

Smart Handwash System

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ABSTRACT

The Automatic hand washing machine initiative aims to support people in limiting the spread of Covid-19, germs, and bacteria in hospital. Direct contact at the sink and a lack of community awareness about adequate hand washing can transmit the virus and bacteria. The research's objective is to build a touch-free handwashing device that will aid in resolving the issue of preventing people from contracting the virus in hospital. The project incorporates a soap, water, and tissue dispenser to ensure proper hand washing. After placing a hand on the sensor, the soap and water was released simultaneously to encourage user to use soap. The water will be released afterwards for washing the hands. The tissue will spin in order to dry the hands. This study successfully showed a functional water, soap, and tissue dispenser in a touch-less system that is acceptable for use in hospital.

KEYWORDS: Real time feedback, touchless, Hygiene monitoring, Advanced sensors, Temperature control, Hand sanitizer integration.

INTRODUCTION

Coronavirus, also known as covid-19, was a virus that wreaked havoc on the world in early 2020. The virus, which spread around the world, was named coronavirus. It is expected that the first coronavirus would be discovered in China before the end of the year 2019. The World Health Organization (WHO) declared the outbreak a Public Health Emergency of International Concern on January 30, 2020, and declared the virus a pandemic on March 11, 2020. The entire world is currently battling against the coronavirus, and Malaysia is one of the countries that is also fighting against the virus. According to the findings of the study, people can become infected with coronavirus by coming into contact with a surface that has been contaminated with the virus and then touching their mouth, nose, and eyes. As a result, washing hands often with soap and water is one of the most effective ways to prevent the transmission of the coronavirus. Studies have shown that the coronavirus virus may be spread to people's mouths, noses, and eyes after they have touched a surface contaminated with it. One of the greatest strategies to prevent the transmission of the virus is to wash hands often with soap and water. In this scenario, the initiative is aimed towards people in hospital to use such as doctor, nurse, patient and public. A hospital is a health care institution providing patient treatment with specialized health science and auxiliary healthcare staff and medical equipment. Proper hospital cleanliness is critical in preventing patients from contracting serious illnesses and diseases, as well as preventing germs and bacteria from spreading to visitors and out into the general population. In this case, hospital is the primary place for any Covid-19 concern. Hence, a perfect hygiene must be implemented to avoid any harm. Nowadays, most hospital and its facilities still

utilize a standard faucet for sinks or a single automated faucet without an automatic soap dispenser and us.

OVERVIEW OF SMART HANDWASH DISPENSER

This sort of issue must be addressed in order to prevent the spread of viruses and germs in the washing area. The goal of the project is to develop a touch-free system that will dispense soap and water to allow users to wash their hands. The project is titled an automatic hand washing machine that concluded Water/Soap Dispenser and Tissue Dispenser. This project is specified for everyone uses in hospital. The steps that must do to get the water and soap to start flowing is present the hands in front of the sensor. The system also includes a tissue dispenser, which allows people to dry their hands after washing their hands. The Arduino Uno, an ultrasonic sensor, a water and soap pump, and a power supply are the primary components of the project. As a result, the idea aims to discourage people from touching the sink, which will assist to decrease the spread of coronavirus and germs in hospital.

WORKING

When a hand is placed near ultrasonic sensor 1 then semiliquid soap is released from an dispenser, dispenser works with servo motor which is place to dispenser. Which acts as an automatic handwash dispenser.

When a hand is placed near ultrasonic sensor 2 then water is released through pipe, which is placed near ultrasonic sensor 2, water is released because of DC motor pump which is placed in water container, Due to which it works as an automatic tap.

When a hand is placed near ultrasonic sensor 3 then 775 motor starts to rotate, due to this motor works as an hand dryer.

PROJECT IMAGE

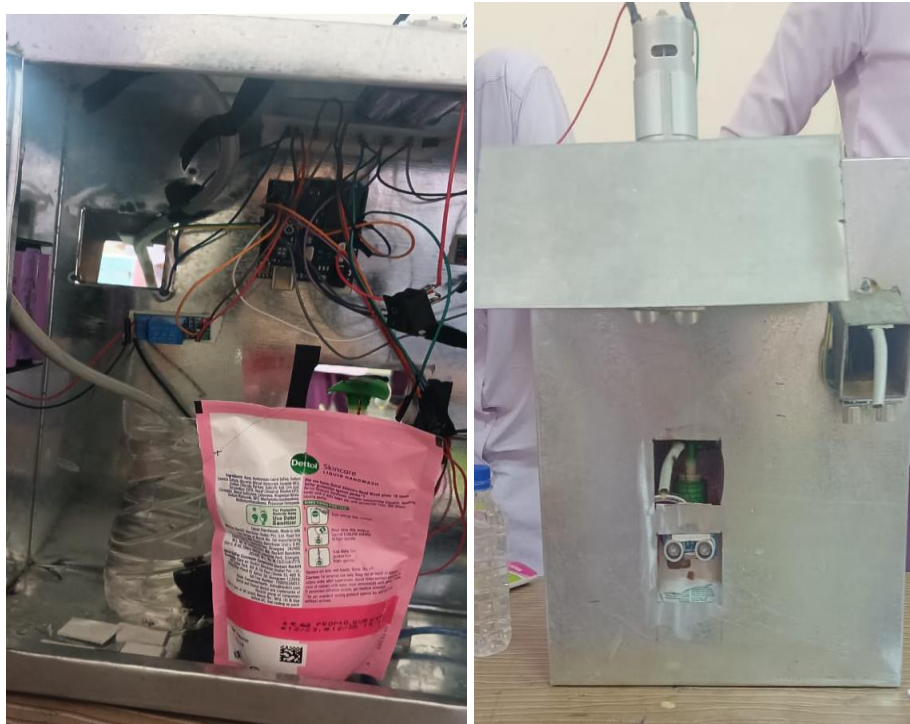
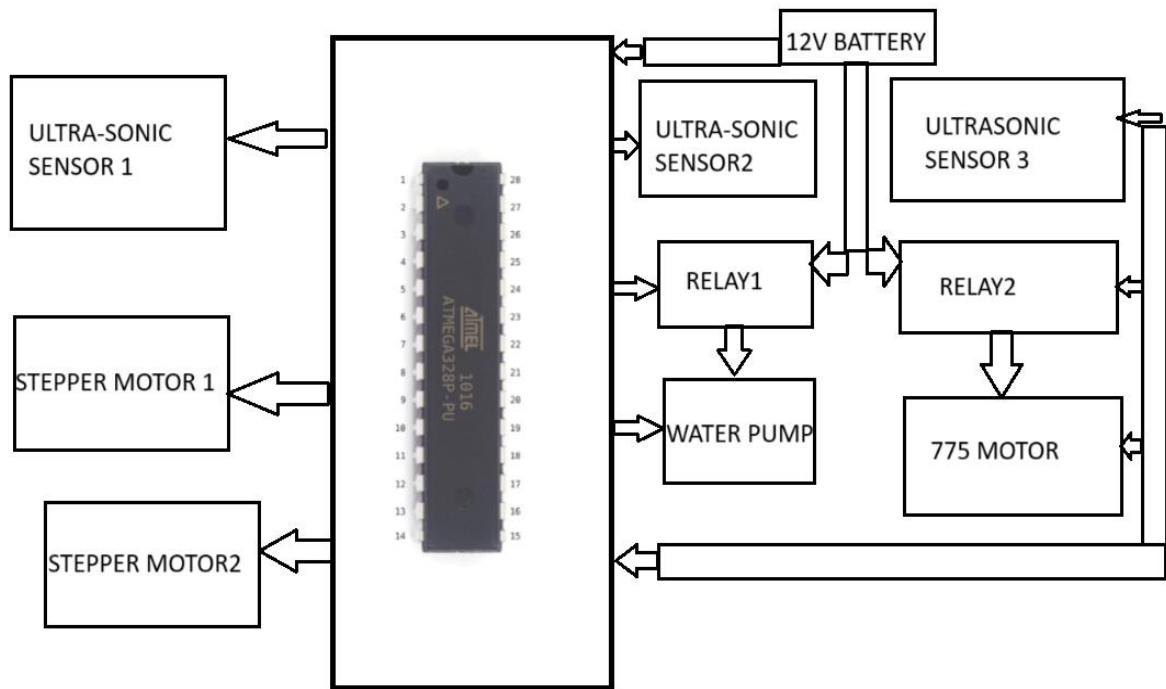


Figure 1: SMART HANDWASH DISPENSER



DIFFICULTIES WITH FOG COMPUTING

Fog computing operates in a distributed environment that considers numerous obstacles among the principal obstacles are:

Decentralised architecture: Fog computing's decentralised architecture produces a duplicate structure. Devices situated at the periphery of the network may exhibit instances of code duplication. The fog environment should therefore concentrate on lowering the redundancy.

Networking resources: At the edge of the fog architecture, the network resources are dispersed at random. To handle the intricacy of connectivity, a suitable network is needed.

Gadget variability: The fog architecture's endpoints are diverse. Furthermore, this element of heterogeneity at the device and network should be considered by the fog services.

Computational difficulties: While certain calculations are carried out at low costs of computation at fog clouds, others are offloaded to clouds where response time and computational capacity are not restricted. Determining which calculations must be carried out at the cloud and which ones must be performed at the fog is a hurdle.

The Fog Architecture poses security problems due to its diverse composition of devices. They could be open to several kinds of attacks. Since the fog's gadgets are situated in an area with low levels of security, any weak point or physical assault can be quickly exploited.

CONCLUSION

The project's purpose is to raise awareness among the hospital community about the need of hand washing in hospital and to ensure that everyone can do their part to prevent the spread of viruses such as covid-19 and bacteria. The use of a touch-free system for washing hands can be extremely beneficial in preventing the transmission of viruses and bacteria that can infect people through contact with contaminated objects or surfaces. During the same time, doctors may ensure that their hands are free of bacteria and viruses when they are working in the operating room. Furthermore, because hospitals and healthcare facilities

consume such large amounts of water, it is anticipated that they will face increased pressure to develop methods and systems that would assist them in reducing their usage. Fortunately, this project can assist in reducing water consumption to the greatest extent feasible because it has a function that restricts the amount of water that can be used in a single use. Those issues will be resolved as a result of this innovation, which will result in the development of a new automatic appliance that uses a sensor for hand washing to avoid the transmission of viruses and bacteria while also reducing water and soap usage in the operating room. Finally, this innovation concept will expand the use of technology in the future and will have the potential to become a high-tech sink in hospital.

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