Retraction

Retraction: Medicine Distribution Robot and Human Less Intervention for Covid-19 Affected People (AKM MED ASSISTIVE BOT) (IOP Conf. Ser.: Mater. Sci. Eng. 1049 012013)

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This article has been retracted by IOP Publishing following an allegation that this article may contain tortured phrases [1].

IOP Publishing has investigated and agrees the article contains a number of nonsensical phrases that feature throughout the paper [2], to the extent that the article makes very little sense. This casts serious doubt over the legitimacy of the article.

IOP Publishing wishes to credit PubPeer commenters [3] for bringing the issue to our attention. The authors neither agree nor disagree to this retraction.

[1] Cabanac G, Labbe C, Magazinov A, 2021, Tortured phrases: A dubious writing style emerging in science. Evidence of critical issues affecting established journals, arXiv:2107.06751v1
[2] Kalpana Murugan et al 2021 IOP Conf. Ser.: Mater. Sci. Eng. 1049 012013
[3] https://pubpeer.com/publications/F86B42EEF6597DFC38FE3C9C373A47

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Medicine Distribution Robot and Human Less Intervention for Covid-19 Affected People (AKM MED ASSISTIVE BOT)

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Abstract. Social robots and administration robots with social insights are beginning to coordinate into our regular day to day activities. Managing health care needs of the patients collaborate with person-centered healthcare. Untimed medications to patients can cause serious health issues for the patients in hospitals and in old age nursing homes. The proposed work is intended to assist these patients with providing or recommending the necessary medication in the correct order at the specific times of the day without the actual need of a human nurse. This is incredibly tricky for the old patient who have issues in monitoring their medication at regular intervals. Thus, to avoid this, we have developed this medication robot. Which is a semi-autonomous microcontroller based programmable robot that works on the ‘line following robot’ concept, which can remind the patients, to consume their pills at regular intervals in a day. After successful intake of pills, the status of the medication is consequently sent to the patient’s relative through an SMS.

1. Introduction

Robots are a needed and fast growing part of the modern medical society. The Robots has their history in medical field from the period of 1985. They are becoming unavoidable in this modern world. Propels in sensor and movement control advances cruel robots are more exact and independent than ever, and competent of not fair helping, but carrying out complex assignments themselves. The drugs that have been endorsed by medical specialists and doctors are bound to be successful on the off chance that you adhere to the specialist’s definite directions on when and how to take them. The health specialist needs to endorse a specific medicine since the person feels that it will improve the patient’s condition. This medicine is bound to be viable on the off chance that you follow your prescription course as endorsed. Inability to do so could, in certain conditions, have perilous consequences [1].

The step by step exercises of clinical laboratories will be fundamentally influenced by two problematic advances: computerization and the man-made thinking (the PC systems prepared to perform tasks that normally require human knowledge). These progressions will similarly broaden the degree of research in medical field. Computerization will realize extended adequacy yet will anticipate that changes should explore office establishment and a move in workforce getting ready requirements or mechanization in nursing care [2]. On the off chance that HNRs (Human Nutrition Research) are to help patients legitimately, so there should be a similar degree of extensive results capacity and the ability to respond as that of human medical caretakers. This incorporates capacities to truly watch, judge, quickly react, and lead human caring work on accentuating individuality [3]. The innovation utilizes a plan to assist patients with monitoring their medication utilization through a progression of light-transmitting diode (LED) caution marker signs and sound alert pointer signals. In the event that the patient isn’t following the treatment that was recommended to the person in question, the framework can send tolerant consistence data via phone to an illness monitory board system [4]. The quantity of meds to be taken by every individual has expanded. It has gotten difficult for us to remind ourselves to take the medications at specific time. The new anticipated element in our task is our framework is reasonable that patient has taken medication or not and in this way the patient can’t delay the time on which he needs to
1.1 Challenges

While implementing this project, there were some challenges like Learning Curve, The Cost of new technologies, Security, Simpler User Interface, Employment Issues, Poor visual perception.

1.1.1 Learning Curve: Practicing a new medical technology on a patient has more risk factors included in it. Medical experts have been told to put off utilizing the modern and progressed gadgets without, to begin with considering the mindfulness, preparation and instruction, required to create beyond any doubt the security of patients.

1.1.2 The Cost of new technologies: The Advanced new innovations in medical field can make the cost of the medical equipment’s to increase every year, but can also increase efficiency.

1.1.3 Security: The most sought after and main thing for every healthcare application is the protection of trusted health data of any patient. The healthcare industry is still in a look for progressed security highlights.

1.1.4 Simpler User Interface: Generally, a less difficult and client inviting interface increments the chances of an application in getting embraced more within the environment utilizations. Therefore, a user-friendly frameworks could be a need in healthcare Types of gear and Gadgets.

1.1.5 Employment Issues: Basically, robots are defined with a greater proficiency and production at a cheap cost. It may make a way for the lay off in all the sectors for the existing of Robotics and it becomes the major crisis.

1.1.6 Poor visual perception: This is one of the major factor for medication utilization blunder or medical errors due to forgot to take the medicines, for example, mal-dose since the older people problematic to peruse the guidance on the medication case. The above challenges are overcome by our project.(i.e) AKM Med Assistive Bot.

2. Literature Survey

Human-Robot Interaction (HRI) is a field identifying with getting, arranging, and surveying mechanized systems for use by or with individuals. Correspondences between a human and a robot may take on various configurations and are commonly influenced by the proximity of the human and the robot [5]. Several innovation for the soundness of more established people could empower them to live autonomously, socially drew in, and safely[6]. Innovation has radically changed the structure and association of nursing to such an extent that the modular changes in present day social insurance have changed nursing’s conveyance of care[7]. The individual focused consideration in nursing is guided by the way towards "realizing people as mindful in nursing". The aim of the competency in trends of technology as Caring in Nursing can be actualized at various levels, concentrated on the individual, and complete as opposed to correcting the individual or supplanting the individual's lost or required parts [8]. The consistent sharing of data and incorporated correspondence is fundamental to the accomplishment of individual focused consideration. This joining and sharing can be finished through mechanical methods [9]. The ongoing improvements in IoT innovation can assume a huge job in the plan of a reasonable human services framework for more established people. Shrewd homes can change the technique wherein medical services are being given to more seasoned people by coordinating well being[10]. IoT may take further more deep into it by simply advising the person under ailment of their status in Medical Progress, associated gadget innovations can give a start to finish clinical arrangement. A model is savvy bundling. Sensors in an associated medicine bundle can send data from when a bundle is opened, which will be transmitted through a safe system stage for the board which permits checking [11]. There is an inclination to present high revolution and apply in care. Assisted living (AL) is the quickest emergent type of more seasoned grown-up people. Robots could reinforce the various kinds of feeling of self-rule in different manners. Robots may reinforce the feeling of self-rule of more seasoned people in AL. They may at the same time represent a danger. Multi-proficient conversations are required on whether robots are invited in care, and on the off chance that they are, the manner by which, for whom, and in what areas[12]. The likelihood that humanoid nurture robots (HNRs) can be conceivable. Being human in relationship with falsely keen machines won't just test the utilitarian parts of savvy machines, yet it will likewise be material to their connections as machines to human beings[13]. The general innovative work may get quicker by utilizing a typical robot stage among a great deal of analysts since that empowers them to share their examination results. Accordingly, we have built up a minimal and safe research stage, Human Support Robot (HSR), which can be worked in a real home condition. The
robot rivalry will be effective primarily to actuate the network[14]. The focal point of our exploration was to research whether a social robot can assume control over a portion of this information assortment by controlling surveys autonomously[15]. The technique takes care of the accompanying three concurrent issues: the geometric parameter recognizable proof that transforms the human model to the robot model, movement getting ready for a robot, and the backwards kinematics of the human movement catch information. Synchronous arrangements can impersonate the first movement more precisely than ordinary methodologies, which take care of the issues sequentially[16]. Through support learning with human criticism, the robot is empowered to settle on proper choices by investigating its own inspiration, condition upgrades and human information sources, permitting the robot to complete ambiguous assignments, for example to serve, help or have a discussion with human on various circumstances. In our test, the human fulfillment rate could arrive at 94% and the robot could also keep up a steady condition to perform long haul service[17]. A novel way to deal with coordinating people and assistive robots into ECHONET based savvy home conditions through a multi-modular UI, toward moderating nursing care issues in maturing societies[18]. The ECHONET based brilliant home condition, iHouse, with the all-inclusive AAL arrangement gives a proficient method to improve the personal satisfaction of keen home inhabitants. We have affirmed that a humanoid robot friend can access the iHouse arrange and give client mentioned information and administrations through verbal connection with the help of a characteristic language preparing tool[19]. In the light of segment change and absence of nursing staff, telerobotic frameworks are a promising arrangement for example for homecare in provincial territories or in isolate stations for dispersal of pathogens[20].

3. Proposed Method Akm Med Assistive Bot

The AKM Med Assistive Bot is based on the ‘Line Following robot’ concept. There would be a Line following tape which is stucked to the floor. The robot traces its path based on the locations where the line following tape is fixed. An Infra-red sensor module is fixed at the front of the robot so that it can trace its path. A pair of ultrasonic sensor is placed at the front and back of the robot system. The Ultrasonic sensor is placed, so that if an obstacle is detected by the ultrasonic sensor, the robot system may stop moving further. The RFID module is intended for authentication and for information gathering purposes. All the movements and actions are commanded through the arduino microcontroller.

![Figure 3.1. Functional Block Diagram](image1)

![Figure 3.2. Vehicle movement Mechanism](image2)
3.1 Working Principle Of AkM Med Assistive Bot

The AKM Med Assistive Bot is equipped with an IR sensor module at the front of the electric vehicle. Two Ultrasonic sensors are placed in front and in back of the vehicle to detect any obstacle and stop accordingly depicted in figure 3.1 and 3.2. A line following tape is fixed prior on the floor to aid the movement of the robot and trace its path. If any obstacle is detected by the ultrasonic sensor, the robot automatically stops further movement. Also, a white tape is fixed at the desired location or near the patient to stop the movement of the Med Assistive Bot. The time at which the robot should make its movement to the patient is programmed using the timer module and is interfaced with the arduino microcontroller board. The RFID module is used for authentication. The patient holds the RFID key and card. The RFID key holds the patient’s information and the card hold the medicinal data of the patient. The amount of medicine to be taken by the patient is then indicated to the patient and the patient uses the medicine box to take the required quantity of medicines. If in case the number of medicines are above 2 or else if the patient is uneducated, the proposed system can label the medicine as numerical digits, so that the patient can consume the specific labeled medicines.

3.2 Flow Diagram

![Flow Diagram]

**Flow Diagram Description**

- **Initialization of the Robot**: The internal components of the robot system are subjected to initialization for the proper working of all the electronic components.

- **Movement towards the patient**: After initialization, the Infrared sensors sense the presence of the line following tape. The robot traces the path using the infrared sensors by keeping the line following tape as a reference.

- **Obstacle detection**: A pair of ultrasonic sensors are attached to detect the presence of any obstacle during vehicle transit. If an obstacle is detected, the vehicle is stopped and waits until the way is clear.
Authentication: An authentication step is done so as to confirm whether the medicines are taken by the right patient. The authentication is carried by the RFID module. The RFID module holds information about the patient along with the medicines to be taken by them.

Recommendation: If the authentication is successful, the system reminds the patient to consume the required medicine. The robot system stands near the patient area for a while until the patient takes the medicine. If no activity is taken by the patient, an alarming system activates alerting the nearby nurse or doctor for further help. If the medicine is taken successfully, the status of the medication is sent to the patient’s relative through SMS. The GSM module sends the status of the medicine to the patient’s relative mobile by means of an SMS.

4. Results And Discussion

We have developed this prototype so as to help the patients in taking their daily medications without the actual need of a human nurse or a care taker. As for now, it acts as a semi-autonomous system, meaning at the start of each day, a human nurse is required in order to feed the information of the medicines that will be taken by the patient each day. This can help the nurses and other care takers to focus on their tasks effectively.

Simulation Results

PROTEUS DESIGN SUITE Version 8.9 is the software tool used to build the project in software simulation. In simulation, the components are taken which are included in the hardware part. First, the Arduino coding developed for running the whole circuit will be dumped into the micro controller. The Coding for the Infrared Sensor was built and it be dumped into the circuit for detecting the patient. After dumping the code into the components, the circuit will be operated by clicking on the RUN Button. After running the circuit, in the simulation output figure 4.2 shows the patient name and the respective medications displayed in the LCD display Module. At this point, the motor driver circuit will be working according to the logics of 00, 01, 10 and 11 for the movements of the robot. After successful authentication, the robot will display the Patient Name, Medications to be Taken, as in figure 4.3, the Status of the Medications will be displayed. The Patient is to take the medicine which is to be taken, and its status will be shown when the patient click on the button switch. The Button Switch is used in the Circuit because of the in availability of RF module in the Proteus Design Suite software. After taking the medications, the patient has to click on the Switch button, so that it will indicate that the patient has taken the medicine it is showed in figure 4.3 like medication taken. The Motor Driver Circuit will be controlling the movement of the robot with the help of 4 motors.
Table 1. Coding for Robots movement

| S.NO | CODE | MOVEMENTS |
|------|------|-----------|
| 1    | 01   | RIGHT     |
| 2    | 10   | LEFT      |
| 3    | 11   | FORWARD   |
| 4    | 00   | STOP      |

Figure 4.2. Simulation Output 1

Figure 4.3. Simulation Output 2
5. Conclusion And Future Work

The AKM Med Assistive bot helps the patients in hospitals and other old age homes to periodically consume the required amount of tablets without the intervention of a human nurse. The robot system recommends the amount of medicine that may be taken by the patient at a particular time. After taken the medication the message will be given to the patient relatives. Currently, the system is designed for one individual patient, and in future, this work have planned to implement the nursing robot system for more than one individual. In future, it will make the system to work as a fully autonomous system. It also embed other hardware components so that various parameters such as the heart rate, blood sugar level, activity tracking, can also be fed into the system and be monitored periodically.

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