COVID-19 ADVANCE MULTIPURPOSE ROBOT FOR CITY

Ms.Sneha R. Bhange
Department of Information Technology
Tulsiramji Gaikwad Patil College of Engineering & Technology
Nagpur, India

Ms.Durga Kashyap
Department of Information Technology
Tulsiramji Gaikwad Patil College of Engineering & Technology
Nagpur, India

Ms.Heena B Kachhela
Department of Computer Science & Engineering
Tulsiramji Gaikwad Patil College of Engineering & Technology
Nagpur, India

Mr. Abhay Rewatkar
Department of Information Technology
Tulsiramji Gaikwad Patil College of Engineering & Technology
Nagpur, India

Abstract— **The current outbreak of pneumonia caused by a new corona virus (COVID- 19) in China is affecting an unexpected risk to normal global health. The spread of this corona virus to humans has increased dramatically because most of them do not understand the common symptoms of the virus or the flu. Due to the rapid growth rate, at present, infrared thermometers are widely used to monitor body temperature in densely populated areas. At the time of writing, the number of cases of COVID-19 cases worldwide had reached more than 42 million. The IoT revolution re-creates modern health care systems by integrating the technical, economic and social context. Since the beginning of the epidemic, there has been an urgent effort in a different research community to use various technologies to combat this global threat, and IoT technology is one of the pioneers in this area. Through early diagnosis of IoT, patient monitoring, and effective procedures described after the patient's recovery. IoT-based solutions against COVID-19 in three main phases, including early diagnosis, duration, and post-recovery. Therefore, rapid and accurate detection of coronavirus is why it has become increasingly critical. The proposed design has the ability to use Virtual Reality or VR so the live video scanning process will monitor with a VR screen to make it more realistic and minimal.**

Keyword:-Internet of Things, COVID-19, IoT, Healthcare, Virtual Reality Pandemic, Quarantine, Coronavirus.

I. Introduction

The COVID-19 pandemic, also referred to as the coronavirus pandemic, is an ongoing pandemic of coronavirus disease 2019 (COVID-19) caused by the transmission of severe acute respiratory syndrome coronavirus (SARS-CoV-2), which was first identified in December 2019 in Wuhan, China. The outbreak was declared a Public Health Emergency of International Concern in January 2020, and an epidemic in March 2020. As of 23 October 2020, quite 41.7 million cases are confirmed, with quite 1.13 million deaths attributed to COVID-19.Symptoms of COVID-19 are often relatively non-specific; the 2 commonest symptoms are fever (88 percent) and dry cough (68 percent). Less common symptoms include fatigue, respiratory sputum production (phlegm), loss of the sense of smell, loss of taste, shortness of breath, muscle and joint pain, pharyngitis, headache, chills, vomiting, coughing out blood, diarrhea, and rash. the quality test for presence of SARS-CoV-2 uses RNA testing of respiratory secretions collected employing a nasopharyngeal swab, though it's possible to check other samples. This test uses real-time rRT-PCR which detects the presence of viral RNA fragments

As this test detects RNA but not infectious virus, its ability to work out duration of infectivity of patients is restricted. Positive tests are shown to not correlate with future excess deaths. consistent with official Chinese sources, these early cases were mostly linked to the Hunan Seafood Wholesale Market, which also sold live animals.

The term Internet of Things (IoT) was first coined during a presentation about implementing Radio-frequency identification (RFID) within the Protector and Gamble Company by Kevin Ashton for supply chain management. IoT is a complicated technology which will link all smart objects together within a network with no human

interactions. More simply, any object which will be connected to the web for further monitoring or transferring data has the chance to be an IoT device. the present global challenge of the pandemic caused by the novel severe respiratory syndrome coronavirus 2 presents the best global public health crisis since the pandemic influenza outbreak of 1918 . consistent with the last report of the planet Health Organization (WHO), as of September 2020, the amount of confirmed COVID-

19 cases passed 40 million people with an approximate huge price number of 100,000 people. But this robot can do that job more efficiently The impact of COVID-19 is vast, varied, complex and evolving. IoT is a complicated technology which will link all smart objects together within a network with no human interactions; More simply, any object which will be connected to the web for further monitoring or transferring data has the chance to be an IoT device. From major disruptions to the worldwide economy relationships, no country business, community, family or individual has escaped Impact Designing a intelligent device for pandemic COVID19 and night patrolling robot.

II. Literature Review
a. Internet of Things for Current COVID- 19 and Future Pandemics: An Exploratory Study

The IoT revolution is reshaping modern healthcare systems by incorporating technological, economic, and social prospects. It is evolving healthcare systems from conventional to more personalized healthcare systems through which patients can be diagnosed, treated, and monitored more easily.COVID-19 is considered as both a global health crisis and an international economic threat. The restrictions put in place response to the COVID-19 pandemic have had a devastating effect on many businesses, marketplaces, economics, society and our lives.

The full health, social, and economical consequences of this pandemic and its restrictions will take time to be fully recognized and quantified, however, there are lots of ongoing efforts in research and industrial communities to utilize different technologies to detect, treat, and trace the virus to mitigate its impacts. Internet of Things (IoT) technology has shown promising results in early detection, quarantine time, and after recovery from COVID-19, however, as we learn more about the virus and its behavior we should adjust and improve our approaches in different phases. While the world is struggling with COVID-19 pandemic, many technologies have been implemented to fight

against this disease. One of these technologies is the Internet of Things (IoT), which has been widely used in healthcare industry. During COVID-19 pandemic, this technology has shown very encouraging results dealing with this disease. In this paper, we conduct a survey on the recent proposed IoT devices aiming to assist health care workers and authorities during the COVID19 pandemic

b. Multi-Robot Multi-Task Allocation for Hospital Logistics

A number of materials are delivered inside a hospital, and a fleet of autonomous navigating mobile robots are applied to replace these heavy mobility works. To increase the efficiency of using multiple robots, more than one delivery tasks can be assigned to a robot instead of delivering only one package at a time. Many various materials are delivered inside a hospital, and a fleet of autonomous navigating mobile robots are introduced to replace such heavy mobility works. Instead of using the robot for delivering one package at a time, (STA) more than one tasks can be assigned to a robot (MTA) to increase the efficiency of using multiple robot. Therefore, a task allocation algorithm is introduced to enable multi-robot-multi-task allocation. The performance is tested in the simulator which models hospital environment. And it shows that the efficiency of using the same number of robot increases dramatically when the multi-task allocation algorithm is applied.

c. Intelligent Surveillance and Security Robot Systems

This paper presents a new security solution that integrates vision, intelligent algorithm and robot technology. The solution can be applied to guarding large facilities, critical infrastructures and national borders. While conventional images provided by cameras, the proposed solution uses machine intelligence to compensate for human factors and robots to provide immediate counter response. an intelligent surveillance and security solution that incorporates robots is presented. The proposed solution is developing In such an environment, operators are prone to failure to detect an abnormal situation due to human factors, and recorded images from DVRs were mostly referred only after an incident to search for clues or evidences for tracking .To overcome the problem mentioned above, intelligent surveillance and security robot systems are proposed. The system is composed of surveillance robots, intelligent

cameras, fire alarm cameras, ANPR (Automobile Number Plate Recognition) cameras, ground surveillance radars, video analytic algorithms, DVRs, video walls with multiple monitors, and an integrated software platform on a computer network.

d. TOWARD A NOVEL DESIGN FOR CORONAVIRUS DETECTION AND DIAGNOSIS SYSTEM USING IOT BASED DRONE TECHNOLOGY

The spreading of this coronavirus that infected people is highly increase because most of them do not realize the common symptom of this virus is fever or high body temperature. Because of the spreading keep rising rapidly, nowadays, infrared thermometers are being used everywhere to check the body temperature in places with large number of people An innovative real-time early detection of coronavirus and monitoring system using an Unmanned Aerial Vehicle (UAV) or drone which integrated with thermal camera has been developed. The proposed system can detect ground surface temperatures from a height above the ground. The drone can also send the measured data to a server to be displayed on a smartphone application. As the latest big issue nowadays that happened across the world, the spreading of coronavirus give so much attention and awareness among people. Early detection of the coronavirus symptoms will be one of the suitable ways to prevent the spreading of coronavirus

e. COVID-SAFE: An IoT-based System for Automated Health Monitoring and Surveillance in Post-Pandemic Life

The proposed framework consists of three parts: a lightweight and low-cost IoT node, a smartphone application (app), and fog-based Machine Learning (ML) tools for data analysis and diagnosis. The IoT node tracks health parameters, including body temperature, cough rate, respiratory rate, and blood oxygen saturation, then updates the smartphone app to display the user health conditions. The paper proposed a Radio Frequency (RF) distance-monitoring method which operates both for indoor and outdoor environmentsto notify users to maintain the physical distancing. Applying ML algorithms on body parameters makes it possible to monitor participant's' health conditions and to notify individuals in real time.

A voice coughing-detector continually monitors the user's voice and records the number and severity of coughing. The fog-based server is implemented to process received data from an IoT node using a cellular network or LoRa connection.

In addition, locally processing the data makes it possible to use the IoT node in the environments without internet connectivity or fog-based networks. The system can assist participants in monitoring their daily activities and minimize the risk of exposure to the Coronavirus

III.   Conclusion

While the world is struggling with COVID-19 pandemic, many technologies have been implemented to fight against this disease. One of these technologies is the Internet of Things (IoT), which has been widely used in healthcare industry. During COVID-19 pandemic, this technology has shown very encouraging results dealing with this disease. In this paper, we conduct a survey on the recent proposed IoT devices aiming to assist health care workers and authorities during the COVID19 pandemic. we review the IoT-related technologies and their implementations in three phases including "Early Diagnosis," "Quarantine Time," and "After Recovery." In each phase, we evaluate the role of IoT enabled/linked technologies including robots by IoT and smartphone applications in combating COVID-19. IoT technology are often extremely efficient for this pandemic, but it's also critical to think about the privacy of knowledge. By implementing Iot Technology proudly during taking precautions by COVID - 19 pandemics with peace of mind . As a result , we can perform for better actions regarding pandemics and also for human security in day / night as a expected result have to design multipurpose robot for battle with COVID - 19 and human security in day/night also with scanning the temperature and regularly sanitization in public area with time gap and also detect any misbehave with women and man in day / night with sound and image capturing , if any detection of not wearing mask and cross temperature (above 97'), or any misbehaving with humans , then result gave to control room for taking action . Consequently, the impact of those sorts of disease including the infection, and hospitalization, and death rate are often significantly reduced

Reference

[1] Mohammad Nasajpour , Seyedamin Pouriyeh , Reza M. Parizi , Mohsen Dorodchi, Maria Valero, Hamid R. Arabnia "Internet of Things for Current COVID-19 and Future Pandemics: An Exploratory Study"

[2] Seohyun Jeon, Jaeyeon Lee "Multi-Robot Multi-Task Allocation for Hospital Logistics"

[3] Kyunghoon Kim, Soonil Bae, and Kwanghak Huh "Intelligent Surveillance and Security Robot Systems"

[4] M. N. Mohammed, Nurul Aslamiah Hazairin, S. Al-Zubaidi, Sairah A.K. , Safinaz Mustapha, Eddy Yusuf, "TOWARD A NOVEL DESIGN FOR CORONAVIRUS DETECTION AND DIAGNOSIS SYSTEM USING IOT BASED DRONE TECHNOLOGY"

[5] COVID-SAFE: An IoT-based System for Automated Health Monitoring and Surveillance in Post-Pandemic.