

# Research Diary

## Jeevan-Lite: Center for Healthcare Entrepreneurship, IIT Hyderabad

**KID: 20200117**

Aerobiosys Innovations Pvt. Ltd. a Medtech startup incubated at Center for Healthcare Entrepreneurship (CfHE), Indian Institute of Technology Hyderabad has developed a portable, cost-effective, IoT-enabled, battery-operated pressure and volume triggered ventilation system called “Jeevan-Lite” to save lives from COVID-19 infected patients.

JCB India Ltd. has come forward to support Team Aerobiosys to take this product for mass manufacturing. Currently, JCB has incorporated the design and product engineers to work on this project with an intention to go for mass manufacturing in a few weeks. A working prototype is ready with team Aerobiosys, currently, they are building Alpha Prototype with actual production intent parts and the required functionality as outlined in ICMR and MoHFW guidelines. Jeevan Lite is a class 2-B product currently in TRL 6 and expected to move to mass manufacturing by end of May 2020.



Jeevan Lite can perform both the invasive and non-invasive ventilation across a comprehensive set of modes and settings. It can be used for both Pediatric and adult patients. Ventilator being a life-saving device, Aerobiosys has incorporated rechargeable Lithium-ion Batteries in Jeevan Lite that can give uninterrupted ventilation for 5 hrs continuously without power supply. Jeevan Lite comes with an App-based software wherein the ventilator can be controlled using the app and real-time display of 4 critical waveforms and can be monitored virtually from anywhere, making it user friendly and easy to handle. The idea of the team is to provide a remote and non-contact operation mode to reduce the chances of viral infection for healthcare providers. Hence each breath of the patient is recorded and transferred to doctors via connected App to enable telemedicine support.

The Start-up company Aerobiosys has been set up as part of the one-year Entrepreneurship Program in Healthcare Entrepreneurship at the CfHE by two young entrepreneurs Cyril Antony and Rajesh Thangavel. The Company has been supported through the seed grants from BIRAC BIG grant and CfHE seed grant.

## Nemocare Raksha Plus from Center for Healthcare Entrepreneurship

**KID: 20200118**

An IoT enabled smart Wearable device with geolocation capabilities and an intelligent integrated decision support platform to provide disease surveillance by remotely monitoring suspected COVID-19 patients and tracking signs of disease progression.

Nemocare, a Start-up from CfHE, IIT Hyderabad has developed a continuous monitoring wearable device that will aid in remote monitoring of vitals along with geolocation and prognosis of affected and quarantined patients.



It will also aid in tracking their symptoms and the doctors will be alerted on detection of deterioration. We will also be able to understand the disease itself by monitoring positive cases and will help biopharma companies and academic institutes that are developing therapies by helping understand the efficacy and effectiveness of candidates.

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The device is ready with a design for manufacture and the clinical testing are currently running. The team is looking for scale-up manufacturers and deployment in various places.

As per ICMR guidelines, Nemocare Raksha will be able to track symptoms such as cough, fever, respiratory illnesses such as shortness of breath, heart rate, SpO<sub>2</sub>, respiration rate, body temperature, cough sounds, Geolocation of the subject and a few passive symptomatic data.

## **Nemocare Raksha can:**

(a) Provide disease surveillance by remote monitoring quarantined patients with suspected COVID-19 and detecting signs of disease progression

(b) Remotely monitor diagnosed cases to learn how this new strain of the virus affects the body

(c) Geotagged remote symptoms monitoring of most vulnerable /prone subjects and aid in timely reporting

Post the initial academic study, based on the results we have further designed with the help of UNICEF (AP and Telangana state office) studies to evaluate the health outcomes of the usage of our solution in both public and private setups.

Manoj Sanker and Pratyusha Pareddy, Cofounders of the Nemocare Wellness Pvt. Limited are part of the one-year Fellowship in Healthcare Entrepreneurship at CfHE, IIT Hyderabad. They have been winners of various prestigious International grants like the Bill and Melinda Gates Foundation Grant and Indo-US Millennium grant. The Company has been supported by BIRAC BIG grant and CfHE seed grant, Pratyusha Pareddy has won several awards including the Niti Ayog Women Transforming India (WTI) 2019 award and the BIRAC TIE Women Entrepreneur Award 2019.



**Prof. Renu John**  
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## **"Work on Effective Framework for Managing supply and demand post lockdown using Federated Learning"** **KID: 20200119**

Post lockdown when the situation moves towards normalcy there can be supply shock on the local grocery store as believed that there will be a new lifestyle after this lockdown. Rather than people going directly to the store will prefer ordering the grocery using other means so that they can maintain social distancing to avoid the situation of COVID-19. We propose a solution where consumers can be able to place the order via chat or phone to the local grocery store. The other problem arises here is the inventory management for the stores as the local grocery stores don't know all the demand for goods by the people post lockdown. If they are not able to maintain the proper inventory management for their stores it can affect the supplies of groceries to the people. Good inventory management revolves around a single contradiction: keeping enough stock in the warehouse to ensure the business keeps moving but not enough stock to drain its limited cash reserves.

Usually to avoid such kind of circumstances large stores have their own machine learning-based inventory management system with the help of which they can maintain the inventory stock in their stores. Since they have a large amount of customer data they can train the system good enough to perform well in real-time scenarios. But the same is not the case with small local grocery stores. The customer base of these local stores is not huge to train a model that can perform well in real-time scenarios. To overcome this situation one can have a centralized system where all the local grocery stores share their data to the central unit and the central unit will train the system using the data accumulated from all the grocery stores. After that, all the local grocery stores can use the same system that is prepared by the central unit. By sharing data to the central unit creates a sense of invasion of privacy for the local grocery stores. Being in this competitive world no one wants to share its customer's data as the other vendors can take benefit from it.