

## **For consideration under COVID -19 Initiatives by NITs**

**Title: Statistical and Data-Driven based Machine Learning, Forecasting and Inferences from Pandemic Data**

**Category: Data Analytics, AI to model epidemic patterns and disease dynamics**

### **Problem Statement:**

A fostering Clinical decision support system for Pandemic healthcare by analysing the problems associated with epidemic, diagnosing the symptoms faster to track and predict the spread of pandemic with an aim to build a data model using expert opinion and suggest prescriptive health care

### **Objectives:**

1. To perform a diagnosis faster and cheaper than with standard tests using machine learning algorithms and deep learning algorithms. Deep Learning techniques can be used to diagnose COVID-19 using clinical attributes, X-rays and Computed Tomography (CT) images.
2. To collect expert opinion from reputed doctors and specialists and construct a data model representing health conditions of COVID -19 pandemic like cough, fever, difficulty in breathing, clinical attributes, X-rays and Computed Tomography (CT) images.
3. To develop algorithms that will predict the disease conditions interactions and determine risk factors for the patients.
4. Use of deep learning and Predictive analytics methodology for disease prediction focusing on epidemics.
5. To track and predict the spread of pandemic which can be a source of valuable data input for public health authorities to plan, prepare, and manage the pandemic.
6. To develop a web based and mobile app to assist pandemic health care.
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### **Deliverables:**

1. The proposed clinical decision support system can be as accurate as humans, can save radiologists' time, and perform a diagnosis faster and cheaper than with standard

- tests. Deep Learning & Machine Learning techniques can be used to diagnose COVID-19 using clinical attributes, X-rays and Computed Tomography (CT) images.
2. The proposed clinical decision support system can be used to track and to predict how the COVID-19 disease will spread over time and over space.
  3. The proposed web based and mobile app can assist pandemic health care for use by hospitals, patients, their associates for health monitoring

**Expected Time-line:** 12 months

**Remarks:** Funding requirement Rs.2, 40,000/-

**Proposed by:**

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