DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
Project Work Phase 1 (18CSP77)

"Face Mask Detection"

By Batch 2021_CSE_11

Under the Guidance of

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INTRODUCTION

- Coronavirus disease 2019 (COVID-19) has globally infected over 2.5 billion people causing over 5 million deaths.

- Individuals with COVID-19 have had a wide scope of symptoms reported – serious illness.

- Fever, dry cough, tiredness, loss of taste and smell are the major symptoms of coronavirus

- Respiratory problems like difficulty in breathing.

- Elder people having lung disease can possess serious complications from COVID-19 illness as they appear to be at higher risk.

Cont...

- Many precautionary measures have been taken to fight against coronavirus. Among them cleaning hands, maintaining a safe distance and wearing a 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.

LITERATURE SURVEY

SI NO	TITLE OF THE PAPER	AUTHOR	JOURNAL AND PUBLICATION YEAR OF PAPER	METHODOLOGY	DISADVANTAGES
1	**Covid-19 Face Mask Detection Using TensorFlow, Keras and OpenCV**	1.Arjya Das 2.Mohammad Wasif Ansari 3.Rohini Bask	IEEE 2020	The proposed method consists of a cascade classifier and a pre-trained CNN which contains two 2D convolution layers	It can be extended to detect if a person is wearing the mask properly or not.

SI NO	TITLE OF THE PAPER	AUTHOR	JOURNAL AND PUBLICATION YEAR OF PAPER	METHODOLOGY	DISADVANTAGES
2	**Detection of Face Mask using Convolutional Neural Network**	1.Riya Chiragkumar Shah 2.Rutva Jignesh Shah	IEEE 2021	Used the MobileNetV2 of convolutional neural network for detection of mask.	Dataset size 2k images. 99% precision and 99% recall this may lead to overfitting problem.
3	**Face Mask Detection on Real-World Webcam Images**	1.Eashan Adhikarla 2.Brian D. Davison	IEEE 2021	Used Yolo V5 Model to detect mask	Yolo V5 needs high computational devices to train and predict the images.

SI NO	TITLE OF THE PAPER	AUTHOR	JOURNAL AND PUBLICATION YEAR OF PAPER	METHODOLOGY	DISADVANTAGES
4	**MobileNetv2 model for image classification**	1.Ke Dong 2. Yihan Ruan 3.Chengjie Zhou 4.Yuzhi Li	IEEE 2020	Used MobileNetV2 for detection of mask. Dataset size 5000 images.	Does not used transfer learning. Small dataset used so accuracy of the model will be less.
5	**Real Time Face Mask Detection and Recognition using Python**	1.Roshan M Thomas 2.Motty Sabu 3.Tintu Samson	IJERT 2021	Used CNN to detect face mask.	Uses classification not object detection.

SI NO	TITLE OF THE PAPER	AUTHOR	JOURNAL AND PUBLICATION YEAR OF PAPER	METHODOLOGY	DISADVANTAGES
6	**The Face Mask Detection For Preventing the Spread of COVID-19 at Politeknik Negeri Batam**	1.Susanto 2.Febri Alwan Putra 3.Riska Analia 4.Ika Karlina Laila Nur	IEEE 2020	Used YOLO V4 to detect face mask.	Yolo V4 is heavy weight model. Not computable to low end devices.
7	**Face Mask Detection in Real-Time using MobileNetv2**	1.Mohamed Almghraby 2.Abdelrady Okasha Elnady	IJEAT 2021	Used MobileNet V2 to detect face mask.	Trained on less dataset.

PROBLEM IDENTIFICATION, STATEMENT AND SCOPE

By above mentioned disadvantages and considering the advantages we come up with a solution.

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

PROBLEM SOLUTION

- To use a light weight model (Fast R-CNN , Yolo V4-tiny).
- Use large dataset.
- Predict if person wear mask or not and generate an alert based on it.

GOALS

- To detect whether a person is wearing a mask properly or not.
- Detect mask with percentage.
- This method will also detect a face along with a mask in motion.
- Generate an alert for concerned authorities if people not wearing mask.

METHODOLOGY
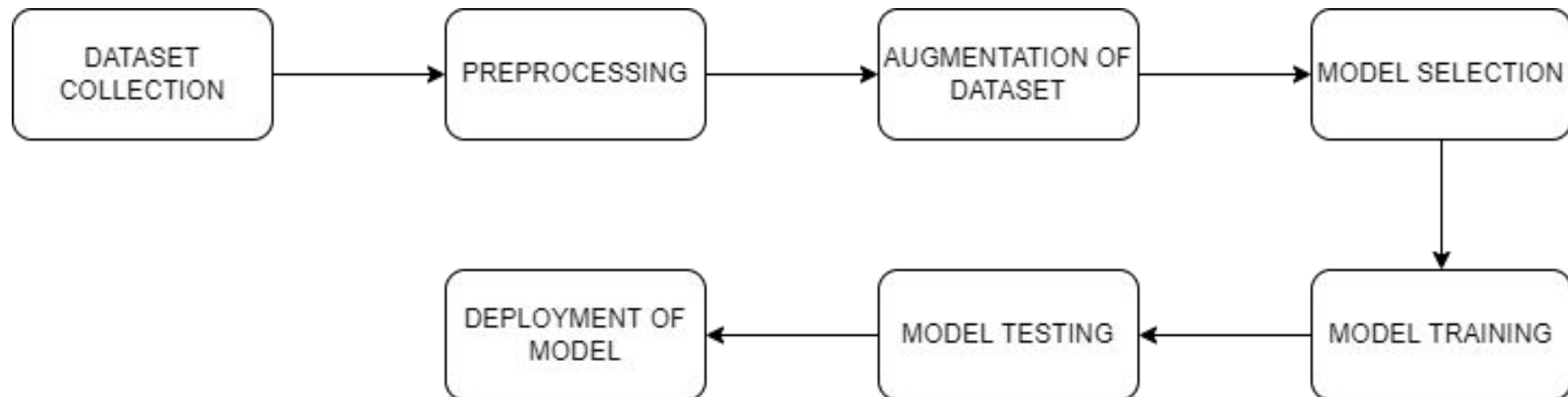
CONTRIBUTION TO SOCIETY

- To detect whether a person is wearing a mask properly or not and report to the concern authority.
- To make sure everyone wearing mask in all the places.

REFERENCES

- "Covid-19 Face Mask Detection Using TensorFlow, Keras and OpenCV" Arjya Das Department of Information Technology Jadavpur University Kolkata, India arjyadas1999@gmail.com Mohammad Wasif Ansari Department of Information Technology Jadavpur University Kolkata, India razamoeezraza@gmail.com Rohini Basak Department of Information Technology Jadavpur University Kolkata, India visitrohinihere@gmail.com.

- "Detection of Face Mask using Convolutional Neural Network" Riya Chiragkumar Shah Department of Computer Science and Engineering Nirma University S G highway, Ahmedabad – 382481, 20MCED11@nirmauni.ac.in Rutva Jignesh Shah Department of Computer Science and Engineering Nirma University S G highway, Ahmedabad – 382481 20MCED12@nirmauni.ac.in

- "Face Mask Detection on Real-World Webcam Images" Eashan Adhikarla Brian D. Davison Computer Science and Engineering Dept., Lehigh University Bethlehem, Pennsylvania, USA {eaa418|bdd3}@lehigh.edu
- https://ieeexplore.ieee.org/document/9422058

- "Real Time Face Mask Detection and Recognition using Python" Roshan M Thomas1 Dept. of Comp Science & Engineering Mangalam College of Engineering, Kottayam, India. Motty Sabu2 Dept. of Comp Science & Engineering Mangalam College of Engineering, Kottayam, India. Tintu Samson3 Dept. of Comp Science & Engineering Mangalam College of Engineering, Kottayam, India. Shihana Mol B4 Dept. of Comp Science & Engineering Mangalam College of Engineering, Kottayam, India. Tinu Thomas5 Dept. of Comp Science & Engineering Mangalam College of Engineering Kottayam, India.

- "The Face Mask Detection For Preventing the Spread of COVID-19" at Politeknik Negeri Batam Susanto Electrical Engineering Politeknik Negeri Batam Batam, Indonesia susanto@polibatam.ac.id Febri Alwan Putra Electrical Engineering Politeknik Negeri Batam Batam, Indonesia febry@polibatam.ac.id Riska Analia Electrical Engineering Politeknik Negeri Batam Batam, Indonesia riskaanalia@polibatam.ac.id Ika Karlina Laila Nur Suciningtyas Electrical Engineering Politeknik Negeri Batam Batam, Indonesia ikakarlina@polibatam.ac.id

- "Face Mask Detection in Real-Time using MobileNetv2" Mohamed Almghraby, Abdelrady Okasha Elnady.

- https://www.kaggle.com/ashishjangra27/face-mask-12k-images-dataset