

## SMART HOME BASED TEACH ME–SHOW ME ROBO USING GSM

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### ABSTRACT:

*As the population is increasing day by day the care issues and cost related issue of population also increased. Many of the countries are facing with this major problem. To overcome this they suggested to use robots in smart home. This challenge makes the personalization of robot to meet the changing requirements of a person. One of the methods for this is to allow the elderly person to make the robot learn activities in smart homes and teach it to carry out behaviour activities. Here the process of teaching is intuitive and nontechnical. To evaluate issues a robot is available which is fully sensorized in sub urban houses. Now, a new design method is described for teaching, learning and the robots are used in smart home systems as integrated unit. The results are obtained from the teaching component with 20 participants and in the same way the preliminary evaluation is done by using human robot interaction experiment. At last results obtained from participants shows that robot personalization is very easy to use and it is useful in real life situations for themselves as well as others.*

**Keywords:** robot personalization, robot learning, robot teaching.

### I.INTRODUCTION

To get possible cost and care solution for population robots should be used in smart homes. The main intent of this approach is to help and assist the elderly residents by using service robots. The robots will encourage and gives active support concerned to reablement and co-learning. Here the both assistive robot and person form a Partnership to meet the changing needs of a elderly person. Basically robot is becoming very trusted companion to a person and as well as it provides support,

assistance and active engagement over time as personalization.

In this paper an approach is used to service the robot personalization which depends upon the end-user robot teaching and learning designs. To reinforce rapport, cooperation, and engagement with a robot personalization is used. In this paper we utilize commercially available robot that is the Care-O-bot3. The basic process involved in this system is discussed below.

### 1. Robot Teaching and Learning:

In this Approach the robot learning will derive a policy depends upon the one or more demonstrations from the user. The Other key challenges will refine the policy from further demonstrations.

### 2. Learning by “Following”:

Here both robot and user sharing a close context. Coming to robot, it uses a vision system to detect the presence of user. This approach will track the mobile robot by matching predicted post conditions. The learning process in the robot can use external environmental perceptions.

### 3. Behavioral Cloning

In this encoding of human knowledge is done in a form where it is used by computational system. Actions of human subject are analyzed and recorded. Without the human presence the both actions and decisions are extracted in the system.

#### 4. Learning by Demonstration

Last process is demonstration, in this there will be direct interaction between a human teacher and a robot. The teacher sends instructions to the robot directly by some external mechanism. Hence, the interaction is direct.

#### 5. Learning From Observation:

In this process, the closeness of shared context between learner and user will decrease. Hence the robot operates by sharing context with the user but at a distance.

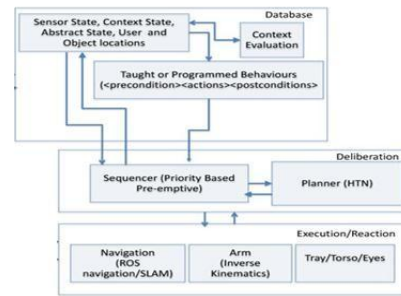
### II. EXISTED SYSTEM

From below figure (1) we can observe the existed system block structure. Basically, house has only one entity than the collection of individual parts. So we can say that sensor information available in home is too different from the robot sensor information. This sensor information is obtained from the occupant activities. From this we can provide co learning and re-ablement to treat the robot and user by using different entities.

Basically, a robot house consists of sensors, users, objects, people and robots which are analysed to yield house ontology. From below figure 2 we can see that car-o-Bot is used which is designed for the research in assistive environments. Now to update a map of the house in real time we use the Laser range finders.

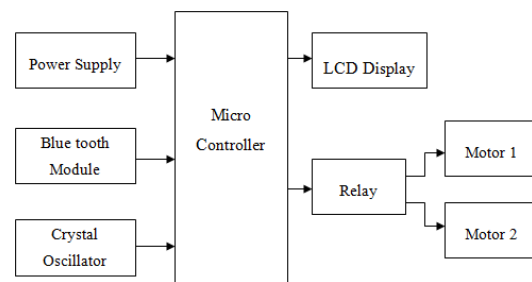
All the sensory information is stored in sensor table and sensor logging table in data base. In this each row in sensor table consists of an individual sensor and gives instantaneous value for each sensor. Coming to the each row of logging table consists of historical value of sensor over

the time. In this the Tech Me system uses only the current and previous values and next one is Show Me system will only exploits the historical log sensors. In the entire existed system they are maximum 50 low level sensors. This is the overview of existed system but it is imperfect during time.



**Fig. 1. Existed system**

### III. PROPOSED SYSTEM



**Fig. 2. Bluetooth Controlled Robot**

The robot is controlled by the Bluetooth module as shown in fig 2. The commands such as forward, reverse, move left, move right are given to the robot by means of Bluetooth module and provide to the microcontroller circuit for controlling the motors. Motors are utilized to move the robot. LCD display is to display the directions of the robot.

From below figure we can observe that the block diagram of proposed system. As today's population is increasing there is need to use the new technologies. So the

main intent of this system is provide kind of care that is offered by a health care professional and to reduce the cost of health care and improve the elderly person life. Robotics plays an important role in now days and in the same way the autonomous user companion robot consists of special kind of service robot which is useful at home. This robot performs various tasks like as diary duties, home surveillance, control home devices, entertainment etc. This robot is used to reduce the cost of health care and improve the quality of life.

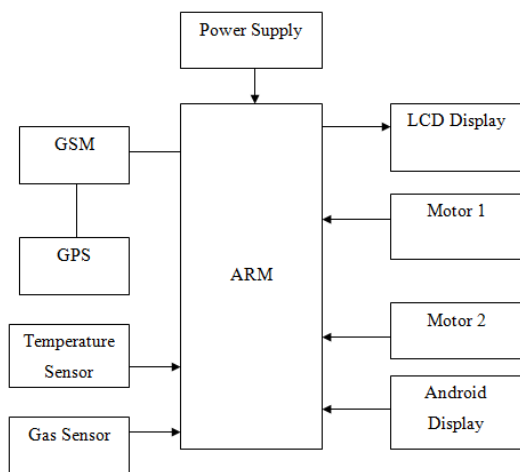


Fig. 3. Proposed system

Not only this one, different type of robots are designed to interact with human being to provide the kind of care offered by health care professionals. The main intent of this approach is to design a sensorized “autonomous robot” which monitors the elderly person. The entire robotic system is designed by using ARM. From this we can observe that the proposed system will provide care for elderly person and consists of low cost. Let us discuss each component in detail manner which is shown in figure (2).

**Power supply:** We utilize 7805 is a voltage regulator integrated circuit in

power supply. Generally, it is a 7805 series of fixed linear voltage regulator ICs. The voltage source in a circuit contains fluctuations and produces the continuous change in voltage output. The constant output voltage is provided by the voltage regulator IC. It provides 5v supply voltage.

**LCD interfacing:** It is the display unit in a system which displays appropriate messages depend up on the scenario. LCD consists of LCD driver/controller that is used to interface LCD and microcontroller.

**GPS Receiver:** The main purpose of GPS is to obtain the current location of the vehicle. The GPS is referred as Global Positioning System and it is a satellite depended navigation system which contains a network of 24 satellites positioned into orbit. By using GPS receiver the entire information is accessible from GPS system. GPS receiver is utilized to identify the location of vehicle and provides information to responsible person through GSM technology. GPS unit can determine other information like, speed, distance to destination, time etc once the vehicle position has been determined.

**GSM modem:** The GSM modem is used to send and receive messages to and from the owner. GSM is a specific type of modem and it acquires a SIM card which operated over a subscription to a mobile operator like as a mobile phone.

**MAX 232:** It is an integrated circuit. Max232 is a voltage converter which converts from RS232 voltage levels to TTL voltage levels and vice-versa. MAX232 utilizes +5v power source which is same as that of source voltage. Single +5v power supply is utilized to power both

microcontroller and MAX232. It contains two sets of line drivers for transferring and receiving data.

**Motor:** It is the DC motor which represented the engine. DC motor is interfaced with ARM processor. By interfacing with the ARM Speed, direction of rotation of motor is to be controlled.

#### IV. RESULTS

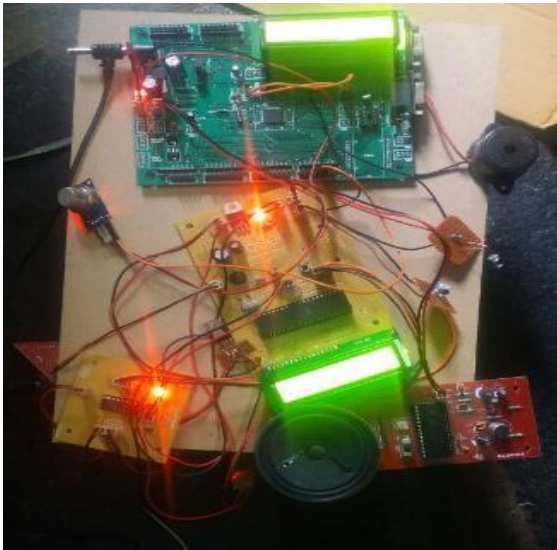


Fig. 4. Output

#### V. CONCLUSION

In this we use a robot personalization to use robot in assistive environments. In order to generate robot behaviours, the teacher component exploit the set of standards templates. Because of this method complexity obtained in the system is avoided. Now as there is increasing in generation new ways should be proposed by personalising the robot behaviour. In this system first robot will find the person to inform them and next a person follows the robot instructions rather than a phone. So from this we can view two main points one is to focus people centred initiatives by tackling HRI issues giving control on

personalisation and product customisation. Next one is to study the technological activities in order to perform the some operations. At last we can conclude that the personalization of autonomous robots are used in domestic environment also.

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