



SMART COVID-19 ALERT MECHANISM IN PUBLIC TRANSPORTATION

¹Mayur Pawar, ²Suraj Pawar, ³Amit Thete, ⁴Amit Pawar, ⁵S.M. Ingle

¹UG Scholar, Electrical Engineering Dept., AVCOE, Sangamner.

²UG Scholar, Electrical Engineering Dept., AVCOE, Sangamner.

³UG Scholar, Electrical Engineering Dept., AVCOE, Sangamner.

⁴UG Scholar, Electrical Engineering Dept., AVCOE, Sangamner

⁵Asst.Prof., Electrical Engineering Dept., AVCOE, Sangamner

¹mayurpawar053@gmail.com

²surajpawar671999@gmail.com

³amitthete53@gmail.com

ABSTRACT - The outbreak of Coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome (SARS) coronavirus 2 (SARS-CoV-2), has thus far killed over 3,000 people and infected over 80,000 in China and elsewhere in the world, resulting in catastrophe for humans. Similar to its homologous infection, SARS-CoV-2, which caused SARS in large number of individuals in 2003, SARS-CoV-2 may likewise be communicated from the bats and causes comparable side effects through a comparative component. Notwithstanding, COVID19 has lower seriousness and mortality than SARS however is substantially more transmissible and influences more older people than youth and a larger number of men than ladies. A COVID-19 danger counteraction and control dynamic model is proposed by the incongruent qualities of pandemic danger expectation. Right off the bat, the vulnerability quality of pestilence hazard was examined through the assortment of data on the work force stream, and the issue that the danger of the scourge couldn't be precisely anticipated because of the vulnerability of the faculty stream was settled, and crisis avoidance and control countermeasures were proposed for the conceivable COVID-19. Also, a model of pandemic danger avoidance and control examination is set up by using correlation function method, which provides a new research method for risk prevention and control of public health security. In this project, to avoid a spreading of Covid 19 in public transportation vehicles we propose a system which is smart Covid alert mechanism in vehicle. In this system people before entering the vehicle their thermal scan, mask inspection and sanitization of people will be done simultaneously.



I. INTRODUCTION

The prevention and control of the COVID-19 epidemic is a major challenge for all countries. How to predict the risk grade of the epidemic is an urgent problem for the prevention and control departments of all nations. In the dynamic of pestilence counteraction and control in different locales. At the point when traveler come before transport entryway then IP camera associate with raspberry pi3B+ is catch the traveler face and check if veil is wearing on the off chance that wear, temperature sensor (MLX90614) measure the temperature of the body. On the off chance that it is inside the breaking point (temp.then entryway is open the temp sensor is interface with arduino. assuming over two condition are fulfilled, arduino convey message to dc engine and entryway get open in any case entryway isn't open and bell give alert. at the point when entryway open traveler entering in bus then IR sensor detect passenger and send signal to motor pump through arduino and sanitize passenger through nozzle. Using laser and LDR technique in the luggage area, luggage gets sanitize through nozzle when luggage put in that area. when passenger leave the seat, PIR sensor detect it and seat get sanitize using nozzle for 5 second.

1.2 Objective :-The main objective of this project is to protect the human from Covid-19 pandemic. Clean surfaces, good air handling and hand hygiene are important, but COVID-19 is a virus that spreads between individuals. The essential danger is public transportation. The human disease hazard could be amazingly high because of length of openness time window, transmission courses and underlying qualities during movement or work. This can bring about the quick spread of the disease. In light of the transmission qualities of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and the nature of public transport sites. The prevention and control of the disease during the use of public transportation will be particularly important.

II. SYSTEM DEVELOPMENT

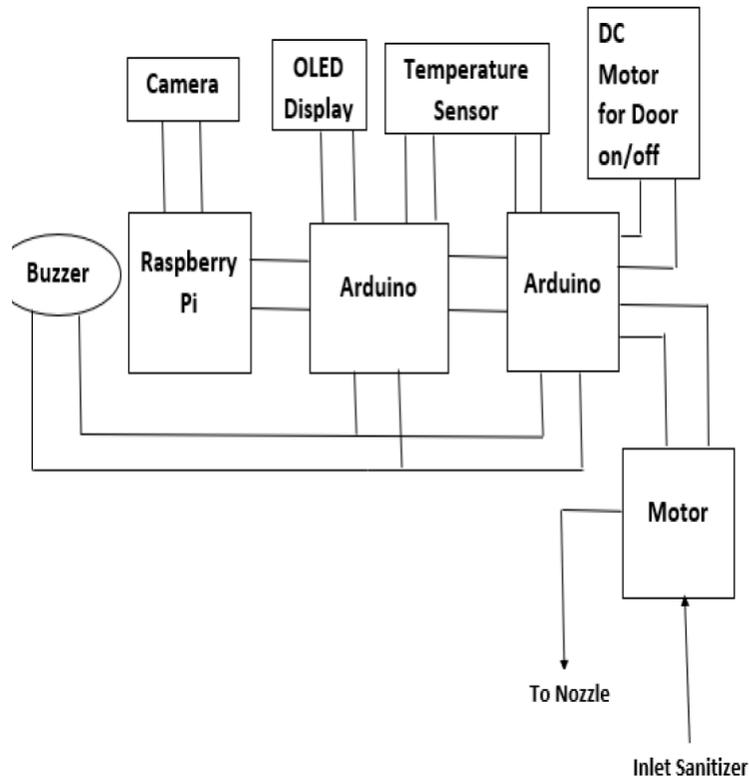


Fig. 1 - Block Diagram

RASPBERRY PI 3 is a development board in PI series. It can be considered as a single board computer that works on LINUX operating system. The board not only has tons of features it also has terrific processing speed making it suitable for advanced applications. PI board is specifically designed for hobbyist and engineers who are interested in LINUX systems and IOT (Internet of Things).



Fig.2 - Raspberry PI 3

RASPBERRY PI platform is most used after Arduino. Although overall applications of PI are less it is most preferred when developing advanced applications. Also, the RASPBERRY PI is an open source platform where one can get a lot of related information so you can customize the system depending on the need. Where the system processing is huge. Most ARDUINO boards all have clock speed of less than 100MHz, so they can perform functions limited to their capabilities. They cannot process high end programs for applications like Weather Station, Cloud server, gaming console etc. With **1.2GHz clock speed** and **1 GB RAM RASPBERRY PI** can perform all those advanced functions.

III. ARDUINO UNO

Arduino is an open-source electronics platform based on easy-to-use hardware and software. **Arduino** boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online.

3.1 Construction

The **Arduino Uno** board is a microcontroller based on the ATmega328. It has 14 digital input/output pins in which 6 can be used as PWM outputs, a 16 MHz ceramic resonator, an ICSP header, a USB connection, 6 analog inputs, a power jack and a reset button

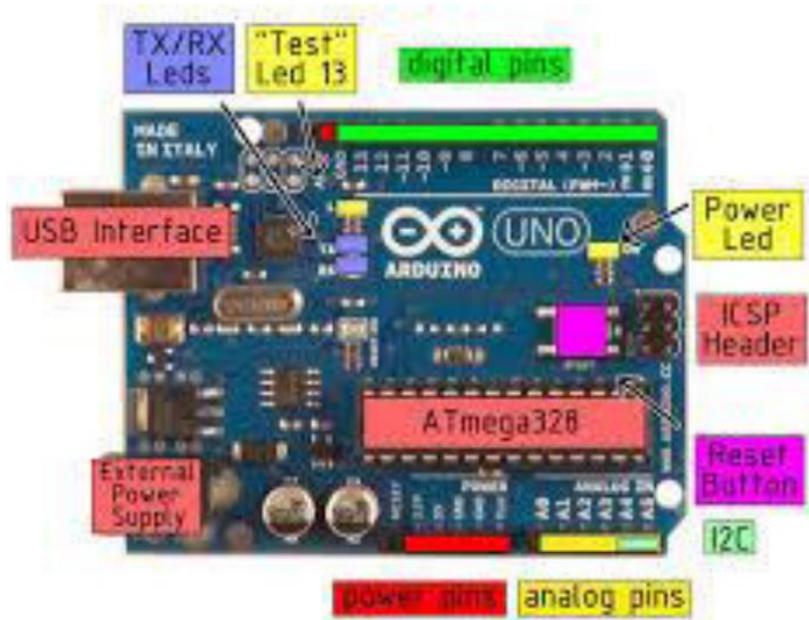


Fig.3 Arduino UNO

Working :

Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board. It consists of 14 digital inputs/output pins, each of which provide or take up 40mA current. Some of them have special functions like pins 0 and 1, which act as Rx and Tx respectively, for serial communication, pins 2 and 3-which are external interrupts, pins 3,5,6,9,11 which provides pwm output and pin 13 where LED is connected.

IV. DC MOTOR

The **DC Motor** is such dc motor that used in such applications where a high quantity of torque needed. Its construction is such that armature windings and field windings are linked in series combination. Such configuration helps to generate a large quantity of torque. The terminal characteristics of the series dc motor is like the parameters of the **dc motor**. Its operation is based on that flux has a direct relation with the current flowing through armature or I_A till the point where we get saturation. With the increment in the load connected to the motor flux also rises. Due to increment in flux speed of motor reduces.

4.1 Construction

The main parts of this motor are armature windings commutator stator field windings and brushes. Its outer part is stator that is created through the steel and provides cover to the internal parts of the motor. Here in the place of electromagnet poles are also used in some cases. Rotor of this motor comprises of armature windings these windings are linked to the commutators. The external power to this motor is given by the carbon brushes than armature windings.

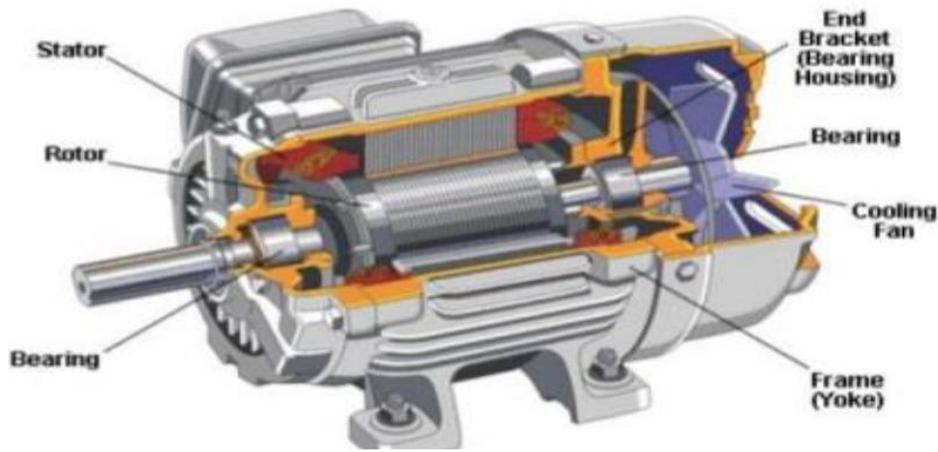


Fig..4- DC motor

An electric motor is an electrical machine which converts electrical energy into mechanical energy. The basic **working principle of a DC motor** is: "whenever a current carrying conductor is placed in a magnetic field, it experiences a mechanical force". The direction of this force is given by Fleming's left-hand rule and its magnitude is given by $F = BIL$. Where, B = magnetic flux density, I = current and L = length of the conductor within the magnetic field.

V. SANITIZER SPRAY THROUGH NOZZLE

For the purpose of hyper loop sanitization of hole person the spray required, by using the nozzle of sprinkler the spreading of sanitizer on human body will be done. It is made up of plastic having tiny holes, due to the pressure created by motor the speed of sanitizer increases which is flowing in hyper loop.

5.1 Construction

A **spray nozzle** is a precision device that facilitates dispersion of liquid into a spray. Nozzles are used for three purposes: to distribute a liquid over an area, to increase liquid surface area, and create impact force on a solid surface. A wide variety of spray nozzle applications use a

number of spray characteristics to describe the spray. Spray nozzles can be categorized based on the energy input used to cause atomization, the breakup of the fluid into drops. Spray nozzles can have one or more outlets; a multiple outlet nozzle is known as a compound nozzle. Multiple outlets on nozzles are present on spray balls, which have been used in the brewing industry for many years for cleaning casks and kegs. Spray nozzles range from heavy duty industrial uses to light duty spray cans or spray bottles

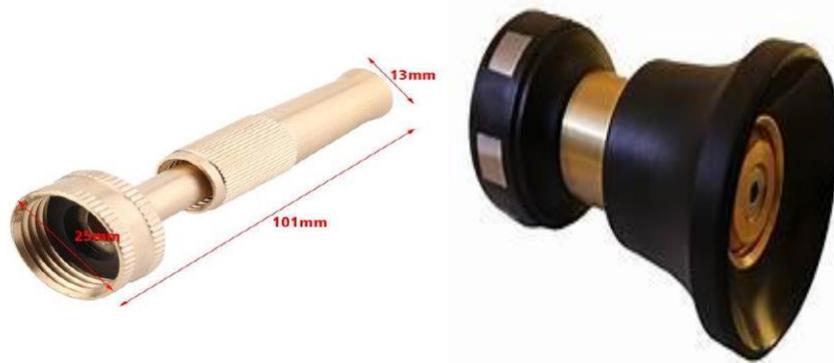


Fig.5- Nozzle

Single-fluid or hydraulic spray nozzles utilize the kinetic energy of the liquid to break it up into droplets. This most widely used type of spray nozzle is more energy efficient at producing surface area than most other types. As the fluid pressure increases, the flow through the nozzle increases, and the drop size decreases. Many configurations of single fluid nozzles are used depending on the spray characteristics desired.

VI. CONCLUSION

The people that affected by covid-19 is also travels through the public transport and private vehicle it is main issue of spreading of covid to avoid this problem and controlling the spreading of covid We have design a framework that is useful to try not to spread of Covid 19 in open transportation. Because cuurently Coronavirus is most risky issue and spread through contact so our framework serves to makes the public transportation more secure and not apprehensive capable for clients .This framework is easy to use and can be use in any public transport like Bus,Cab,Taxi,Trains and in private vehicle also.This sytem is Environment friendly and required very low power for operating the all sytem . There is no need of an external power supply for it.It operate on vehicle battery supply.

REFERENCES

1. McKinsey analysis—Metropolitan transportation authority financial impact assessment on 2020 Revenue of COVID-19.” Metropolitan Transportation Authority. 2020.



2. J. E. Harris, “The subways seeded the massive coronavirus epidemic in New York City,” The National Bureau of Economic Research, Cambridge, MA, Working Paper No. 27021, 2020.
3. J. Cordes and M. C. Castro, “Spatial analysis of COVID-19 clusters and contextual factors in New York City,” *Spat. Spatio-temporal Epidemiol.*, vol. 34, p. 100,355, Aug. 2020. doi: 10.1016/j.sste.2020.100355.
4. L. Codeca and J. Härrri, “Monaco SUMO traffic (MoST) scenario: A 3D mobility scenario for cooperative ITS,” in *Proc. SUMO2018, SUMO User Conf., Simulating Autonom. Intermodal Transp. Syst.*, 2018, pp. 43–55.
5. D. Stadler, “The modernization of the Long Island Rail Road,” *Long Island Hist. J.*, vol. 25-2, pp. 1–16, Dec. 2016. [Online]. Available: https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1050&context=lg_pubs
6. E. Manfredi, F. Iannotta, F. Romano, and S. Vanfiori, “Archaeology and tunnelling interaction in the railway project of Catania underpass in Sicily, Italy,” in *Tunnels and Underground Cities. Engineering and Innovation Meet Archaeology, Architecture and Art*. Naples, Italy: CRC Press, 2019, pp. 118–126.
7. F. Zhu, “Factor analysis of railway passenger transport demand in Eastern China,” in *Proc. 2nd Int. Conf. Educ. Econ. Manage. Res. (ICEEMR)*, Atlantis Press, Singapore, 2018, pp. 364–367. doi: 10.2991/iceemr-18.2018.83.
8. P. A. Montenegro, R. Calçada, H. Carvalho, A. Bolkovoy, and I. Chebykin, “Stability of a train running over the Volga river highspeed railway bridge during crosswinds,” *Struct. Infrastruct. Eng.*, vol. 16, no. 8, pp. 1121–1137, 2020. doi: 10.1080/15732479.2019.1684956.
9. M. S. Wang, “An overview of development of railways, tunnels and underground works in China,” *Tunnel Construct.*, vol. 30, no. 4, pp. 351–364, 2010