A Novel Resource to Facilitate New Medical Imaging Discoveries Related to the COVID-19 Pandemic: the Medical Imaging and Data Resource Center (MIDRC)

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The COVID-19 pandemic has prompted a rapid response by instituting a number of monumental and unprecedented medical initiatives to better understand disease manifestations, develop novel ways to manage the illness and to develop, test and deploy a potential vaccine to stave off new cases and mitigate hospitalizations which has overwhelmed healthcare resources worldwide. While we have a much better understanding of the disease than we did a year ago, there are many aspects of the disease that remain a mystery. Although the initial manifestations of COVID-19 affect the respiratory system, it has become abundantly clear that the virus can affect a number of organ systems including the central nervous system, liver, kidneys and heart.

In an effort to accelerate our knowledge of this deadly disease, a number of data consortiums have been set up worldwide to provide badly needed resources to the research community to better study the manifestations of COVID-19 in a variety of populations. The National Institutes of Health (NIH) and the National Institute of Biomedical Imaging and Bioengineering (NIBIB) were tasked with creating research resources to aid in this effort in the United States. Recognizing that medical imaging plays a key role in the diagnosis and management of the disease and that machine learning techniques have the potential to rapidly make novel discoveries on large datasets, the NIBIB asked leadership from the American College of Radiology (ACR), the Radiological Society of North America (RSNA) and the American Association of Physicists in Medicine (AAPM) to form a consortium and design a comprehensive plan focused on collecting representative COVID-19 imaging exams from a large number of potential sources in the healthcare community. The goal is to develop a platform for the rapid and secure collection of imaging studies donated from many diverse sources (both academic and community sites), curate, organize and publish this data on a public portal that is made readily available to data scientists and machine learning researchers worldwide.

The project is now underway. Named the Medical Imaging and Data Resource Center or MIDRC (https://www.midrc.org), it is being co-led by the ACR, the RSNA and the AAPM. It is hosted at the University of Chicago. It is a multi-institutional collaboration involving over twenty institutions from coast-to-coast. The goal is to accelerate image-based COVID machine learning research centered around a high quality COVID image commons that is linked to relevant clinical data and other COVID-19 clinical data repositories such as the National Covid Cohort Collaborative (N3C). The initial influx of imaging data is pulmonary but the longer-term goal is to collect all COVID related imaging exams including neuroimaging. Imaging studies are being actively ported into the system and a number of contributing sites are being on-boarded into the process. MIDRC is seeking collaborative partnerships with subspecialty societies and their members like ASNR to help with the collection, curation and data model design around COVID related neuroimaging studies. MIDRC will be hosting a public Town Hall event on March 12, 2021 to answer questions for interested participants (https://www.midrc.org/midrc-townhall-march-2021).