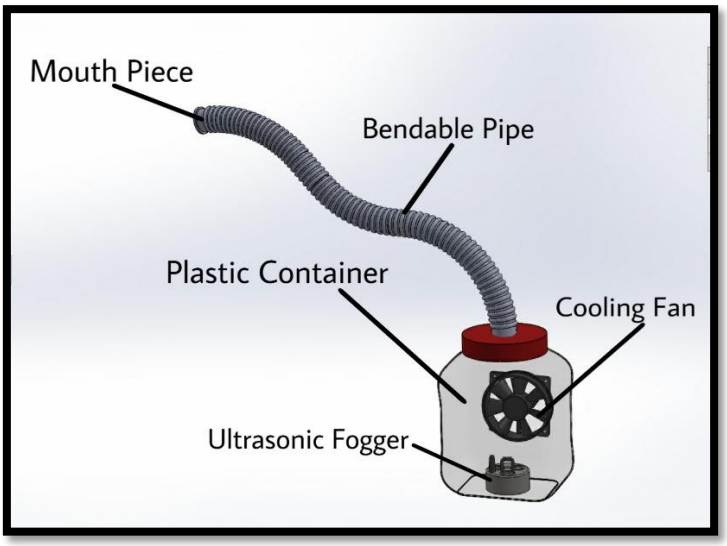
APP CONTROLLED AUTOMATED NEBULIZER

Overview of the project

This project aims at creating a cost effective, automated nebulizer using an ultrasonic fogger controlled via a microcontroller and an android app for monitoring the time.

The purpose behind the innovation

The Covid-19 has wrecked havoc all over the world. This has resulted in a surge in usage of nebulizer. But each sitting costs around Rs 200-300 which cannot be afforded by all sections of the society. Thus the automated nebulizer is built with the purpose of providing the necessary treatment recommended by the doctors at a cheaper price.

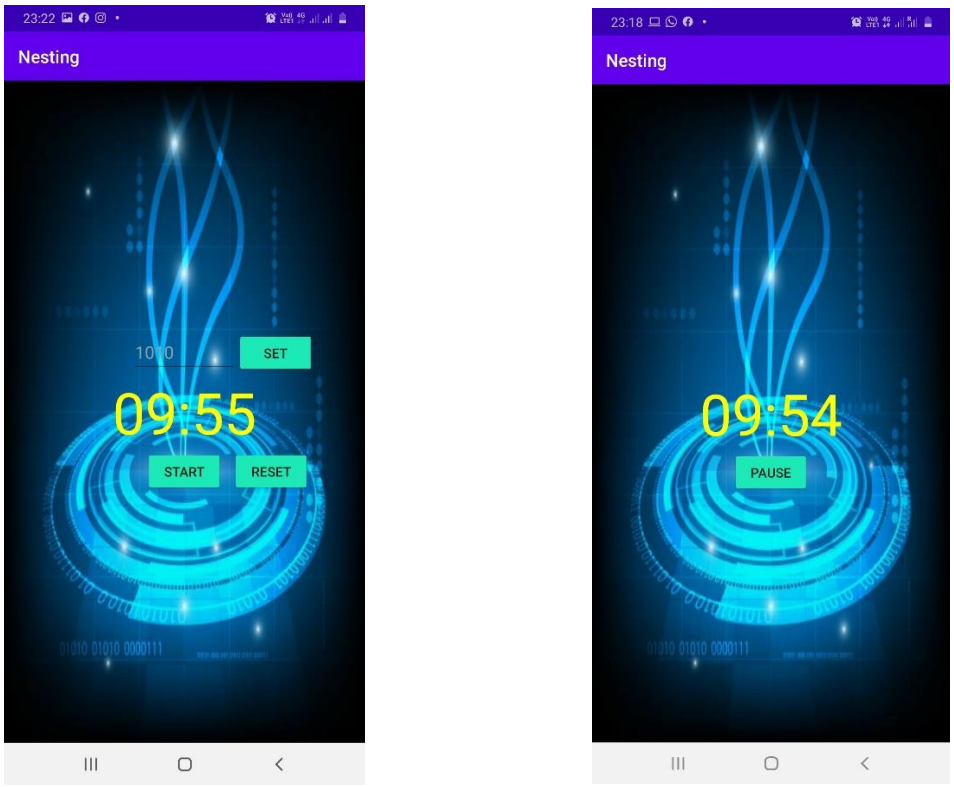


Model of the Automated Nebulizer

Technical background

- **NodeMCU**: NodeMCU is used as a microcontroller to control the entire process of automation. It is further controlled by an android app that has been designed.

- **Ultrasonic Fogger**: A built-in sensor detects the presence of water and activates the transducer plate. The transducer vibrates causing the water to turn into micro sized droplets, which vaporises to turn into fog particles.
- **Android App**: The app “Nestin“ has been designed to automate the nebulizer. A time period is set for operating the nebulizer. As the time starts power is supplied to the nebuliser via microcontroller. Upon stopping the timer, power is withdrawn and the nebulizer stops working.



Nestin Android App

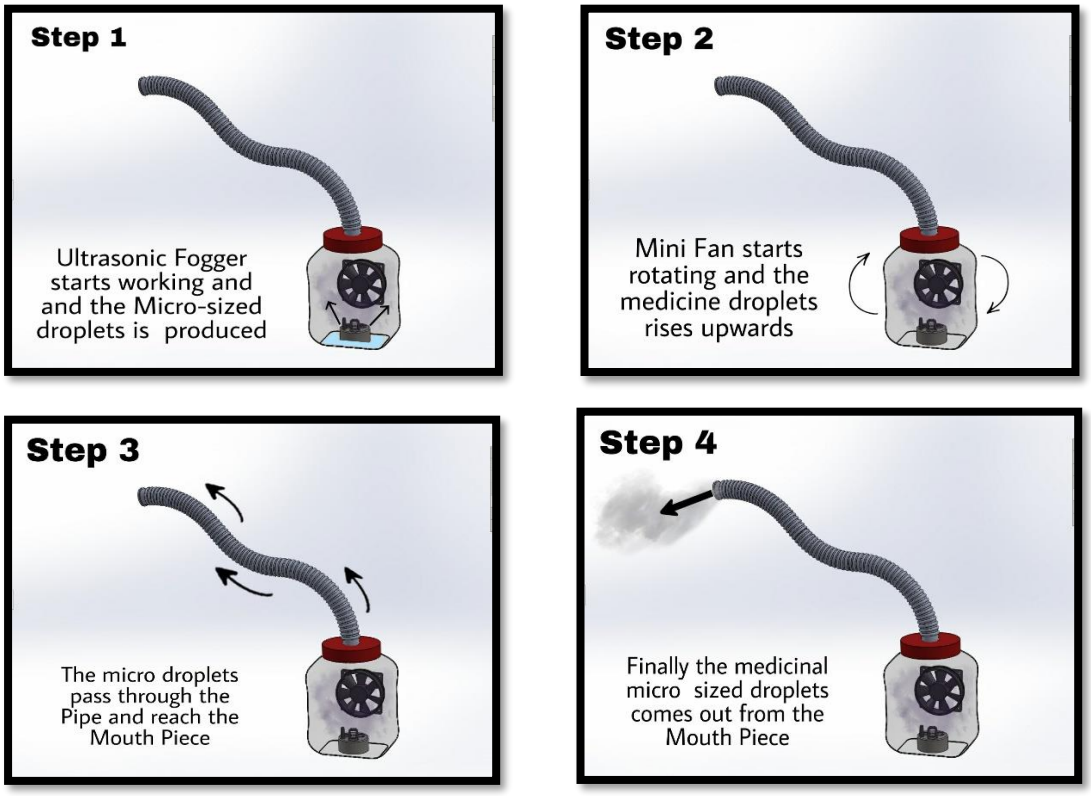
Working:

Our main emphasis was to make this nebulizer cheap and automatic. In this smart world, everything has to be as smart as possible.

This nebulizer basically is an app-controlled nebulizer. Doctor, nurse or any Guardian needs to switch on the nebulizer and set time according to their requirements. The nebulizer will turn off automatically.

When a person starts the nebulizer by setting the required time, there is a pulse from NodeMCU which completes the circuit by giving the signal to the base of the transistor and the timer starts the countdown. As the

timer strikes to 00:00:00 the NodeMCU cuts off the circuit by not allowing any voltage to the base of that transistor. And hence the nebulizer stops.



Real-time scenario:

We have many children and old people as patients as well. They can't take care of their nebulization on their own. For them a nurse is always needed to take care of switching on an off the nebulizer. A small carelessness in this case may lead to a severe loss. Hence this Smart nebulizer can be used instead which will be much safer for a life.

Applications

- The nebulization process is done at a much cheaper rate as compared to the ones used currently.
- Being automated, it can be handled easily.
- Senior citizens can be benefitted by this as they can used it without anyone's aid.
- Asthama patients need nebulizer frequently. Hence the automated nebulizer can be of great help and the sittings will cost quite less.

Future aspects

Some people are allergic to the steroids that a nebulizer makes use of. They feel dizzy and uncomfortable sometimes. To overcome this issue we look further to incorporate a steamer with temperature sensor and heater into the automated nebulizer. This could be effective for people allergic to the steroids.

We also look forward to improve our app and include features like

- Online ordering of the automated nebulizer
- Doctors' assistance in the app so that the patient or person is free to consult the doctor over the app.

References used for the project

- https://www.researchgate.net/publication/12425670_Nebulizers_Principles_and_performance
- https://college.acaai.org/publications/college-insider/nebulizer-use-during-covid-19-pandemic