model are collecting data, pre-processing, splitting the data, testing the model, and implementing the model. The developed model can tell whether or not someone is wearing a face mask.

[9] Mr. Kalla Kiran, Bokka Vamsi Kiran, Devarapalli Cheswanth Sai, Gaggala Vijay Vamsi, Pitta Rani Salomi, To address issues with the current system, a face mask detecting method has been proposed. Code completion, syntax and error highlighting, linter integration, and rapid fixes are all features of the existing system for coding aid and analysis. They successfully detected face mask violations using PyCharm, Notepad++, and Jupyter.

[10] Preeti Nagrath, Rachana Jain, Agam Madan, Rohan Arora, Piyush Kataria, suggested a real-time DNN-based face mask detection system based on MobileNetV2 and a single shot multibox detector (SSDMNV2). Both the training and development of the image dataset, which was separated into two groups of persons wearing masks and people wearing masks but not wearing masks, were completed successfully. The OpenCV deep neural networks approach utilised in this model produced the greatest results. MobileNetV2 image classifier was used to classify the image in a unique and accurate way.

DATASET

Two dataset will be used for this experiment. The model is trained and tested using a dataset. It is collected from kaggle and google. It consists of with or without mask images.

Fig 1

It consists of front pose without mask images.

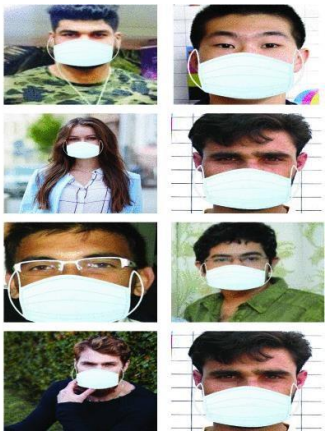

Fig 2

HARDWARE REQUIREMENTS

This section will explain about hardware components required for real time use.

As shown in Fig 3 we require webcam, PC, speaker. For detection we will use YoloV4-tiny or Fast RCNN by comparing accuracy. This model will be deployed in the PC. The concerned authorities will be alerted by a buzzer if a person is not wearing a mask or not wearing properly will pass by.

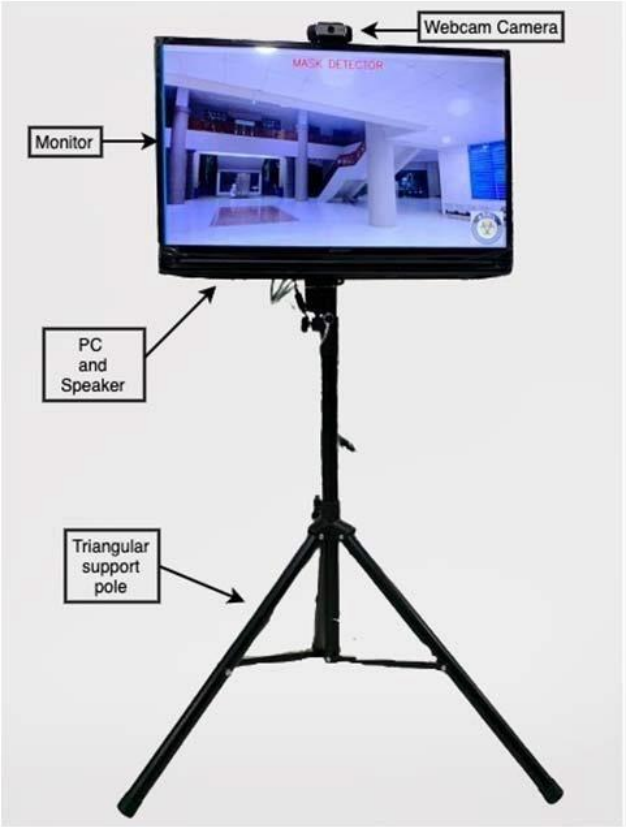

Fig 3

Face mask detection hardware is depicted in this diagram.

METHODOLOGY:

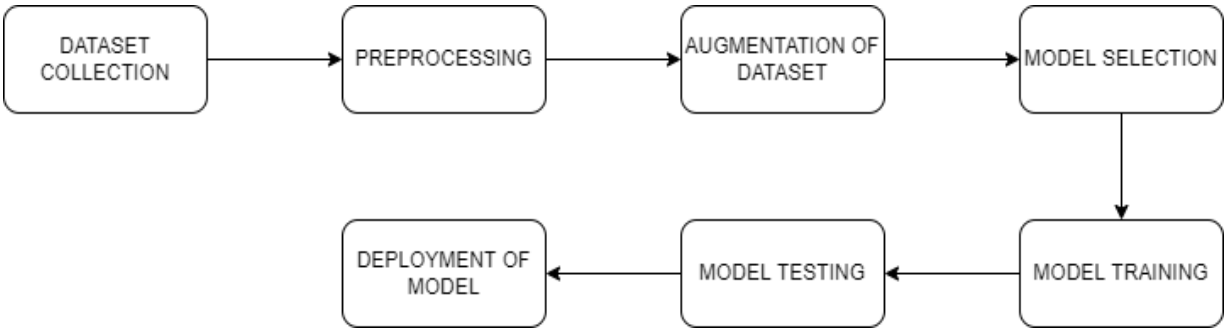

Fig 4 Block diagram

1. DATASET COLLECTION:

With or without mask dataset as been collected from kaggle and google.

2. DATA PREPROCESSING:

This phase is performing before training and testing of the data. In this there are four steps to perform that is resize, converting to an array, labeling, one hot encoding.

First is converting all images uniformly with respect to size for the effectiveness of the model. Next step is to process all the images into an array. Then labeling all with or without mask images.

And the last step is performing one hot encoding because many machine learning algorithms will not be performed directly on labeled data.

3. DATA AUGMENTATION:

Data Augmentation will help to increase our data by making alterations to already existing data. Such that by rotating angle, zooming etc.

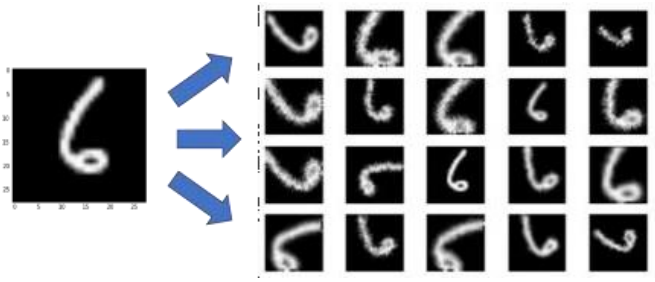

Fig 5 Shows example for data augmentation

4. MODEL SELECTION:

It is the process of selecting one model as final model for our project from the collection models.

We will be choosing YOLOV4-tiny and Fast R-CNN Algorithms because faster training and testing rate and works for low end devices [11]. YOLOv4-tiny's size has been drastically decreased. The CSP backbone's number of convolutional layers is reduced. There are two YOLO layers instead of three, and there are fewer prediction anchor boxes.

Split Data:

From the dataset split data to 80% to train and 20% to test the model.

5. MODEL TRAINING:

Training the model by feeding 80% of split data. It consists of the sample output data and the corresponding sets of input data that have an influence on the output.

6. MODEL TESTING:

Testing of the fully build model by feeding 20% of split data. By checking result of this we will conclude about the model.

7.DEPLOYMENT OF THE MODEL:

Creating a Machine Learning model is not enough until we make it available to public use or to specific client use. After the building and testing the model now it is ready to use.

CONCLUSION AND FUTURE WORK

As we know this Coronavirus disease has become our part of life mask is compulsory to prevent ourselves from Coronavirus. This model helps to predict if person wear mask or not. If not gives an alert to concerned authorities. This will be very helpful for the society concern.

Future research can be send an alert message to specific person who does not wear mask and also to the concern authority.

REFERENCES

1. Arjya Das, Mohammad Wasif Ansari, Rohini Basak "Covid-19 Face Mask Detection Using TensorFlow, Keras and OpenCV", IEEE 17th India Council International Conference (INDICON), 2020.

2. Riya Chiragkumar Shah, Rutva, "Detection of Face Mask using Convolutional Neural Network", arXiv, 10th June 2021.

3. Eashan Adhikarla Brian, D. Davison "Face Mask Detection on Real-World Webcam Images" ACM ISBN 978-1-4503-8478-0/21/09, 2021, pp 139-144. https://dl.acm.org/doi/10.1145/3462203.3475903

4. Ke Dong, Chengjie Zhou, Yihan Ruan and Yuzhi Li, "MobileNetV2 model for image classification" 2nd International Conference on Information Technology and Computer Application (ITCA), 2020, pp 476-480 https://ieeexplore.ieee.org/document/9422058.

5. Roshan M Thomas, Motty Sabu, Tintu Samson, Shihana Mol B, Tinu Thomas "Real Time Face Mask Detection and Recognition using Python", IJERT, 2021, pp 57-62.

6. Susanto, Febri Alwan Putra, Riska Analia and Ika Karlina Laila Nur Suciningtyas "The Face Mask Detection For Preventing the Spread of COVID-19 at Politeknik Negeri Batam" 3rd International Conference on Applied Engineering (ICAE), IEEE, 2020.

7. Mohamed Almghraby and Abdelrady Okasha Elnady, "Face Mask Detection in Real-Time using MobileNetv2", IJEAT, Volume-10 Issue-6, August 2021, pp 104-108.

8. Samuel Ady Sanjaya and Suryo Adi Rakhmawan, "Face Mask Detection Using MobileNetV2 in The Era of COVID-19 Pandemic", International Conference on Data Analytics for Business and Industry: Way Towards a Sustainable Economy(ICDABI), IEEE, 2020.

9. Mr.Kalla.Kiran, Bokka Vamsi Kiran, Devarapalli Cheswanth Sai, Gaggala Vijay Vamsi and Pitta Rani Salomi, "FACE MASK DETECTION USING MACHINE LEARNING", SSRN, 2021 https://ssrn.com/abstract=3925736

10. Preeti Nagrath, Rachna Jain, Agam Madan, Rohan Arora, Piyush Kataria and Jude Hemanth, "A real time DNN-based face mask detection system using single shot multibox detector and MobileNetV2", 2020 https://doi.org/10.1016/j.scs.2020.102692

11. Zicong jiang, Liquan zhoa, Shuaiyang Li and Yanfei Jia, "Real-time object detection method for embedded devices", arXiv, 2020.

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