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# Any Time Homeopathy Medicine (ATHM)

**Dr.Jaiprakash Narain Dwivedi[*], Dr. Sanjay Kakkar[**], Ashish Virdi[***]**

[*]Associate Professor, ECE, Lingaya's Vidyapeeth, Faridabad, India (jpndwivedi@gmail.com)
[**]Homeopathy Medical Practitioner, Lucknow, India (drsanjaykakkar@gmail.com)
[***]Ambala cantt,Haryana India (virdi.ashish2@gmail.com)

***Abstract-*** In this article, Any Time Homoeopathy Medicine (ATHM) is proposed for dispensing of "homoeopathic dilution medicines". The main purpose of this machine is to mitigate the gap between the patient and doctor and to provide the homoeopathy medicine within the reach of patients in a very short duration everywhere with correct measures. This machine will have bottles globules filling unit and then dropping of homoeopathic dilution over globules and then capping of bottles and labelling on it.

***Keywords***- ATHM, Homoeopathy medicine, Dispensing machine, sensor based tablet filling

## I. INTRODUCTION

This paperpresents a novel idea for the dispensing of homoeopathy dilution medicines within the patient's reach for the homoeopathy treatment.The primary advantage of this project is to provide homeopathy medicine at nearby place instead to moving far away to doctors'clinic and thus reduce waiting time. Not only this, by using this vending machine, we can avoid human error as it is going to automatic filling of medicine i.e. liquid.

This paper is arranged as follows. In the second part, Literature review, the third part methodology has been mentioned, fourth part discuss the working flow of the machine, fifth part describes the medicine dispensing system, which describes about liquid dispensing flow and sixth part shows the conclusion and future enhancement of the project.

## II. LITERATURE REVIEW

There are many research papers which were referred to understand how the route planning is done in similar situations. A paper titled "Travel Time Forecasting and Dynamic Routes Design for Emergency Vehicles" by Giuseppe Musolino and others were published in 2013. The paper presents a framework to dynamically design routes of emergency vehicles taking into account within-day variations of link travel times on a road network presented. The framework integrates two modeling components: (i) a within-day dynamic assignment model that simulates the interaction between the time-varying network and travel demand, and (ii) a dynamic vehicle routing model that design optimal routes of emergency vehicles. The linking variable of the two modeling components is the short-term forecasted travel time, which allows designing routes of emergency vehicles based on anticipatory knowledge of traffic dynamics on the road network. Some procedures of the proposed framework are calibrated and validated in an experimental evacuation test site [1].The safe operation of all highway facilities, including intersections, requires the consideration of three primary elements for safe roadway operations: the driver, the vehicle, and the roadway. Robert Layton presented the detailed analysis in a report to Oregon Department of Transportation (US) in 2012.

There was a study done by a team in Egypt on GIS-Based Network Analysis for the Roads. This study was conducted for Greater Cairo area. Sayed Ahmed, Romani Farid Ibrahim and Hesham A. Hefny, in their paper, says in a crowded city like Grater Cairo Region (GCR), Egypt, finding a desired location becomes a difficult task, especially in emergency situations. The main criteria of any emergency response system (ERS) are its readiness to solve the immediate emergency situation such as fire emergency response, police station emergency response, healthcare emergency response system,etc.
Then there are many papers which talks about the vehicle movement in crowded city. Road accidents are a serious problem in the world especially in developing countries. Travel time of Emergency Vehicle (EV) is an important parameter in emergency rescue during accidents. The situation can be improved provided the emergency information services like Web based emergency information and

management systems which identifies incident, alerts emergency vehicle (EV), estimate travel time, enhance pre-emption control and route the EV. The study titled "Travel Time Estimation and Routing for Emergency Vehicles Under Indian Conditions" by R. Anil, M. Satyakumar, JeshJayakumar proposes a multilayer fuzzy model to determine the degree-of-priority (DOP) based on emergency vehicle pre-emption demand and impact intensity on each road section.

There are few research papers which focusses on shortest path problem. A research paper published in 2016 titled "Dynamic Path Planning of Emergency Vehicles Based on Travel Time Prediction" by Jiandong Zhao in Journal of Advanced Transportation. The dynamic paths planning problem of emergency vehicles is usually constrained by the factors including time efficiency, resources requirement, and reliability of the road network. Therefore, a two-stage model of dynamic paths planning of emergency vehicles is built with the goal of the shortest travel time and the minimum degree of traffic congestion. Firstly, according to the dynamic characteristics of road network traffic, a polyline-shaped speed function is constructed. And then, based on the real-time and historical data of travel speed, a new kernel clustering algorithm based on shuffled frog leaping algorithm is designed to predict the travel time. Secondly, combined with the expected travel time, the traffic congestion index is defined to measure the reliability of the route. Thirdly, aimed at the problem of solving two-stage target model, a two-stage shortest path algorithm is proposed, which is composed of K-paths algorithm and shuffled frog leaping algorithm.The three-wheeled motorcycle engine starting system built on an Arduino Uno seeks to make it simpler for motorbike riders to start their engines and add security features to protect their vehicles from theft. A Bluetooth connection on an Android smartphone may turn on the motorbike engine start system at a distance of 1 to 9 metres, according to the findings of testing the engine start system using an Android smartphone [13]. Additionally, a mobile application for Android was utilised to show the customer the entire cost of billing as well as the amount of real-time power consumed by each appliance separately. The load curve produced by this technology, which was used to determine the ideal billing amount based on a two-part tariff, is created along with the measurement of total power consumed [14]. A user-friendly and practical automatic appliance control is what the system aims to create. The system included an Android app, a Bluetooth module (HC-06), and an Arduino ATMEGA328 microcontroller board (MIT App Inventor 2). The C++ programming language and the Integrated Development Environment were used to programme the Arduino, which is capable of controlling any connected component (IDE). For the switching mechanism, relays and triacs are employed. Once the system is set up, the user has control over the electrical appliances linked to the home automation system. The Google assistant built into an Android smartphone can also be used to provide voice prompts to operate the connected electrical appliances. Using the Android app, Bluetooth module, and voice prompt, the system turns on and off household equipment [15]. Controlling everyday devices requires the usage of an Android application. The Bluetooth module, microcontroller, relay board, and light are additional crucial components used in this project. Switches in this system could be wirelessly manipulated at a radius of around 30 metres. It may be utilized in healthcare facilities, nursing homes, and gadgets for elderly and Parkinson's sufferers' homes [16]. An Android app for home automation provides a user-friendly and dependable technology. An Arduino Uno with a Bluetooth module is used in a home automation system to operate appliances like fans, bulbs, AC units, and automatic door locks, among other things. The study primarily focuses on the monitoring and control of smart homes via Android phones and offers a security-based smart home when the occupants are not at home. The goal of this research is to easily and affordably regulate household appliances in a smart home [17]. Instead of traditional switches that are mounted on walls, modern homes are anticipated to have centralized control systems. The user must approach the wall and operate the switches if they wish to control the appliances. The elderly and the disabled will find this procedure inconvenient. The suggested home automation system, which incorporates a remote module to control the appliances, can thus be justified by their difficulties operating the appliances. A smart phone or tablet with Android OS support can operate remotely. The Android Bluetooth app on a smart phone serves as a transmitter, sending instructions to the Bluetooth receiver module. Using electromagnetic Relays, the loads are connected to the Arduino controller [18]. The Raspberry Pi ARM11 microcontroller board serves as the foundation for the Aumation system. The essential software is created using the Python Integrated Development Environment (IDE). The second method makes use of Bluetooth technology to operate the devices when we are at home. For turning the appliances on and off, it utilises an HC-05 Bluetooth module and Bluetooth Controller smartphone application. To show how the system operates, relays and LEDs are utilised as the load. This prototype design can be expanded for a number of purposes, including security, power monitoring, fault monitoring, power control, and surveillance [19]. Although there are solutions on the market that allow you to control several programmes with a single gadget, this project gives students the opportunity to build their own communication networks, develop Android apps, and experience electrical circuit operation. An Android mobile app can be designed to use Bluetooth and the Arduino Uno Rev 3 Microcontroller to remotely operate AC-powered home appliances like fans and lights [20].

## III. METHODOLOGY

ATHM Machine works on the principle of similar to liquid dispensing and vending machine but this machine has been prepared using Arduino Uno and Relay.

Arduino UNO board comprises of the ATmega 328P microcontroller and supports digital/analogue inputs and outputs. It consists of 14 digital I/O pins, out of which, 6 can be used as Pulse Width Modulation (PWM), 6 analogue pins, a reset button, in-circuit serial programming (ICSP) header and a power jack. When connected through the USB port it communicates through Serial and loads the program into the microcontroller.

The relay is electrically operated switch which is used an electromagnet to mechanically operate a switch.Using a low power signal. Relay board with 5 relays has been used to carry the outputs for the precisedispensing pumps.

Bluetooth module (HC-05) which is intended for remote correspondence. This module can be utilized in an expert or slave configuration.To speak with HC 05 Bluetooth module ,cell phone requires versatile application for communicating and getting of information.HC-05 module has two modes,1. Information mode: Exchange of information between gadgets.

2. Order mode: It utilizes AT orders which are utilized to change setting of HC-05. To send these orders to module sequential (USART) port is utilized. 3. VCC: Connect 5 V or 3.3 V to this Pin. 4. GND: Ground Pin of module. 5. TXD: Transmit Serial information (remotely got information by Bluetooth module communicated out sequentially on TXD pin). 6. RXD: Receive information sequentially (got information will be communicated remotely by Bluetooth module). 7. State: It tells whether or not module is associated.

In figure1 model has been shown Arduino UNO, relay with the connecting wires, and Bluetooth module sensor, which is connected to microcontroller. It receives the command from specific Mobile app used to connect with Bluetooth module (HC-05) as it acts as input of the system and the relays are connected to Arduino UNO are specially energise with the help of external source of power supply.The relays are further connected with the precise liquid dosing pumps to dispense the liquid in bottle below carrying tray. So these Pumps are acting as the output of this system, which is discussed in part three 3.

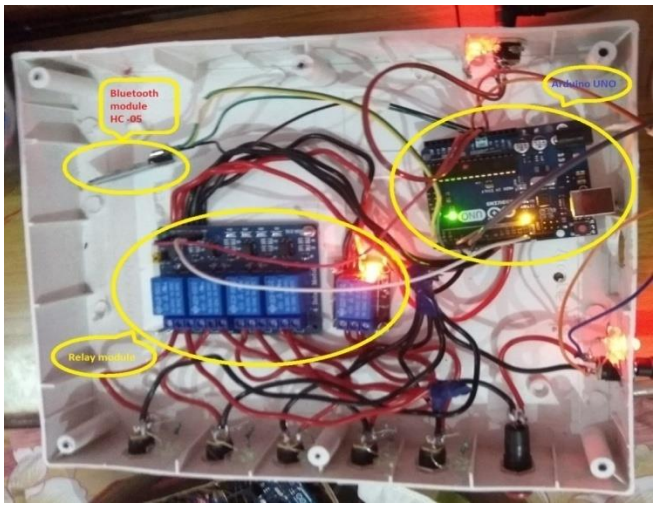


Figure1: working Circuit module using Arduino Uno, Bluetooth and Relay

## IV. WORKING FLOW OF ATHM

The working flow has of ATHM machine has been shown in figure2. In this flow it has been discussed that how a patient is interacting with the doctor and doctor connects virtually using this machine and try to understand the symptoms and diagnose the patient on the basis of the discussion between patient and doctor. A token or QR code will be generated which carries unique ID. By using this unique id patient will put his information and pay for the consultation. Once this payment is completed, this ATHM machine will dispense the medicine to the specific patient..

## V. MEDICINE DISPENSING SYSTEM

In figure 3, the medicine dispensing station has been shown. The liquid dispensing plays important role in the field of medicine and therefore precise liquid dispensing pump has been used as shown in the figure 4.

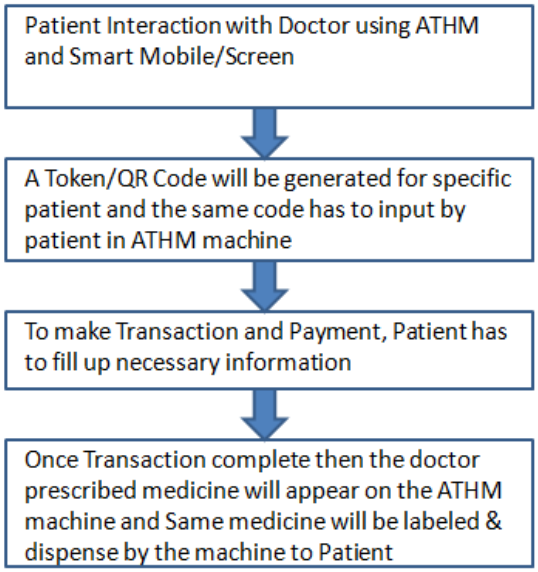


Figure2: Working Flow of ATHM machine

In this liquid as medicine dispensing system, which deals with 12V dc power supply. It has flow rate of 5.2 to 60 ml. This pump consists of silicone pipe, which is of food graded quality and therefore it is suitable to use for passing medicine (i.e. liquid). Also, the pumps are controlled with pulse with modulation (PWM) with software program for controlling time duration.

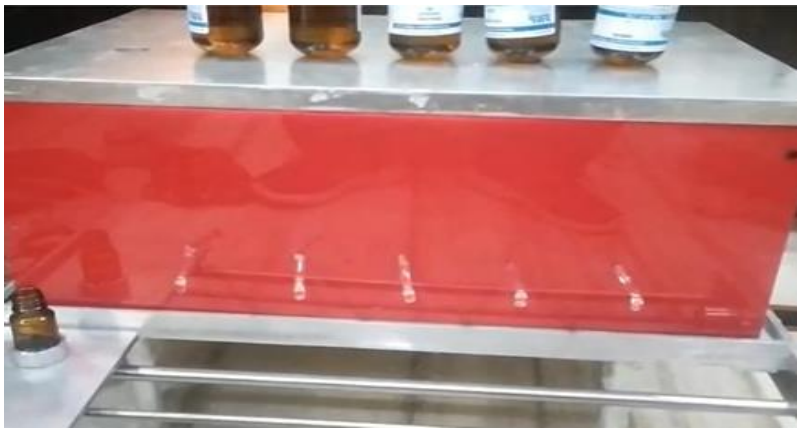

Figure3: Medicine Dispensing Station

There is one inlet shown in the figure 4, which is connected to major bottle (bottle with liquid 500ml as shown in the top ) and one outlet which is just point in downward direction for dispensing in minor bottle ( in which pills carrying bottle are now filled medicine)

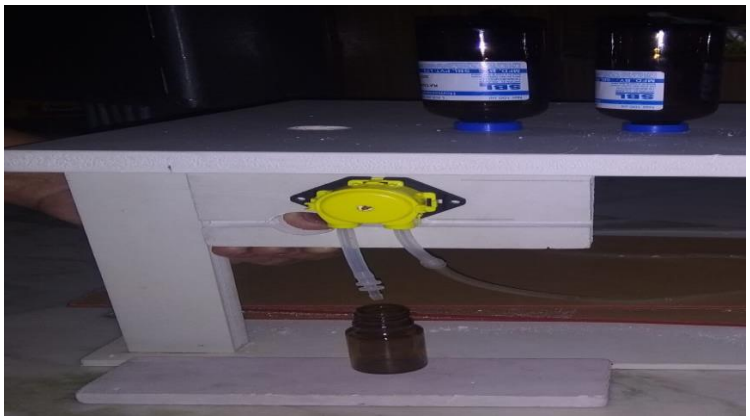

Figure4: Precise Liquid dispensing Pump

## VI. CONCLUSION AND FUTURE ENHANCEMENT

Any time homeopathy Medicine (ATHM) has been proposed for apportioning of "homeopathic weakening prescriptions". This machine has bottles globules filling unit and afterward dropping of homeopathic weakening in globule and afterward covering of jugs and marking on it. The proposed machine with liquid (i.e. medicine) dispensing system successfully controlled via Bluetooth. In future, web based server can be used to communicate and control the dispensing flow. In the next step capping and labeling of the bottle will be accomplished. Our Further step on this project will be IoT, PLC and HMI screen and its compatibility will be checked.

The future scope of this machine will be bright because of inclusion of the state of the art technology in order to serve the society.

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