IOT BASED COVID -19 OXYGEN AND TEMPERATURE MONITORING
NAMED (COVASAVOUR)

Nitish Kumar, Dipesh Kumar Sharma,
Ritesh Pawar
Department of Electronics and Communication Engineering,
Lovely Professional University, Phagwara, Punjab, India.

Abstract- IOT describes the network of physical object. Things that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet.[1][2][3][4].Things have evolved due to the convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), and others all contribute to enabling the Internet of things. In the consumer market, IOT technology is most synonymous with products pertaining to the concept of the "smart home", including devices and appliances (such as lighting fixtures, thermostats, home security systems and cameras, and other home appliances) that support one or more common ecosystems, and can be controlled via devices associated with that ecosystem, such as smartphones and smart speakers. IOT can also be used in healthcare systems. There are many applications like military applications, consumer applications, health care, elder care, smart home applications, transportation, manufacturing , farming ,agriculture etc. use of IOT based applications.

Keywords: IOT based, Arduino UNO, machine learning, sensor based

1. INTRODUCTION

Since the last days of the previous year which is 2020, the occurrence of novel infectious flu-alike respiratory disease COVID-19 caused by SARS-Cov-2 virus (also known as coronavirus) has affected almost every aspect of people's lives globally. First, it was discovered in China, but spread quickly to other continents in just few weeks. Until July 11th, 2020, the total number of identified cases was 12,653,451, while taking 563,517 lives worldwide. Common symptoms of coronavirus disease include fever, tiredness, sore throat, nasal congestion, loss of taste and smell. In most cases, it is transmitted directly (person to person) through respiratory droplets, but also indirectly via surfaces. Incubation period could be quite long and varies (between 14 and 27 days in extreme cases. Furthermore, even asymptomatic persons (almost 45% of cases) can spread the disease making the situation even worse. Therefore, the usage of face masks and sanitizers has shown positive results when it comes to disease spread reduction. However, the crucial problem is the lack of approved vaccine and medication. Due to these facts, many protection and safety measures were taken by governments in order to reduce the disease spread, such as obligatory indoor mask wearing, social distancing, quarantine, self-isolation, limiting citizens' movement within country boarders and abroad, often together with prohibition and cancellation of huge public events and gatherings [5].After knowing about these points we have to make an oxygen, temperature monitoring sensors machine, which will help us to find out the people who are infected by corona virus. With the help of oxygen and temperature sensors, cloud computing, raspberry Pi, Arduino UNO, we have to make this project with the help of these devices. As we know about this pandemic, this virus will spread over air or person to person, this virus is invisible we can't see that virus with naked eyes. So if a person effected by this virus their body temperature, oxygen level will increase, and they will not inhale oxygen properly they found difficulty whenever they inhale oxygen or take oxygen. So we are working on certain factors, which help us how to find effected person

MERITS OF USING IOT SYSTEM

The advantages of the Internet of Things (IOT) have changed the use of devices in the workplace. In today's digital landscape, devices, machines, and objects of all sizes can automatically transfer data through a network, effectively talking with each other in real time. [6].

Merits of the IOT devices:

1. Cost reduction
2. Efficiency and productivity
3. Business opportunities
4. Customer experience
5. Mobility and agility

1. Cost reduction

The more businesses use of IoT devices to operations and increase profit, the more IoT technologies will be help those businesses succeed. IoT devices are already make an impact on companies' bottom lines. Maintenance cost can be impacted when IoT devices are used with sensors, to keep business equipment running at peak efficiency. The troubleshooting of office equipment catches problems before them impact staff and employees, saving the cost of large repairs. To minimize the cost for repairing just one of the benefits of IoT. As you can imagine, this technology is extremely useful to businesses in the manufacturing of logistics, and food sector. There are also number of ways to use IoT technology to impact your bottom line through common working processes
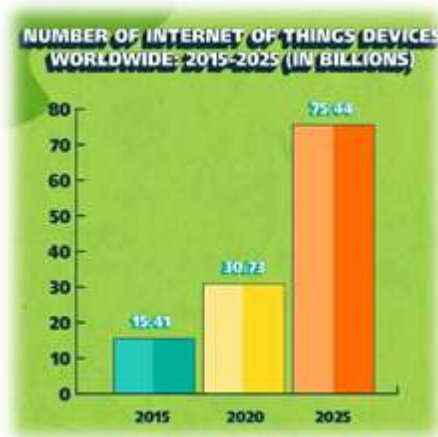

Fig. 1

As we shown in graph that the use of IOT devices becomes increase in upcoming time because these are many useful for human and also the case when it comes to reducing labor costs by improving process efficiencies 83% of organizations that have introduced IoT technology have improved their efficiency by doing so, reducing their expenditures and bettering output from employees.

2. Efficiency & productivity

Efficiency is the basis for the kind of improved productivity that boosts revenue for SMBs. These IoT tools increase the kind of communication that results in better productivity. In fact, according to a survey, 58% of companies are seeing increased collaboration through the use of IoT devices. IoT can be used to optimize an office floor plan and mobilize company resources like photocopies, printers, and Wi-Fi bandwidth for a better workflow and a more effective approach to management in environmental work

Fig.2

3. Business opportunities

While many businesses try to access the profit producing power of digital services, most lack of strategy for pursuing this avenue. IoT is a game changer in this respect, as advanced analytics, artificial intelligence, and smart utility grids make it easy to collect actionable data .These analytics provide new insights that are not only being utilized to create new business models, but completely redefining traditional industries. For example, IoT sensors in automobiles which can track speed and driving habits it helps to optimize rates on automobile insurance. Shopkeepers can use IoT to measure in-store foot traffic to optimize displays for maximum impact based on customer habits.

4. Customer experience

IoT technology has so far mostly influenced because of its relatively new presence, today's IoT has meant that Omni-channel strategies have completely change the way consumers approach their relationships with businesses. Front-end customer engagement has become a priority for organizations as they look to engage better with their audiences, usually through IoT devices. Customers in 2020 have an expectation towards businesses that must be met; namely that they want to be able to interact with you through their phone, whether that's using an automated Chabot or dedicated app.

5. Mobility & agility

IoT technology means that businesses, now have the opportunity to let their employees conduct their work from virtually any location flexibility that can provide key advantages. Office leases aren't cheap, and the IoT revolution has allowed small and mid-sized businesses changing the way they operate hiring more full-time remote employees in "work from anywhere" positions.

RELATED WORK AND COMPARATIVE STUD

THE FOLLOWING TABLE, TABLE 1 DEPICTS THE SURVEY OF MULTIPLE WORKS DONE ON COVID MONITORING PROJECTS IN LAST FEW YEARS

Author Name	Title	Techniques	Sensors	Publication Date	Result	Conclusion
Sandra Costanzo et al. [7]	A Non-Contact Integrated Body-Ambient Temperature	It based on the combined integration of an infrared thermometer and a capacitive humidity	Non –contact sensors, capacitive sensor	12 October 2002	This is particularly useful for detecting fevers and	It is fully hardware design which has been accurately

	Sensors Platform to Contrast COVID-19	sensor, which is able to provide a fast and accurate tool for remotely sensing both ambient and body temperature in the framework of pandemic situations,			therefore possible infections of **COVID-19** and other illnesses.	described. Numerical simulations, reporting the curves for the three assumed variable parameters are shown
Nenad Petkovic et al. [8]	IoT-based System for COVID-19 Indoor Safety Monitoring	In order to reduce the disease spread, they mainly focus on most common indoor measure .Like high body temperature should stay at home, wearing mask is mandatory and distance between people should be at least 2ft. For this we use microcontroller, rely on raspberry pi etc.	Temperature sensor, infrared sensor or thermal camera	September 2020	In this we get result of various scenarios like mask detection, distancing check and temperature sensing. Moreover we also get accuracy of each scenarios	under certain performance limitations such as number of processed frames or measurements per second they worked both open hardware and free software, being definite and desirable advantage for such systems
Seyed Shahim Vedaei et al. [9]	An IoT-Based System for Automated Health Monitoring and Surveillance in Post-Pandemic Life	The technique which are used in this project is IOT (internet of things). 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 tracks body temperature, cough rate, respiratory rate, and blood oxygen saturation, then updates the	wearable sensors, Wireless Sensor Networks(WSN), orientation sensor	12 October 2020	Result may consider under three certain conditions 1.Distance measuring 2.Desicion making results 3.system performance	It presented to monitor participant's health conditions and notify them to maintain physical distancing. The proposed system integrates a wearable IoT node with a smartphone app, by which the IoT sensor node can collect a

		smartphone app to display the user health conditions. 4G/5G/Wif, or LoRa, which can be selected based on environmental constraints.				user's health parameters, such as temperature and blood oxygen saturation, and the smartphone connects to the network to send the data to the server
Prajoona Valsalan et al. [10]	IOT BASED HEALTH MONITORING SYSTEM	Health care has become of major importance. In such areas where the epidemic is spread, it is always a better idea to monitor these patients using remote health monitoring technology. objective of developing monitoring systems is to reduce health care costs by reducing SMS based patient flourishing viewing	temperature sensor, heartbeat sensor, humidity sensor, pulse rate sensor	4 April 2020	Based on values received, the disease of the patient is diagnosed by applying the rules set. The diagnosis of the health state performed by the medical practitioner .The medications can be prescribed and appropriate action can be suggested by the doctor even from a distance.	The **IoT** is considered now as one of the feasible solutions for any remote value tracking especially in the field of health monitoring. With the help of health monitoring we can see data of any patient with some distance .The system monitored body temperature, pulse rate and room humidity and temperature using sensors, which are also displayed on a LCD.Then the varying values will be send on doctor's phone then

						diagnose the disease and the state of health of the patient.
Zehra Karhan et al. [11]	Covid-19 Classification Using Deep Learning in Chest X-Ray Images	In this we are using deep learning for understanding the project. RT-PCR (Reverse Transcription-Polymerase Chain Reaction) test is applied for the diagnosis of Covid19 .In this we diagnosis from chest images. Detection of the disease from chest x-ray images using artificial intelligence also one of the method but deep learning which has been used frequently. Chest X-ray images are using for more accurate data .Also this study consist of three phase:-1.DATASET 2.Image Augmentation Techniques 3. Convolutional Neural Networks (CNN)	Chest X-rays images, Deep learning etc.	19-20 Nov. 2020	In this we achieved 99.5% classification accuracy. In this we have confusion matrix classification graph, where we know about positive or negative cases of (covid-19).In confusion matrix graph, we have ROC(Receiver Operating Character statics).In ROC curve, we clearly know about performance evaluation	With the help of chest x-ray images were used obtained from Covid-19 and nonCovid-19 patients. These images are classified using the transfer learning model ResNet-50. It can also be used in situations where the possibilities are insufficient (RT-PCR test, doctor, radiologist)

CONCLUSION

IoT framework is presented to monitor participants' health conditions and notify them to maintain physical distancing. IoT sensors can collect a user's health parameters, such as temperature and blood oxygen saturation, and the smartphone connects to the network to send the data to the server. It is our belief that there will be a need to monitor symptoms, contacts, and movements of people for some time in order to slow spread of the disease. We focused here only on portion symptom monitoring efforts and research that aims at understanding movement of individuals in relation to their reported symptoms and contacts. There are a number of interesting observations in the obtained results. Headache is by far the most frequently reported symptom, always reported by individuals who report any symptom. Individuals' movement patterns are very diverse but clearly related to imposed movement restrictions. Some stay at home and leave only when they have to, while others tend to freely move without any limitations.

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