

# Simple COVID-19 x-ray detection using Neural Network

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## 1 Abstract

Coronavirus Disease 2019 (COVID-19) has long been devastating the health of the global population, causing respiratory disease. Therefore, simplifying the diagnosis of the patient has a crucial effect on health of the people. This is done through a screening methods implementing radiology examination and using chest radiography since a great quantity of patient present abnormalities in those regions. In this small project we are going to illustrate non-invasive implementation with a deep convolutional network for detecting COVID-19 possible cases using X-ray images throughout a dataset of 8425 elements equally divided among which we have three classes: Pneumonia, COVID-19 and normal chest. The main purpose of this content consist of reaching high performance, therefore we have applied transfer learning technique using a DenseNet169 network. In our experiments, we achieve a 95.36% of accuracy and 94.61% of precision in COVID-19, proving that deep learning models implementation could be successfully applied for COVID-19 X-ray images classification.

## 2 Results

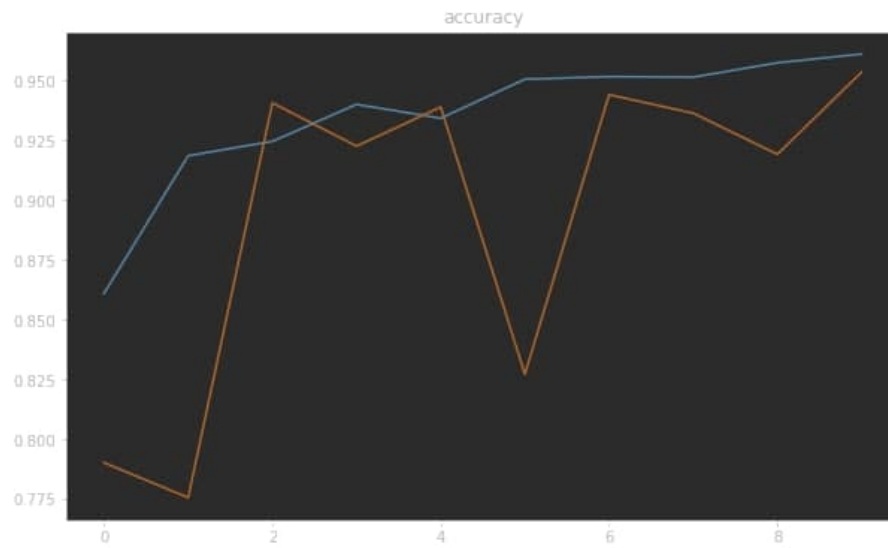


Figure 1: Accuracy plot. Result achieved = 95.36%

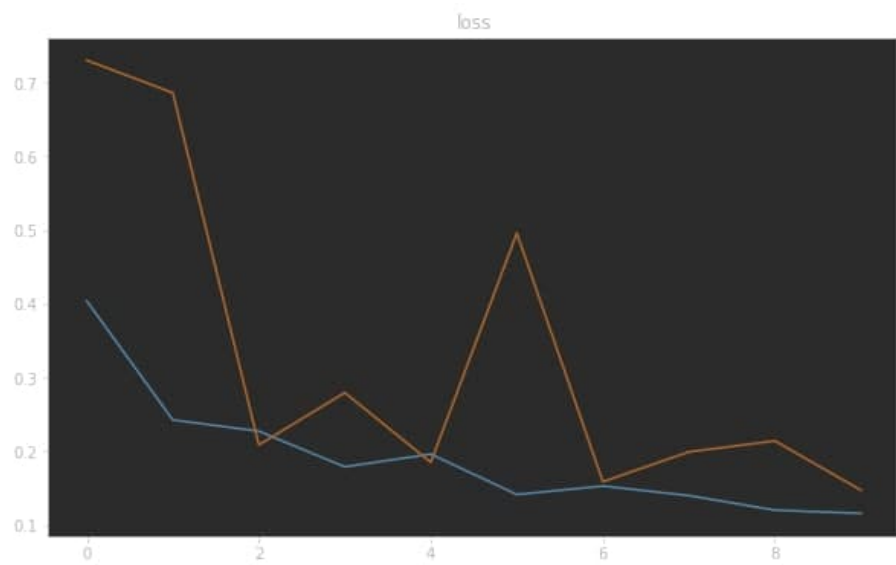


Figure 2: Loss plot

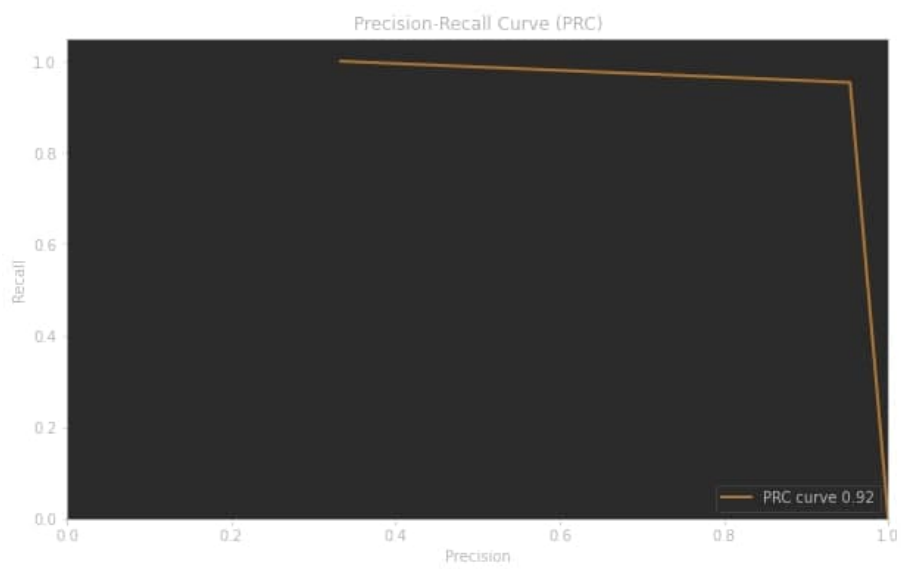


Figure 3: PRC curve. Result achieved = 92%

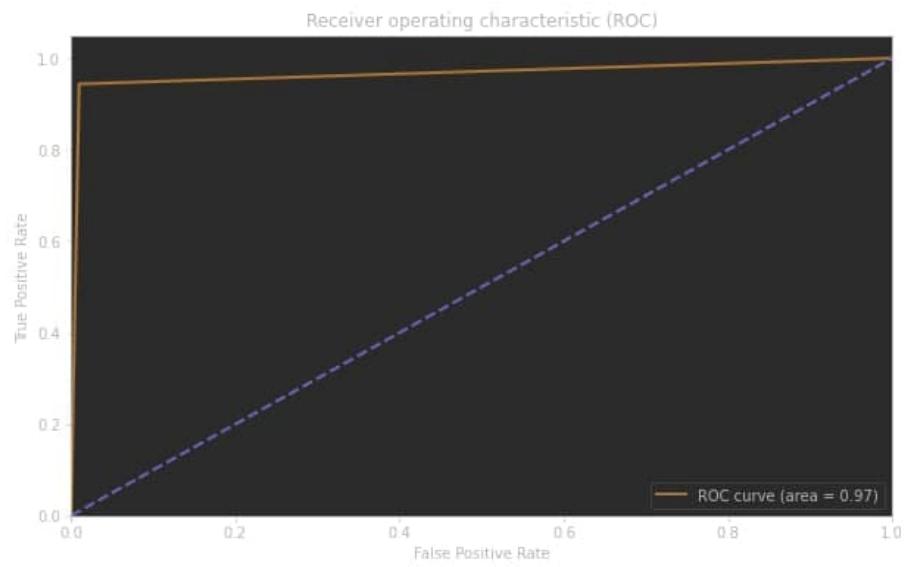


Figure 4: ROC curve. Result achieved = 97%