

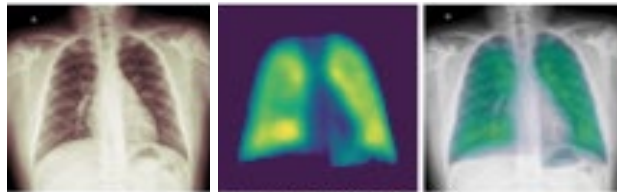


### **COVID-19 detector**

**What's new:** Topazium has designed and implemented a tailor-designed deep convolutional network on the tasks of early detection and localization of radiological signs associated to COVID-19 on frontal chest X-rays.

**Key insights:** The system can equally process images obtained by photographing X-rays using mobile devices (cell phones or tablets) or scanned chest radiographs.

**How it works:** chest X-ray images belonging to patients with suspected COVID-19 condition are uploaded into Topazium's platform. It outputs the probability of abnormal radiological signs indicative of COVID-19 along with a heatmap localizing the suspected regions.



Probability of COVID-19: 95%

**Results:** Our algorithmic framework is able to precisely detect the chest X-rays with COVID19-related radiological findings whilst correctly categorizing images deemed as non-COVID-19 pneumonias or normal chest X-rays. Accuracies are comparable to expert radiologists.

**Why it matters:** COVID-19 can exponentially precipitate life-threatening emergencies as witnessed during the recent spreading of a novel coronavirus infection which can rapidly evolve into lung collapse and respiratory distress (among other various severe clinical conditions). Our AI framework is able to classify COVID-19 accurately, making of it a potential tool to improve the diagnostic performance across primary-care centres and, to grant priority to a subset of algorithmic selected images for urgent follow-on expert review. This would sensibly accelerate diagnosis in remote locations, reduce the bottleneck on specialized centres, and/or help to alleviate the needs on situations of scarcity in the availability of molecular tests.

More info: Lucius et al. Robust COVID-19-related condition classification network. medXriv 2020