

## IOT BASED BOT USING SMART GLOVES

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### ABSTRACT

In the present scenario, IOT(Internet of Things) is emerging with great pace and is being used in every field. IOT has become a very developing concept as the whole world is making use of IOT in different ways and applications. IOT basically refers to the connection of various devices with sensors, software, modules etc for the exchange of information over the internet. IOT stands out as an excellent technology in today's world as it is helping in making work simpler and automated. At homes, there are elderly people who cannot communicate properly and convey their message to the family members. In such cases, there is a need for a medium through which they can convey what they are trying to communicate. Also, in this ill-mannered world which is not a safe place for women, there are an increasing number of crimes occurring in our day to day life like murders, sexual assaults, kidnaps, women trafficking etc, Therefore, there should be some means by which women can be safe. Making use of IOT, We have proposed to build a BOT which serves the elderly or old aged people and also covers a key role in being a part of women safety. So the Bot serves these two purposes and hence the project has two parts in it. The BOT is a composition of many hardware devices like ultrasonic sensors, flex sensors, Bluetooth modules motors etc in which the key component which holds the project intact are the "Smart Gloves". The Bot has 4 inbuilt chambers for accommodating the required items. The first part of the project describes how the bot helps the elderly people by making use of the Smart Gloves and the second part of the project deals with how the Smart Gloves are implemented for the safety and security of women. In the first case, the SMART GLOVES are connected with flex sensors and are worn by the elderly people. The IOT based bot is a finger gesture controlled bot which moves back and forth according to the specific finger gestures given by the elderly person. As mentioned earlier, The bot also has inbuilt chambers in it which contains the necessary items like food, tablets, water etc. On wearing the smart gloves and showing finger gestures, the person could control the bot's movements and easily get the required item. On showing figure gestures, the instructions as per the program would be sent to the Bot and the bot will reach the elderly person according to the figure gesture information received through code, without any need to move or communicate. In the second case, we are also trying to implement the smart gloves for women safety. The Smart Gloves are connected with buzzer in such a way that it rings when it senses a wrong touch and alerts the nearby public to help the person who is in danger even before the family members and police could reach out for help. In such situations of emergency, The Smart Gloves would play an eminent role and help save lives of women. It would serve as a small contribution to the women who are facing a lot of troubles everyday because of the ill-mannered world. Arduino, an open source microcontroller is the main functional unit for the entire project as we use Arduino to program the bot for the bots movements and the software used for dumping the program to Arduino is Arduino IDE. This bot, making use of IOT technology would be a completely autonomous one which serves as a helping hand for the aged people to get their basic requirements and also for women in times of emergencies or dangerous situations.

**Keywords:** Finger Gesture Controlled Bot, Smart Gloves, Flex Sensors.

### I. INTRODUCTION

IOT stands out jointly of the foremost renowned technologies within the developing globe of science. the net of Things (IoT) could be a popular technology that's defined as a group or cluster of physical objects that are embedded with various styles of sensors, software, capability, and processing, further as other technologies that are used for information exchange over the net and in various areas of communication networks. IoT may be a fast-evolving technology that mixes variety of important technologies, including robust embedded systems, sensors, and machine learning. The term "Internet of Things" refers to devices that don't have access to the

web but may communicate with each other over it without the requirement for human intervention. IoT technology refers to and is identical with the concept of a sensible home, which includes automated lighting, fans, electronic devices, and other items that don't require human intervention to manage or monitor and might be controlled remotely. IOT has also stretched its wings within the fields of security and privacy, where it plays a critical part in fulfilling all of the organization's security goals and is assisting the world in becoming more safe and secure. Electronic appliances, gadgets, air conditioners, fans, lights, and everything else around us can all be made automatic with IOT. This protects plenty of energy by automatically turning off or shutting down anything that may not be in use, or by alerting people to the usage, all of which contribute to the IOT's long-term benefits. IoT also plays a major role in business, allowing businesses to speak more data and knowledge about their own goods or products, further as information about their internal operations, in order that any necessary adjustments is made quickly. IoT essentially makes objects smarter by allowing them to speak with other devices and other people via the web and share or exchange data. An IoT ecosystem is created of internet-connected devices that use embedded systems including communication hardware, sensors, and CPUs to assemble, send, and act on or work with data from many platforms. The info acquired by IoT based devices is shared by connecting to the IOT gateway or the other edge based device, where data is transferred to the cloud for analysis or processed locally. These gadgets occasionally communicate with each other and act on the data they receive. These gadgets are self-contained and don't require human involvement. The Internet of Things (IoT) unifies concepts like smart environments, self-driving cars, augmented reality, electronic health care, and other omnipresent or widely utilised technologies. These notions necessitate extremely fast data rates, low latency, big capacities, broad and huge bandwidth, and high throughput. IOT has transformed the planet by enabling optimal communication between numerous networks, shedding light on these developing notions. The inevitable goal of IOT is to introduce play-plug technology by enabling remote controllability access, configuration, and simple operation to IOT system end users. IOT is currently admired on both knowledgeable and private level. For knowledgeable, IOT may help with a range of tasks like logistics, smart supply chain management, trading, and transportation. Individuals' living standards are improved by IOT during a type of ways, including smart homes, e-health, remote monitoring and control, and so on. Therefore, both the professional and private levels of a person's have become more and more advanced and are revolution arising due of the many contributions IOT has made. Today, the net is pervasive, having spread to practically every corner of the world and having a profound impact on human life. With a large range of appliances connected to the web, we are now approaching an era of even more pervasive connectivity. Smart Cities (and regions), Smart Car and Mobility, Smart Home and Assisted Living, Smart Industries, Public safety, Energy & environmental protection, Agriculture and Tourism as components of a future IoT Ecosystem have attracted lots of interest. These capabilities are accustomed query the state of the article and, if possible, change it. The web of Things (IoT) could be a term wont to describe a brand new style of environment within which practically all of the gadgets and appliances we use are connected to a network. We will combine them to execute complex tasks requiring a high level of intellect. To enable this intelligence and interconnection, IoT devices are equipped with embedded sensors, actuators, processors, and transceivers. IoT may be a collection of technologies that function together instead of one technology. Sensors and actuators are electronic devices that allow individuals to interact with their environment. The information collected by the sensors must be intelligently stored and analysed so as to extract valuable judgments.

## II. METHODOLOGY

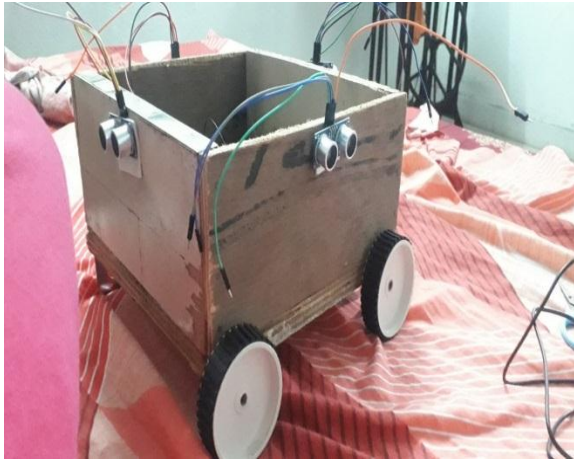
In the present scenario, IOT (Internet of Things) is emerging with great pace and is getting used in every field. IOT has become a awfully developing concept because the whole world is making use of IOT in numerous ways and applications. IOT basically refers to the connection of assorted devices with sensors, software, modules etc for the exchange of knowledge over the net. IOT stands out as a wonderful technology in today's world because it helps in making work simpler and automatic. At homes, there are elderly those that cannot communicate properly and convey their message to the relations. In such cases, there's a necessity for a medium through which they will convey what they're trying to speak. Also, in this ill-mannered world which isn't a secure place for ladies, there are an increasing number of crimes occurring in our day to day life like murders, sexual assaults, kidnaps, women trafficking etc, Therefore, there should be some means by which women may

be safe. Making use of IOT, We have proposed to create a BOT which serves the elderly or old aged people and also covers a key role in being an element of ladies safety. So the Bot serves these two purposes and hence the project has two parts in it. The BOT may be a composition of the many hardware devices like ultrasonic sensors, flex sensors, Bluetooth modules motors etc during which the key component which holds the project intact are the "Smart Gloves". The Bot has 4 inbuilt chambers for accommodating the specified items. The first a {part of} the project describes how the bot helps the elderly people by making use of the Smart Gloves and therefore the second part of the project deals with how the Smart Gloves are implemented for the security and security of ladies. In the first case, the SMART GLOVES are connected with flex sensors and are worn by the elderly people. The IOT based bot could be a finger gesture controlled bot which moves back and forth in keeping with the precise finger gestures given by the elderly person. As mentioned earlier, The bot also has inbuilt chambers in it which contains the required items like food, tablets, water etc. On wearing the smart gloves and showing finger gestures, the person could control the bot's movements and simply get the desired item. On showing figure gestures, the instructions as per the program would be sent to the Bot and also the bot will reach the elderly person in line with the figure gesture information received through code, with none must move or communicate. In the second case, we are trying to implement the smart gloves for girls safety. The Smart Gloves are connected with buzzer in such the way that it rings when it senses a wrong touch and alerts the nearby public to assist the one that is in peril even before the relations and police could reach out for help. In such situations of emergency, The Smart Gloves would play an eminent role and help save lives of ladies. It would functionatiny low contribution to the ladies who face lots of troubles everyday thanks to the ill-mannered world. Arduino, an open source microcontroller is that the main functional unit for the whole project as we use Arduino to program the bot for the bots movements and therefore the software used for dumping the program to Arduino is Arduino IDE. This bot, making using of IOT technology would be a very autonomous one which is a help for the aged people to urge their basic requirements and also for girls in times of dangerous situations. The Arduino Uno and Arduino Mega are the most functional units and form the core of our project. The Arduino is an open source programmable board which will be integrated into a large range of straightforward and sophisticated maker space projects.

This board includes a microcontroller that may be programmed to detect and control objects within the environment. the physical world .The Arduino can interact by responding to sensors and inputs. with a various set of outputs including LEDs, motors, and displays due to this, Arduino has become a well-liked choice for makers thanks to its flexibility and low cost. Maker spaces that want to make interactive hardware projects. The flex sensors which are attached to the gloves are interfaced with Arduino Uno and when the finger gestures are made the instructions of for the movement of the bot according to the figure gestures are sent to Arduino Uno where the instructions are processed. The project uses two Bluetooth modules to set up a wireless connection between the bot and the smart gloves. One of the Bluetooth module is connected to Arduino Uno and the instructions from the Arduiono Uno are sent to the Bluetooth module. This entire setup forms the part of the smart gloves. For the setup of the bot, another type of Arduino called Arduino Mega is used which is interfaced with another Bluetooth module, ultrasonic sensors and motor driver which is in turn connected to 4 motors. The ultrasonic sensors are used to measure the distance of the bot from any obstacle. The instructions from the first Bluetooth module are sent to the second Bluetooth module which in turn sends the instructions of the flex sensors to Arduino Mega which processes the data and these instructions are sent to the motor driver which are used to drive motors by taking low current signal and converting them into high current signal. So these motor drivers ,on receiving the instructions drive the motors which in turn helps to rotate the wheels and the bot moves back and forth according to the gestures and reach the elderly person to which the required item would be served. In this way, the bot would be useful to the old aged people.



### III. MODELING AND ANALYSIS



### IV. RESULTS AND DISCUSSION

On Completion of the IOT based bot we can draw conclusions that the bot can serve as a helping hand for the elderly people by helping them get their basic requirements like food, water, medicines etc without any means of communication and movement. The Smart Gloves would also serve as a rescue system when a woman is in danger and is being attacked by someone as the buzzer rings upon sensing a wrong touch and alerts the nearby people to call. The IOT based robot is a finger gesture based robot which uses Bluetooth modules Arduino Uno and Mega, Flex sensors as the main functional units. After the complete setup is done it has been observed that the movements of the bot which are controlled by the Bluetooth module are not done as expected as there are defects in the Bluetooth module. Hence to rectify this, we have made use of the flex sensors by interfacing them with Arduino. The movement of the flex sensors attached to the smart gloves determine the direction in which the bot has to move in order to provide the required item to the person. For example, if the smart glove or flex sensor is turned forward, the bot moves in the forward direction and if the flex sensor is bent the bot moves backward and so on. So for the time being, the movement of the bot is now controlled by the flex sensors. On showing the finger gestures the instructions are sent to the Bot through Arduino and the required action is performed and the specific task is completed. The instructions are as follows:

flex1 - forward

flex 2 -backward

flex 3- right

flex4 left

flex 1 flex 2 flex 3 food

flex 1 flex 2 water

flex1 flex 2 flex 3 flex4 tablet.

The bot will perform actions as per the above instructions and perform the tasks.

## V. CONCLUSION

The IOT based bot being a finger gestured controlled bot would prove to be a boon to the old aged people as it needs no human intervention nor any remote to control it and makes it easy for the old aged people to get their basic requirements. They do not have to move anywhere or call out for help. Instead they can sit in one place and control the bit with hands which would approach them according to the instructions of the finger gestures and would serve the elderly people with food water medicines etc. As they cannot communicate or speak properly because of their old age, this bot would make life better for them. Even the illiterate and the deaf and dumb people can use them. On the other hand the smart gloves are also being used for women safety which would also act as a rescue system for women and bring them out of dangers. This bot, making use of IOT technology would be a very autonomous one which is a help for the aged people to urge their basic requirements and also for girls in times of emergencies or dangerous situations. This project would be one of the greatest contributions in the world with the best service being served.

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