

Team: intelligence

Title: Diagnosing COVID-19 using AI-based medical image analysis

The Team

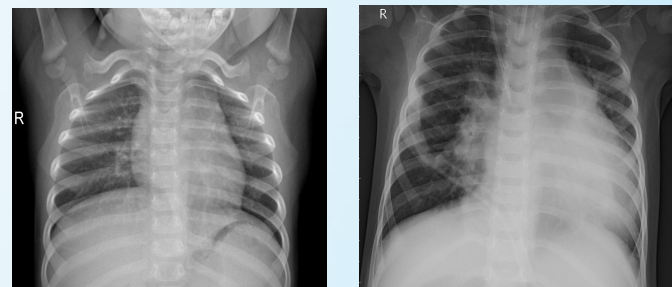
1. **Anuraag Shankar:** Interested in deep learning and reinforcement learning. Proficient in C++, Python and have done web development projects using Django. Currently pursuing courses and projects on reinforcement learning.
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2. **Asawari Walkade:** Full stack developer with special interest in UI/UX development and game design. Have worked on various web dev projects and currently pursuing a course on UXD and Interaction Design.
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3. **Tanusri Bhowmick:** Full stack developer, fluent in Java, C++, having successfully completed various projects on web development and android development projects. Currently pursuing projects in Spring boot.
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4. **Yash Sonar:** Deep Learning and Web Development enthusiast with experience in Keras, Tensorflow, Node.js and React.js. Passionately developing efficient and real-world projects.
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Idea / Solution

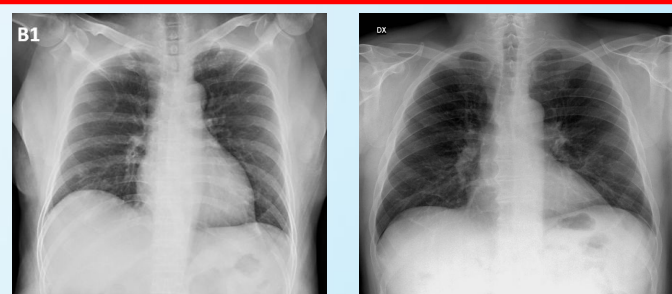
- Our software's core is a model that accepts **chest X-ray** images of patients and **predicts** whether a person is **infected with COVID-19** or not.
- This is achieved using a **transfer learning** model in **Keras** which uses **InceptionResnetV2** as its base model for **classification** of X-rays.
- Our model achieves an **accuracy of 100%** over a **test** image set of **80 images** and has been **trained** on a set of **375 images**.
- The complete details of the **dataset**, **training** methods, **evaluation** methods have been specified in the model's **GitHub repository**:

https://github.com/anuraagshankar/CDAC_Covid-19_X-Ray

Non-Covid Cases



Covid Cases



Need

- The number of centers where **testing of COVID-19** takes place is only **207** which is really **insignificant** in comparison to the amount of **cases emerging daily**.
- It is thus extremely necessary that the **patients being tested** be the ones who genuinely have a **higher probability** of being **infected**.
- The **current system** that permits an applicant to be tested is a **primitive one** in which the person must **suffice** a given **list of conditions** such as their travel history.
- **Our model** would provide a **more advanced approach** to decide whether a person is to be tested or not.
- A **chest X-ray** of the applicant can be the **primary test**, whose **result** may decide whether he needs to be **further tested** or not.
- This primary test will be **carried out by our model** and is a more **scientific approach** against the current system.

Deployment Approach

- The number of **centers** in India which have an **X-ray facility** is in the range of **thousands**.
- Our software can be **embedded** in these centers to **obtain results** which shall decide **further testing** of a patient.
- Since the **X-ray digital copy** is **available** almost **instantly**, the **results** of a scan can come along **with the report** of the patient **immediately**.
- Our approach would be to **deploy our model on a website** and make it **available for free** to these centers in **association** with the **government**. This would allow us to **maximize our reach**.
- Apart from this we can also contact **technical organisations** which are connected to the **health sector** to further **increase our reach**.
- **This method** of primary testing **drastically improves** the current testing approach because of **significantly better resource management**.



Thank You