

Bangalore based startup brings mobile app for detection & risk assessment of COVID 19 infected individuals

Novel methods to supplement the early detection of disease and risk assessment of infected population to prioritise the conventional testing queue through mass screening is a crucial challenge the COVID 19 pandemic has thrown up. Combating the crisis needs technological solutions that can carry this out rapidly while minimizing risk for healthcare professionals.

The Centre for Augmenting WAR with COVID-19 Health Crisis (CAWACH), an initiative by the Department of Science and Technology (DST), has selected Bangalore based startup Acculi Labs to develop a COVID risk assessment profile called Lyfas COVID score. Acculi Labs is armed with 'Lyfas' a clinical-grade, non-invasive, digital functional biomarker smartphone tool for screening, early detection, root cause analysis, acute event risk assessment, prognosis, and home monitoring of chronic diseases which they have repurposed to Lyfas COVID score.

CAWACH, an initiative by the National Science & Technology Entrepreneurship Development Board (NSTEDB), DST, Government of India, is supporting market-ready innovations for the control of COVID-19 and startup ideas to address associated challenges.

The new technology developed with support from the Department of Science and Technology (DST), will detect the possible infection in an asymptomatic individual to prioritise the conventional testing queue as well as carry out a risk assessment of an asymptomatic individual to become symptomatic and risk assessment of an asymptomatic individual for recovery.

In March 2020, DST, Government of India, collaborated to support technologies that are solving COVID problem. Acculi Labs was selected after several rounds of screening for a solution towards mass screening. Its product Lyfas has received a grant of Rs 30 Lakh from DST and is now virtually supported by IIT Madras, Healthcare Technology Innovation Centre (HTIC), MedTech Incubator.

Lyfas is an Android application in which, when one keeps the index finger on the rear phone camera of a mobile phone for 5 minutes, captures the capillary pulse and blood volume change and derive 95 biomarkers with proprietary algorithms and signal processing techniques. It uses the power of smartphone processor and smartphone sensors to capture a bunch of body signals. The signals are subsequently processed on the principle of Photoplethysmography(PPG), Photo Chromatography(PCG), Arterial Photoplethysmography(APPG), mobile spirometry, and Pulse Rate Variability(PRV).

Lyfas then provides cardio-respiratory, cardio-vascular, hematology, hemorheology, neurology based parameters that are capable of tracking minute pathophysiological changes in the body. These changes are further profiled into organ system-wide response.

The technology is focused on population screening, monitoring of quarantined individuals, and surveillance at the community spreading phase. It has been proved to detect asymptomatic individuals with an accuracy of 92%, specificity of 90%, and a sensitivity of 92% in a study conducted with Medanta Medicity hospital.

Witnessing the success of the study, Medanta ethics committee has approved for a larger population study. This study is currently registered in Clinical Trials Registry- India (CTRI) and is acknowledged by World Health Organisation (WHO). While AarogyaSetu works on contact tracing where one has to enter your symptoms, Lyfas is a proper medical screening test which purely depends upon test results.

“Inexpensive, accessible, point-of-care smart phone based diagnostics is a powerful tool that would tremendously help in screening the high risk cases, sustained monitoring of quarantined cases and general surveillance. Lyfas is an interesting example of the rising power of technology startups in innovating relevant and creative solutions for the emergent challenges with speed and efficacy,” said Prof Ashutosh Sharma, Secretary, DST.

The clinical trials and regulatory proceedings are expected to be completed by the end of September, after which the testing facility will be made available for the general public.

Given the impact of COVID-19 globally and in India, the need of the hour is to support R&D efforts to combat the crisis and end any further damage to the economy. Department of Science and Technology (DST), Government of India, is supporting innovations offering comprehensive solutions through the startup-ecosystem, and one of such solutions is the Lyfas COVID score.