



Press Release

## ***AI-for-COVID19: PREDICTIVE DIAGNOSTICS FOR CUSTOMIZING COVID-19 PATIENT TREATMENTS***

*Now online, the "AIforCOVID Imaging Archive" platform enables the international scientific community to share radiographic images from COVID-19 patients and develop leading-edge Artificial Intelligence-based methods for diagnosing and predicting clinical developments of the disease caused by SARS-CoV-2.*

*The platform has been promoted and implemented by Bracco Imaging with Centro Diagnostico Italiano, in partnership with major Italian hospitals and public and private research institutes.*

**Milan, May 17<sup>th</sup>, 2021** – The **AIforCOVID Imaging Archive** is a shared collection of images and clinical data for developing innovative Artificial Intelligence-based methods to diagnose and predict clinical developments of SARS-CoV-2-related disease. This valuable tool enables the international scientific community to share radiological and clinical data and find innovative solutions to combat the disease. The **AIforCOVID Imaging Archive**, which is available at <https://aiforcovid.radiomica.it/>, contains more than a thousand positive patient chest radiographic examinations carried out upon hospitalization. Each X-ray is associated with clinical information about the patient collected at that time.

Data was collected as part of the "AIforCOVID" no-profit multicentre research project, promoted by Bracco Imaging in partnership with the Centro Diagnostico Italiano. The initiative involved major hospitals and public/private research institutes such as the Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico (Milan), Fondazione IRCCS Policlinico San Matteo (Pavia), Azienda ospedaliero-universitaria Careggi (Florence), ASST Santi Paolo e Carlo (Milan), ASST Fatebenefratelli-Sacco (Milan), ASST Ospedale San Gerardo (Monza), and the Ospedale Casa Sollievo della Sofferenza (San Giovanni Rotondo).

The Istituto Italiano di Tecnologia (IIT) of Genoa and Università Campus Bio-medico of Rome were responsible of data analysis and developed the artificial intelligence algorithms, working in partnership with the Centro Diagnostico Italiano and Bracco Imaging teams. These algorithms have the objective of identifying indicators of risk of a severe disease progression, providing physicians with a tool to evaluate the potential need for intensive therapy ahead of time.

Support from Amazon Web Services was pivotal for the development of the platform. AWS supported the AIforCOVID project through the *AWS Diagnostic Development Initiative*, after recognizing it as one of the most innovative ongoing projects at international level. The platform integrates a range of AWS technologies, including machine learning and Amazon SageMaker artificial intelligence, a fully managed service for creating, training and deploying machine learning models, as well as data storage and transfer services.



**Fulvio Renoldi Bracco**, CEO Bracco Imaging SpA, says: "We are very proud of this initiative and the collaborations that have been established with important Italian hospitals and research centers. We are witnessing the age of personalized healthcare where partnership between Industry and providers will play a crucial role as enabler of knowledge sharing and value creation. In this case, the application of Artificial Intelligence technology to imaging data empowers Clinicians with a tool to predict COVID-19 disease progression and, more importantly, allows for more targeted and timely intervention".

**Prof. Lorenzo Preda**, Director of the Complex Structure of Radiology at Fondazione IRCCS Policlinico San Matteo in Pavia, says: "Joint efforts between the San Matteo in Pavia and the other hospitals in the network coordinated by CDI-Bracco has, in a very short timeframe, made available input data acquired in the field for developing an extremely powerful AI system. The AIforCOVID Imaging Archive platform is another step in this sharing process."

**Michaela Cellina**, a radiologist at Fatebenefratelli Sacco in Milan, says: "Throughout the COVID-19 pandemic, the role played by radiologists and radiological imaging techniques, particularly X-rays and CT, has been essential. Against the backdrop of our working conditions in 2020, with overcrowded emergency rooms and especially long processing times to get swab results back, radiological imaging proved to be a vital frontline tool for diagnosis and patient management. Because of the limited resources we had (and continue to have), with very few beds available for hospitalization, especially in intensive care, applying artificial intelligence tools capable of predicting patient outcomes from radiological examinations makes a real difference, enabling optimal management of patients and available resources. During this emergency, Italy's radiologists have shown remarkable commitment. The development of multicentre studies and sharing data and direct clinical experience have markedly accelerated the development of effective weapons to fight this battle, one that we are still fighting."

The AIforCOVID Imaging Archive platform is on the EIBIR (European Institute for Biomedical Imaging Research) published list of Radiological Imaging databases at <https://www.eibir.org/covid-19-imaging-datasets/>, conceived to foster the study and further development of Artificial Intelligence solutions applied to COVID-19 diagnosis.

The platform was presented at the most recent European Congress of Radiology (ECR 2021) in Wien.

*\* results obtained by the AIforCOVID project are summarized in the article "AIforCOVID: predicting the clinical outcomes in patients with COVID-19 applying AI to chest-X-rays. An Italian multicentre study", which is currently under review by the Medical Image Analysis scientific journal. The paper is available for open-access preview at the Cornell University website (link <https://arxiv.org/abs/2012.06531>).*