

CT Images in COVID-19

Redirection Notice

This page will redirect to <https://doi.org/10.7937/TCIA.2020.GQRY-NC81> in about 10 seconds.

Summary

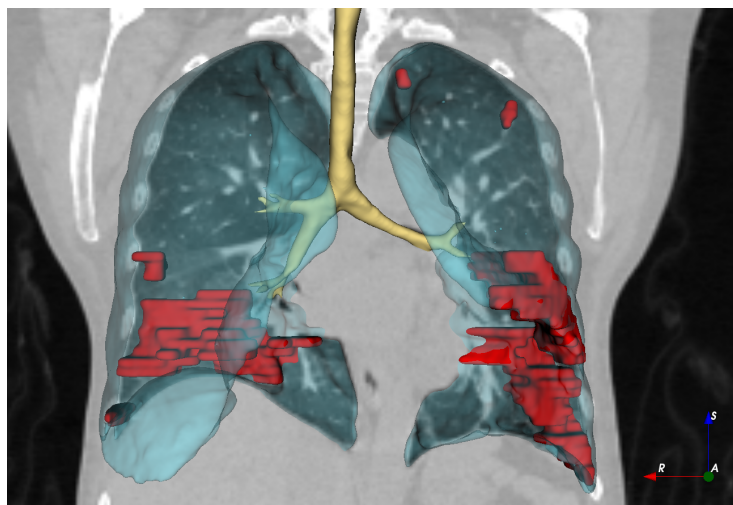
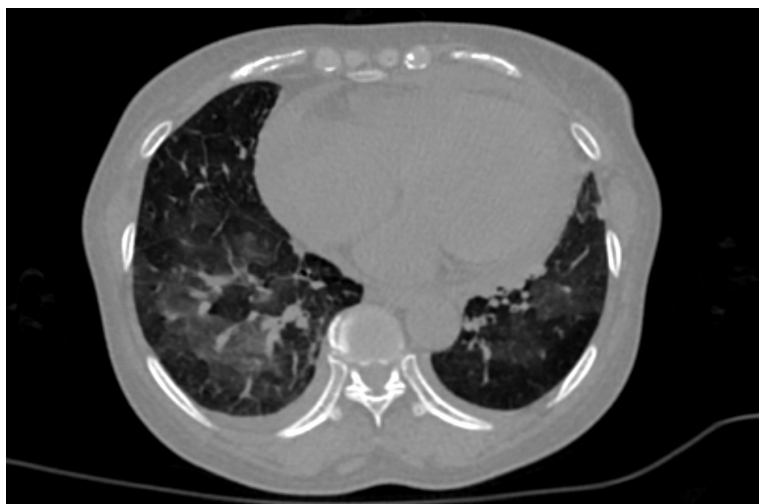
These retrospective NIfTI image datasets consists of unenhanced chest CTs:

- First dataset - from 632 patients with COVID-19 infections at initial point of care, and
- Second dataset - a second set of 121 CTs from 29 patients with COVID-19 infections with serial / sequential CTs.

The initial images for both datasets were acquired at the point of care in an outbreak setting from patients with Reverse Transcription Polymerase Chain Reaction (RT-PCR) confirmation for the presence of SARS-CoV-2.

Patients presented to a health care setting with a combination of symptoms, exposure to an infected patient, or travel history to an outbreak region. All patients had a positive RT-PCR for SARS-CoV-2 from a sample obtained within 1 day of the initial CT. CT exams were performed without intravenous contrast and with a soft tissue reconstruction algorithm. The DICOM images were subsequently converted into NIfTI format. The second dataset also had other follow up CTs, in addition to the initial point of care CT.

A multidisciplinary team trained several models using portions of the first dataset, along with additional CTs and manually annotated images from other sources. A classification model derived in part from the first dataset is described in a Nature Communications manuscript at: <https://doi.org/10.1038/s41467-020-17971-2>. The NVIDIA-related frameworks and models specific to this publication are available at no cost as part of the NVIDIA Clara Train SDK at <https://ngc.nvidia.com/catalog/containers/nvidia:clara:ai-covid-19>. This includes both inference-based pipelines for evaluation, as well as model weights for further training or fine tuning in outside institutions. The second data set of 121 serial / sequential CTs in 29 patients is reported in a Scientific Reports manuscript at <https://doi.org/10.1038/s41598-021-85694-5>.



Acknowledgements

The Imaging AI in COVID team would like to acknowledge the following individuals who supported this multi-disciplinary multi-national team effort:

- All frontline workers and Peng An, Sheng Xu, Evrim B. Turkbey, Stephanie A. Harmon, Thomas H. Sanford, Amel Amalou, Michael Kassin, Nicole Varble, Maxime Blain, Dilara Long, Dima Hammoud, Ashkan Malayeri, Elizabeth Jones, Holger Roth, Ziyue Xu, Dong Yang, Andriy Myronenko, Victoria Anderson, Mona Flores, Francesca Patella, Maurizio Cariati, Kaku Tamura, Hirofumi Obinata, Hitoshi Mori, Ulas Bagci, Daguang Xu, Hayet Amalou, Robert Suh, Gianpaolo Carrafiello, Baris Turkbey, Bradford J. Wood.
- Thanks for leadership support to: John Gallin, Steve Holland, Cliff Lane, Bruce Tromberg, Tom Misteli, Bill Dahut.

- Supported by the NIH Center for Interventional Oncology and the NIH Intramural Targeted Anti-COVID-19 (ITAC) Program.

TCIA COVID-19 Datasets

Additional datasets and information about TCIA efforts to support COVID-19 research can be found [here](#).

Data Access

Data Access

Data Type	Download all or Query/Filter	License
Images (NIfTI, 12.71 GB)	Download	CC BY 4.0
First dataset	(Download and apply the IBM-Aspera-Connect plugin to your browser to retrieve this faspex package)	
Images (NIfTI, 2 GB)	Download	CC BY 4.0
Second dataset	(Download and apply the IBM-Aspera-Connect plugin to your browser to retrieve this faspex package)	

Click the Versions tab for more info about data releases.

Please contact help@cancerimagingarchive.net with any questions regarding usage.

Detailed Description

Detailed Description

Image Statistics	
Modalities	CT
Number of Patients	661
Number of Series	771
Images Size (GB)	14.7

Link to publication below contains AI model that was only partly derived from this data, and also from other data not present here on TCIA.

- Harmon, S. A., Sanford, T. H., Xu, S., Turkbey, E. B., Roth, H., Xu, Z., Yang, D., Myronenko, A., Anderson, V., Amalou, A., Blain, M., Kassim, M., Long, D., Varble, N., Walker, S. M., Bagci, U., Ierardi, A. M., Stellato, E., Plensich, G. G., Franceschelli, G., Girlando, C., Irmici, G., Labella, D., Hammoud, D., Malayeri, A., Jones, E., Summers, R. M., Choyke, P.L., Xu, D., Flores, M., Tamura, K., Obinata, H., Mori, H., Patella, F., Cariati, M., Carrafiello, G., An, P., Wood, B. J., & Turkbey, B. (2020). Artificial intelligence for the detection of COVID-19 pneumonia on chest CT using multinational datasets. Nature Communications, 11(1). <https://doi.org/10.1038/s41467-020-17971-2>

Citations & Data Usage Policy

Citations & Data Usage Policy

Users must abide by the [TCIA Data Usage Policy and Restrictions](#). Attribution should include references to the following citations:

Data Citation

An, P., Xu, S., Harmon, S. A., Turkbey, E. B., Sanford, T. H., Amalou, A., Kassin, M., Varble, N., Blain, M., Anderson, V., Patella, F., Carrafiello, G., Turkbey, B. T., & Wood, B. J. (2020). **CT Images in COVID-19 [Data set]**. The Cancer Imaging Archive. <https://doi.org/10.7937/TCIA.2020.GQRY-NC81>

Acknowledgement

The Multi-national NIH Consortium for CT AI in COVID-19.

Publication Citation

Harmon, S. A., Sanford, T. H., Xu, S., Turkbey, E. B., Roth, H., Xu, Z., Yang, D., Myronenko, A., Anderson, V., Amalou, A., Blain, M., Kassin, M., Long, D., Varble, N., Walker, S. M., Bagci, U., Ierardi, A. M., Stellato, E., Plensich, G. G., Franceschelli, G., Girlando, C., Irmici, G., Labella, D., Hammoud, D., Malayeri, A., Jones, E., Summers, R. M., Choyke, P.L., Xu, D., Flores, M., Tamura, K., Obinata, H., Mori, H., Patella, F., Cariati, M., Carrafiello, G., An, P., Wood, B. J., & Turkbey, B. (2020). **Artificial intelligence for the detection of COVID-19 pneumonia on chest CT using multinational datasets**. Nature Communications, 11(1). <https://doi.org/10.1038/s41467-020-17971-2>

TCIA Citation

Clark, K., Vendt, B., Smith, K., Freymann, J., Kirby, J., Koppel, P., Moore, S., Phillips, S., Maffitt, D., Pringle, M., Tarbox, L., & Prior, F. (2013). **The Cancer Imaging Archive (TCIA): Maintaining and Operating a Public Information Repository**. Journal of Digital Imaging, 26(6), 1045–1057. <https://doi.org/10.1007/s10278-013-9622-7>

Other Publications Using This Data

TCIA maintains [a list of publications](#) which leverage our data. If you have a manuscript you'd like to add please [contact the TCIA Helpdesk](#).

Versions

Version 2 (Current): Updated 2021/05/25

Data Type	Download all or Query/Filter
Images (NiftI, 12.71 GB) First dataset	Download
Images (NiftI, 2 GB) Second dataset	Download

Added second dataset, 29 patients/121 CT images.

Version 1: Updated 2020/08/31

Data Type	Download all or Query/Filter
Images (NIfTI, 12.71 GB)	Download