Top 20 ideas from students & Project staffs of IITG for COVID-19 Challenge

Organized by IIT Guwahati jointly with IIT Guwahati Research Park

Crop Control Using Drones (mitigating risk by keeping local crowds and gatherings in check)

ANGAM BHATTACHARYYA, Research Scholar, Dept. of Physics

Proposes to increase the awareness of citizens about monetary schemes, via an ‘App’ designed by the team, so as to effectively release their economic pressure during COVID-19 pandemic.

Compact and cost-effective ventilator design

MADHUMOHAN PRADHAN, Research Scholar, Dept. of EE

To receive the expected shortage of ventilators due to the COVID-19 pandemic with an extended goal to make it a low-cost product to reach out to the local and middle-income countries of the world.

A Combinatorial Approach to Screen COVID-19 Patient from Normal Flu or Cold

SUBARAT MONDAL, Research Scholar, Dept. of Chemistry

Proposes a combination of an analytical test and computational methods to calculate the risk of COVID-19 cases, circumventing the use of the standard COVID-19 detection kit, and thus reducing the economic burden.

Study of cured covid patients

SONALI LITARE, B.Tech, Mechanical Engg.

Developing a machine learning-based pattern recognition algorithm to find useful data from cured cases of COVID-19.

One-step, cost-effective fabrication of the highly efficient electrochemical sensor for instant detection of COVID-19

SUPTIJDA DAS, Research Scholar, Dept. of Chemistry

Proposes a paper-based sensing approach with mobile interfacing, capable of breath as well as saliva testing, intending to bring down cost and testing time and increase efficiency.

Economic assistance to the citizens

VEDRA KULKARNI, B.Tech, Dept. of CSE

Proposes to increase the awareness of citizens about monetary schemes, via an ‘App’ designed by the team, so as to effectively release their economic pressure during COVID-19 pandemic.

Novel optical technique to characterize the RNA sequence of SARS-CoV-2

SUKRAJ SARKAR, Research Scholar, Dept. of CSE

Proposes to make an interference pattern-based detection of the nucleotide variants of the viral RNA. This will help to detect region-wise mutations of the viral genome, on a global scale, hence having many applications.

Autonomous UGV for PRAFULL MANGAONKAR, B.Tech, Dept. of CSE

Proposes robot-based solutions using high-intensity ultrasonic sources capable of automated disinfection of large areas.

Possible Therapeutic Targets of SARS-CoV-2 Infection: Cyclin Dephosphorylation

SHAMBHAVI PANDEY, B.Tech, M. Tech, Dept. of CSE

Proposes different approaches based on interference with the critical steps of the virus host interaction.

Rapid diagnosis of positive COVID-19 patient via RT-LAMP technique

GOLUPRASAD SAH, Research Scholar, Dept. of CSE

Developing a RT-LAMP based test kit for virus detection, capable of being produced in an urgent basis, releasing the dependence on foreign countries.

Immuno-fluororescence Drug Orange Form for Quarantine and Isolated COVID-19 Patients

VIVEK PRASHAN, Research Scholar, Dept. of CSE

Proposes an exploratory approach for finding out the immune-booster condition from synecdoche drugs and natural products, to resist SARS-CoV.

The approach of inhibiting the endosomal-acidification to accomplish anti-viral effects

KAMAL SINGH, Research Scholar, Dept. of CSE

Proposes a method based on increasing the pH inside endosomes, prior to disrupt critical SARS-CoV viral pathways.

Detachable Door Handle Sanitizer System

SIDDHARTHA MUKHERJEE, B.Tech, Dept. of CSE

Proposes a gravity-assisted self-replenishing sanitizer unit based on a panel detachable from covering on door handles.

A traditional medicine approach for treatment of SARS-CoV-2

YUVRAJ VASHI, Project SINE, Dept. of CSE

Idea based on developing anti-viral compounds from natural plant-based products. Low cost, and fewer side effects are the expected benefits.

Eco-friendly Accessories to Prevent COVID-19 Impact on Mother Earth

ABHINANDAN SINGH, Research Scholar, Centre for the Environment

Proposes to address the non-recyclable material and waste overflow associated with the management of the COVID-19 pandemic by developing recyclable biodegradable plastic alternatives.

Indoor Sanitization Robot - An autonomous wheeled robot with multiple disinfectant spray nozzles to sanitize indoor places

AMAN GOVANDI, B.Tech, Dept. of Mechanical Engg.

Proposes to develop an automatic robot capable of cleaning and disinfecting floors and walls, using disinfectant spray.

Rapidly Manufacturable Emergency Ventilator for COVID-19 and related respiratory pandemics

JOSEPH TIGAROS, Sr. Project Engineer, IITB

Proposes a basic design of a ventilator which can be assembled and set to go with local resources, as to cope up with urgent scale ups needed during respiratory pandemics.

Detection of SARS-CoV-2 using Ultra-sensitive Magnetic nanoparticle DNA probe-based PCR assay

SIDDHARTHA MUKHERJEE, Research Scholar, Dept. of CSE

Proposes a sandwich assay involving both gold and magnetic nanoparticles for signal amplification, followed by PCR based detection, which is more sensitive than conventional ELISA & PCR.

Smart N95 mask with nano protection & enhanced ventilation

SHYAM CHANDRA, Research Scholar, Centre for the Environment

Proposes to address the shortcomings of the N95 mask by incorporating activated charcoal adsorbent.