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Social Distancing & Mask Monitor Drone for COVID Prevention

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***Abstract* – In 2019 a powerful epidemic began to engulf the world. By mid-2020 almost all of the countries facing the search were affected and had a local closure. To stop the spread of this infectious disease, it is important to ensure that people wear a mask in public and follow social norms. To ensure the enforcement of masks and social abstinence, constant enforcement and monitoring is necessary and a constant reminder to offenders. To make this work easier the construction of a drone that can easily monitor long distances easily and ensure that social movements and masks are worn in public places and social gatherings. Our specially designed drone uses a circuit-based circuit system compatible with 4x High RPM Quad-Coptor motors for easy navigation and control. RC control to ensure long distance flight. FP camera with live graphics transmission. Loudspeaker and voice receiver to warn / warn offenders away from the drone as soon as they are detected and detected by our drone. The drone can be used to remotely monitor Covid-19 limitations and issue alerts remotely with speakers. This will assist in easy monitoring / surveillance of large areas / long roads using drones.**

***Keywords* – Social Distancing, Mask, Monitor Drone, Covid Prevention.**

I. INTRODUCTION

For most people, a "drone" is a type of unmanned aerial vehicle (UAV): multirotor or multicopter. As the name implies, these machines fly in a straight line from two or more propellers traveling by car. The most popular customer types are quadcopters (4 rotors), but the commercial variants include hexacopters (6 rotors) and octocopters (8 rotors) to provide a great boost. While there are a variety of military and civilian drones out there, we will focus on standard multirotor drones and accessories.

What are the drones made of? A white flying plane. In order to fly, drones must be able to produce high enough to overcome their weight, so the selection of objects in the drone is governed by the drone's weight reduction.

Fig. 1.

The Frame: Holding it all Together:

The frame gives the drone its own design and handles all sub-systems. Because it operates mechanically, the most important independent energy source. For commercial drones, thermoplastics such as a variety of nylon,

polyester, and polystyrene, are popular options because they are less expensive to make complex parts using injection molding procedures.

Fig. 2.

Thermoplastics also offers good strength and low density, with several types with a strength of more than 100 MPa and a thickness of less than 2 g/cm 3. Many thermoplastics are also available at events that can be used for 3D printing parts, making thermoplastics a popular part of test drones.

Motors and Propeller: Lifting:

Without a source of anointing, the drone will never move. Motors running drones are standard electric motors with copper wings and permanent magnets. Motors houses can be chosen for weight loss, and can be thermoplastics or aluminum alloys that show good strength to weight.

Fig. 3.

Sensors: Drone Sensor System:

Multirotor drones perform a critical measurement every time they fly. If one car offers too much, the drone will tilt or flip. Just as the human body uses a complex network of nerves and nerves to balance itself while moving, multirotor drones use a combination of sensors and response processes to stay in the air.

II. METHODOLOGY

The concept is a response to Drone-based COVID-19 health monitoring platforms and individual surveillance by finding someone who does not follow proper social organization and face masking among crowds, staff,

vulnerable groups, i.e., adults in care facilities, students in restaurants, conference centers, crossings critical boundaries or infrastructure structures.

'Drone' is a term often used for an airplane flying like other aircraft (aircraft / pilot) but with a different aircraft. With the advancement of control technology, more drones can be used and operated with very little knowledge. Combined with the very low cost of most models, drones are available for most users.

Another is to use the use of drone safety facilities. Drones can also gather important information during and after natural disasters such as the time of corona virus infection which is why this is the best choice to choose.

We will use drones to check whether social cuts are taken care of and whether people have a mask on or not, we will monitor this display on the controller itself or on the external display. Idrone will be active on the at mega microcontroller.

Our project is a novel portable controller where we use an accelerometer to wirelessly control the movement of a quadcopter drone. There the camera will detect that if a person does not wear a mask or does not follow the public distance it will appear on our live screen and the speaker will mount on a drone that will warn the perpetrators.

III. PROJECT PLANNING

Scheme of Implementation /Project Completion schedule:

Work Task	July 21-Aug. 21	Sept. 21-Oct. 21	Nov. 21- Dec. 21	Jan. 22- Feb. 22
Information Gathering-Literature Survey.				
Finalization of the Aims and Objectives of Title.				
Development Experimental Set Up and Instrumentation or Case Study				
Experimentation/Data Collection				
Formulation of Model/Analysis of Model/Data				
Critical Analysis of the Formulated Model/Optimization and Sensitivity/Analysis.				
Initial Report Writing and Publication				
Final Report writing and Publication				

IV. MATERIALS UNDER CONSIDERATION

Step 1: Frame

The frame is important because that's where you can put some Multicopter stuff. Like Mobil, the Body of the Multicopter Framework.

The type of frames that are customized. In itself there are varieties such as PCB Fiber, Aluminum, Glass Fiber, Carbon, or others made of wood.

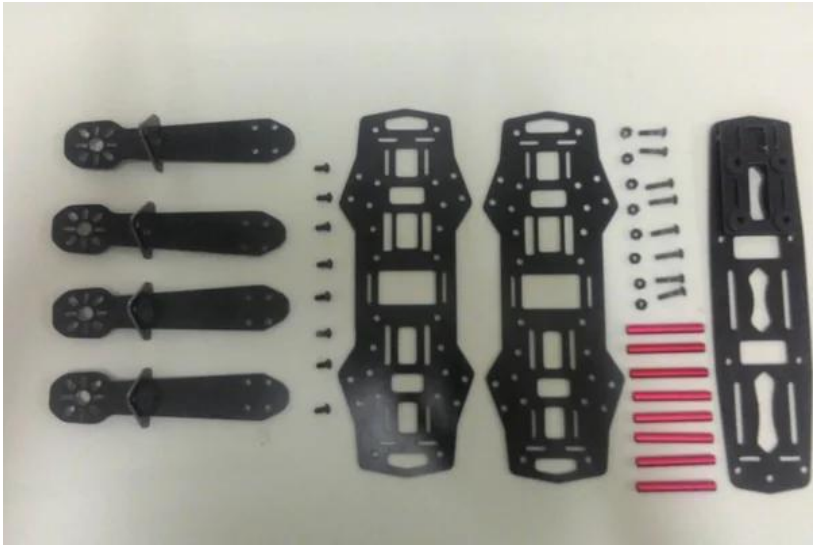


Fig. 5.

Step 2: Motor OR Rotor

The motor is used as a player so that the home-made quadcopter can fly and fly. There are so many types of motorcycles on the market, but there are some things you need to be aware of. The motor kilovolt is sorted by size, when it rises very quickly its kV motors and can rotate.

Fig. 6.

Step 3: ESC (Electronic Speed Controls)

Use the ESC contained in Simonk Firmware, the firmware is able to change the ESC update rate to provide instant instructions above the ESC in the car.

Fig. 7.

Step 4: Flight Controller

This is the central part of the Quadcopter, on which the Flight Controller is located at work where there is a gyroscope sensor for determining the position of the motion and an accelerometer sensor that reads the speed and slope of the quadcopter.

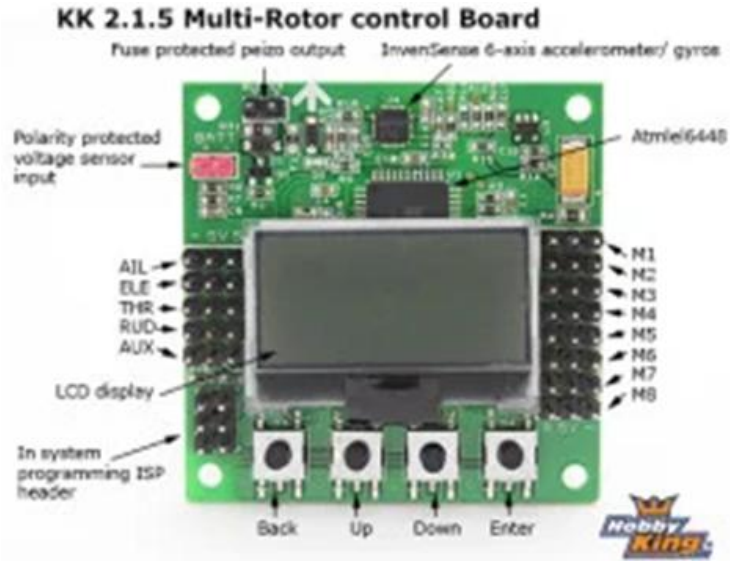


Fig. 8.

Step 5: Battery

Typically, a quadcopter using the LiPo (lithium polymer) battery, for the project in this article, uses a LiPo battery with a specification of 3000mAh 3S1P 20C.

Fig. 9.

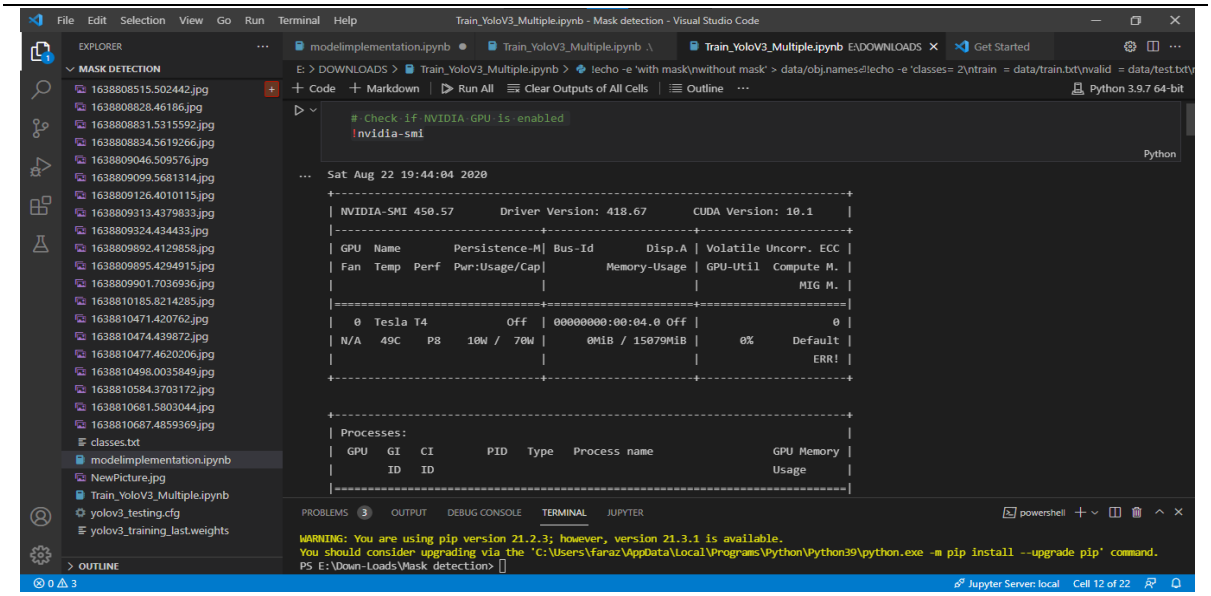
V. TRAINING YOLO MODEL

Our source code's main core is YOLOv3, one of the best algorithm which comprises the state-of-art object detection system for the real-time scenario.

It is accurate and fast that is also another reason to choose it.

I trained the YOLO v3 model according to our needs:

First we checked if NVIDIA GPU is enabled, and saw in output as 0% default error, so we proceed.



Then building dataset. To build dataset we need some relevant data. Additionally, because if there would be no datasets yolo would find it hard as there is no bounding data being found and errors would appear. So, we gather images from the internet or even taking pictures externally and had made a Dataset successfully.

Those dataset, are converted from .xml to .txt, to create the YOLO format to train our model.

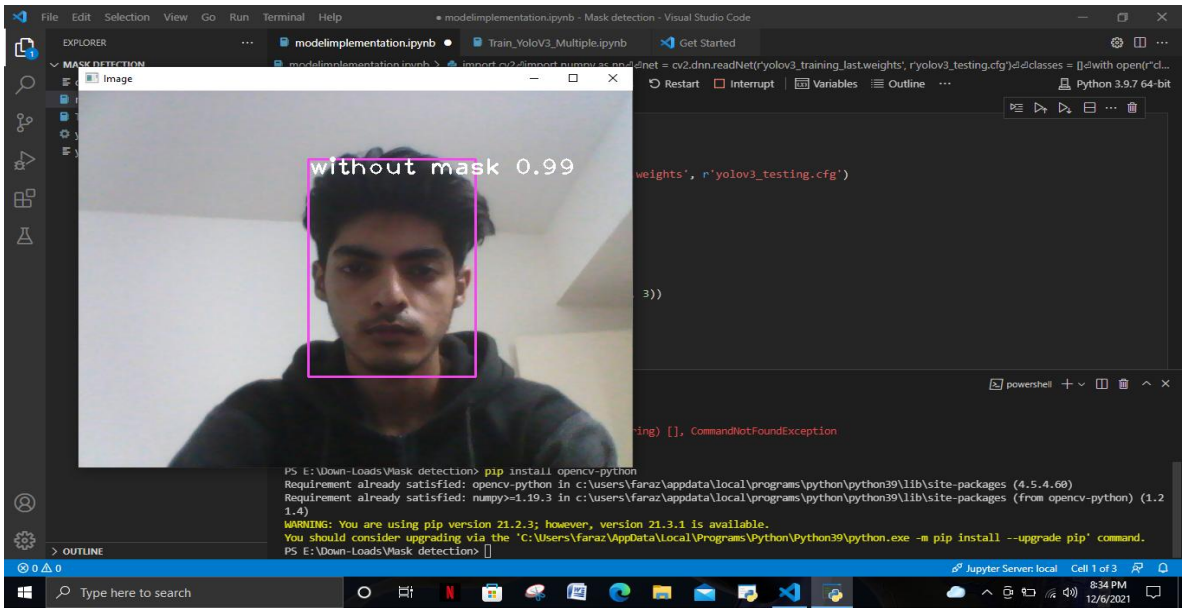
Then rearranged the dataset accordingly.

Cloning the darknet framework.

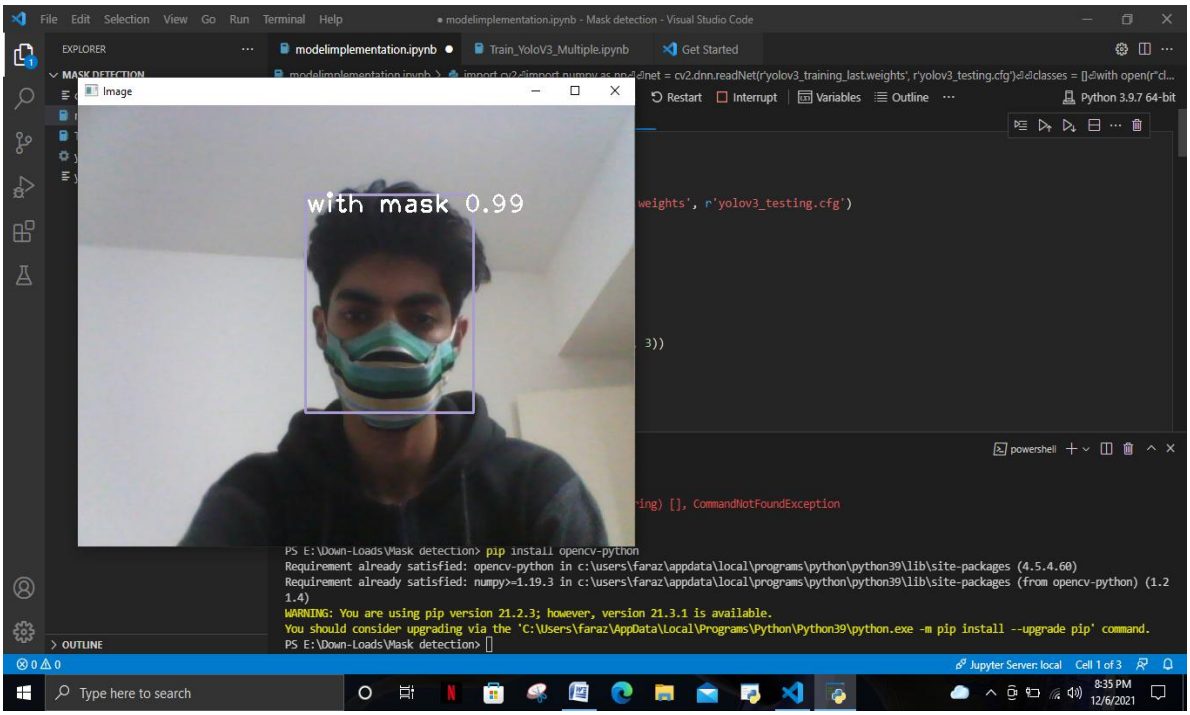
We had used the darknet framework as it is only going to extract the images from the dataset. I had called in my editor the cloned location of darknet framework. I have cloned darknet53 from git to successfully train the model or source code.

VI. RESULTS

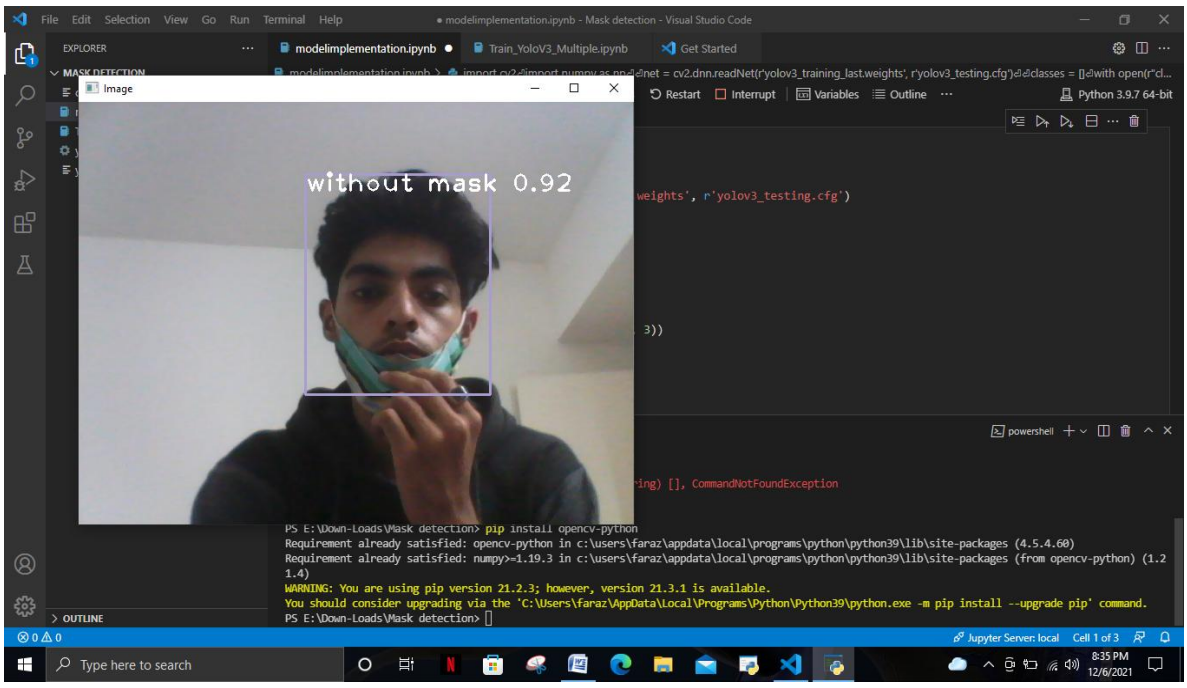
Without Mask



With Mask



Mask Partially On



VII. OUTCOME

1. Reducing the workload from frontline workers i.e.- Police.
2. Spreading awareness regarding social distancing & wearing Mask.
3. Monitoring the situation over a specific area.
4. Helping to punish the offenders.

5. Maintaining & helping people to follow the guidelines.

6. It can be even used as surveillance drones in industrial areas as well as border patrolling.

7. Sensoring places where there are crowd gatherings.

8. It can be used to collect real time images.

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