

Using lung X-rays to diagnose COVID-19

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Researchers from the Department of Computer Architecture and Technology at the University of Seville's School of Computer Engineering (ETSII) are working on a system that uses X-ray images of patients' lungs to help diagnose COVID-19. This system uses deep learning to train a neural network model that can distinguish between healthy patients, pneumonia patients and COVID-19 patients. This has been achieved using a freely accessible online database that medical professionals from around the world have been feeding with lung X-rays since the onset of the pandemic.

"The spread of the SARS-CoV-2 virus has turned COVID-19 into a global epidemic. The most commonly-used tests to diagnose the disease are invasive, time-consuming and resource-limited. Images obtained from magnetic resonances and/or X-rays are increasingly being used to facilitate diagnostic assistance tasks, having been successfully tested to identify [lung](#) problems. However, these diagnostic methods require a specialist, which limits mass uptake among the population," says University of Seville professor Manuel Jesús Domínguez. The researcher adds that processing tools can help reduce health professionals' workload by filtering out negative cases. In particular, advanced artificial intelligence techniques such as deep learning have proven highly effective in identifying patterns such as those found in diseased tissue.

Similarly, this work analyses the effectiveness of a [deep learning](#) model based on a VGG-16 [neural network](#) for the identification of pneumonia and COVID-19 using X-rays of the torso. The results, published in the journal 'Applied Sciences', reveal that this method is around 100%

effective in the identification of COVID-19, proving that it can be used as an aid to diagnose this disease.

More information: Javier Civit-Masot et al. Deep Learning System for COVID-19 Diagnosis Aid Using X-ray Pulmonary Images, *Applied Sciences* (2020). [DOI: 10.3390/app10134640](https://doi.org/10.3390/app10134640)

Provided by University of Seville

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