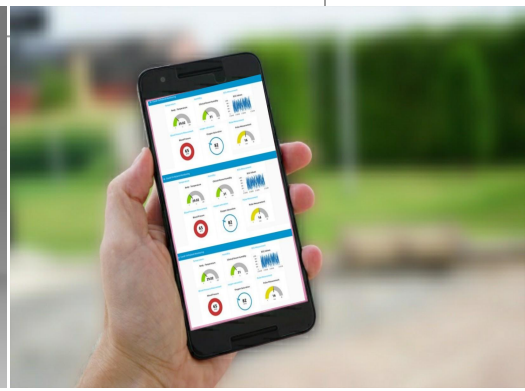
Low cost Portable Screening Booth for COVID-19

Team : HUMAN TARGETS

Dr Geetha G	B.Tech, M.Tech, PhD	geetha@sctimst.ac.in	IEEE 01578277
Chetana Krishnan	B.E, BME, SSNCE	chetanakrish20@gmail.com	95459912
Navadeep Ganesh U	B.Tech, EEE, MSRUAS	navadeepganesh.ngu@gmail.com	96078027
Subramanya Navada K R	B.E ,ETE,SIT karnataka	subramanyanavadakr@gmail.com	96698763
Srishti Venkata Sree Lalitha	M.Tech, Pondicherry University	narasimha.srilalitha@gmail.com	96686265
Sanket Bijawe (Mentor, Expertise: ML, DL, NLP)	B.Tech, VIT, Pune Co-founder - iSpeakFree.ly	sanket.bijawe09@ieee.org	95154717

Kindly visit the video link
https://drive.google.com/open?id=1Htjr98oXv1U4FuEJ9OY1qX6mQGEQy7F8



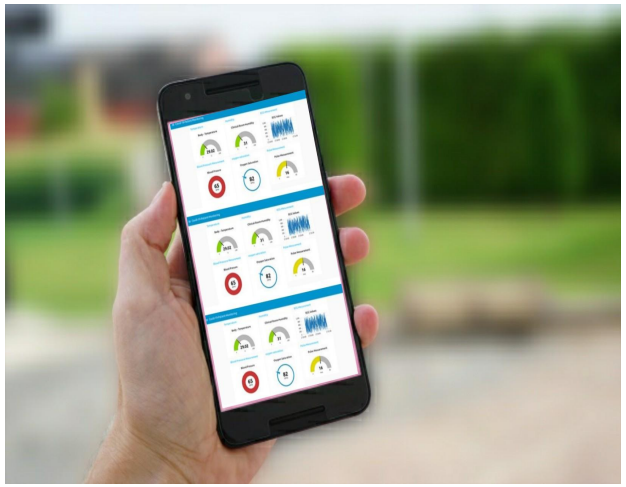


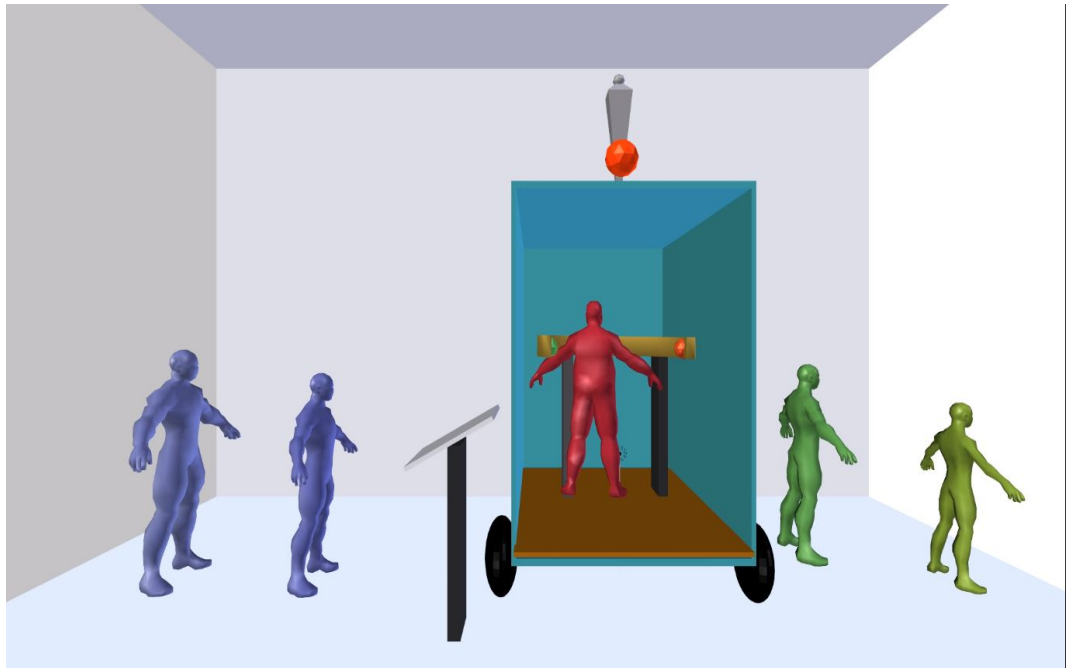
Problem Overview / Idea

- The primary motivation is the **shortage** of medical equipment , hospitals, healthcare staff, population density etc for having proper screening for Covid -19 and the ignorance of people on community spread
- Clinical community is battling for COVID-19 and requires **effective,contactless** monitoring of vital signs to identify all and treat in an affordable manner.
- N**ot all need ventilation/ICU care** but **many will require constant monitoring** and admission for **medium** symptoms (**in-room care**).
- Road side screening booths which displays basic parameters through contact less methods will boost the morale and remove the fear of all category of people.

We **need portable COVID-19 screening booths** which are:

- Indigenously manufactured
- Completely contactless
- Rugged
- Technically sound
- Energy efficient
- Ubiquitous(like thermometer, breath monitor)





Proposed Solution

- A **low cost portable Patient Screening System** with **contact less monitoring** using a **central dashboard**.
- Continuous monitoring of **vital signs** like **body temperature, blood pressure, respiratory rate, lung compliance, SpO2 or Oxygen saturation, and ECG.**
- An automated voice guidance to get the person's details like mobile number etc.
- The monitoring system will send the collected data to a **central console** for **visual depiction** and **alerting** when required. Central console developed using Open Source.
- **Complex** and **expensive** sensors have been replaced with low cost active components and amplifiers.
- Time to time sanitation will be done once a person leaves the booth before the other person enters.
- Leverages **IOT**, integration with **Machine Learning** for alerting.
- SMS alerting

Components we use and how it is different

Component	Use	Features
Electronic nose	Measure the respiratory rate and breathing pattern	One of the accurate and non invasive methods to measure the breathing pattern.
Bolt Module	Send messages and notifications to person's mobile and to the COVID center.	One of the efficient and speed up tool which can have control over many devices at the same time.
Piezoelectric	To measure the weight of person,also to provide small quantity of electricity which can be used to charge the iPad	Modern method to measure weight,efficient to produce a constant energy
Solar cell	Provides the required electrical energy for the project	It allows an efficient,economical and environment friendly source
Door sensor	To detect appearance of new person	
Tablet / Mobile with GSM	Tab:Provides information regarding covid-19 not only information regarding it,but also gives voice messages which are used in procedure mobile with gsm: To update the result, if result found is +ve or near to it,information will be updated	All collected datas can be visualised and monitored with this.
InfraRed sensor	To detect height of person inside room	Since we are using thermal scanning tool,the position of the scanner has to be modified according to the height of person

Impact Of Project

- **The solution is for the clinical community battling COVID-19 and similar scenarios.**
- **The solution is a low-cost COVID-19 screening system for monitoring the vital signs of patients (respiration rate, pulse rate, body temperature, oxygen saturation) and will have an impactful outcome in patient monitoring.**
- **Screening booths are necessary for country like India with high population density and less number of hospitals and health care staff.**
- **These screening systems reduces the cost of patient care and is beneficial even after COVID. System alerts will allow proactively detecting (in a contactless manner) early warning signals that require immediate intervention.**
- **The cost to locally manufacture and set up one is a fraction of what an other diagnostic device costs. Portability will help to keep the screening booth in public areas, like bus stations, railways, malls.**

Implementation Plan

- **This is an low cost, portable device which has vast application areas. The power of this device can be effectively utilised by using in public areas.**
- **Since portable, it can be used as screening booth in public areas, like bus stations, railways, malls.**
- **Implementing Booths with solar energy can save money and energy and hence is sustainable.**
- **We are open to both kind of business models self manufacture (own venture) or collaboration with a bio-medical device manufacturer (private or public sector).**
- **For a field prototype (2-3 pieces), team will use their own funds and collaborate with a small scale bio-medical device manufacturer. It is expected to take around 4-6 weeks which includes a central monitoring control. There will also be a need to move to HL7 messaging standards.**
- **For scaling up manufacture, we will have to look for funding from external sources.**

Finally, we are looking forward to implement this effectively, so that whole humanity will be benefitted

Kindly visit video link :: https://drive.google.com/open?id=1Htjr98oXv1U4FuEJ9OY1qX6mQGEQy7F8