

## **Faculty - Google Cloud Research Awards**

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### **1. Dr. Alwyn Roshan Pais and team "Deep Learning Models for COVID-19"**

**USD 10000 Google cloud credits**

Project title : Deep Learning models for COVID-19

World Health Organization has declared the recent Novel Corona Virus, COVID-19 as Public Health Emergency of International Concern (PHEIC) which has affected 213 Countries / Territories including India till date. WHO has characterized COVID-19 as a Pandemic on 11th March 2020. In this context, NITK Surathkal has started a research study to predict the growth of the cases in India using Machine Learning. We are using Recurrent Neural Networks to build a Deep Learning Model and answer many questions that can help the administration make important decisions that can save lives. A group of Volunteers consisting of Alumni, Faculty and students of NITK are working tirelessly on this project under the supervision of Dr. Alwyn Roshan Pais, HOD, CSE Department NITK Surathkal. This research work has been funded by Google Cloud.

This interactive Tracker helps visualize the results of our work.

The results of this prediction may be used for saving lives, by taking appropriate measures

Technical details of this open source project are available at <https://indiacovid.seva.ml/>

If the above mentioned link does not work, you can use the following link:

### **2. Dr. Jeny Rajan, Asst. Professor, Dept of CSE & Team, has received the Google Cloud COVID-19 Research Award credits of \$7600 for the project of "Artificial Intelligence based tool for COVID-19 Detection".**

Artificial Intelligence based tool for COVID-19 detection from Chest X-Ray Images

The Dept. of Computer Science, NITK Surathkal developed an AI based tool for identifying COVID-19 from Chest X-ray images. The Chest X-ray procedure is less costly, widely available and can be used for a possible preliminary classification of COVID-19. The proposed model is evaluated on a large dataset with more than 1500 samples and achieved a precision and recall of above 90%. Dept. of Respiratory Medicine, JSS Medical College,

Mysore, is also collaborating in this project. The team is now focused on incorporating COVID-19 Pneumonia Severity in the model. Dr. Jeny Rajan, Asst. Professor, Dept of CSE is leading this project and this project is now supported by Google through Google Cloud Platform credits.

**3. Dr. Sowmya Kamath S, Assistant Professor, Dept of IT, awarded the Google Cloud COVID-19 Research Grant of US \$10,600, for ongoing research in healthcare analytics.**

Due to the limited availability of COVID-19 test kits, many countries have found it difficult to keep up with the rate of mass testing for their citizens.

Even with rapid testing kits, the process is a time-consuming task, with a reported false-negative rate as high as 30%. Our proposed solution is an

AI based low-cost screening mechanism for diagnosing potential COVID-19 infections at an early stage even before initial symptoms appear, as an alternative to the Rapid testing kits. The objective is to make the proposed diagnostic solution scalable for contact-less, cost-effective and large-scale deployment, to enable hospitals and healthcare centers to perform screening with already available resources. The solution can be deployed as a Clinical Decision Support System with evidentiary support, and is currently under development. Early results have been promising, and are being validated by the doctors who we are collaborating with. We need extensive computational resources for this, which are provided by Google Cloud's COVID-19 Research Grant, in the form of Cloud credits worth US \$10,600.

**4. Dr Neelima B, Adhoc faculty, Dept of Information Technology has received Google Cloud COVID-19 research credits of US \$9100 for the project titled, "HPC Framework for Covid-19 Modelling".**

Project Title: HPC Framework for Covid-19 Modelling

Project Awarded by: Google Cloud COVID-19 research credits program

Project Amount: US \$9100

Project Duration: 180days

Principal Investigator: Dr. B. Neelima

Affiliation: Adhoc Faculty, Department of Information Technology, NITK, Surathkal.

Abstract: This work proposes to design and prototype a high performance computing

(HPC) based modeling framework to simulate complex epidemics like Covid-19. The proposed framework provides a web interface where the client can provide interventions based on local and regional policies and interventions based on computational models that can illustrate the space-time dynamics of epidemics. The middleware collects this data and simulates with interventions and merges this data with the epidemic propagation simulation. This model is aimed at providing fine-grain propagation details which are useful for predicting the future epicenters and providing inputs for policy analysts and epidemiologists.