QUANTORI BioTechX

What Deep Learning Can Do for Novel Diagnostic Techniques to Optimize Patient Care

Problems Facing Healthcare

Trained Professionals

An aging population, burnout and disproportionality in availability between rural and urban areas has led to a severe lack of trained healthcare professionals and the problem is expected to only worsen.

Decentralized

Patient experience significantly hampered through the distributed nature of healthcare facilities, leading to a ‘revolving patient’.

Environment

The global landscape is rapidly evolving, environmental, societal and governance (ESG) issues have a radical influence on healthcare.

Security

The sensitive and costly nature of patient data make healthcare organizations premier targets for cyber attacks.

Artificial Intelligence Solutions in Healthcare

Administrative Processes

On average a trained clinician will spend between 15-20% of their time on administrative purposes, focusing on activities such data cataloguing, forms for insurance claims, etc. A.I. can improve the workflow and operations of such labour intensive activities.

Diagnosis

Disease definitions are often based on phenomenological and historical perspectives, leading to at times delayed diagnosis. A.I. can assist in accelerating early disease onset identification through patient journey studies.

Medical Assistants

The scarcity of trained professionals results in those available being able to dedicated limited time per patient. A.I. based medical assistants (robotics or medical imaging) can significantly reduce the burden.

Research

With a growing and ageing population new methods to look at healthcare (from disease diagnosis, treatment to drug discovery & administrative processes), A.I. can significantly refine the process flow.

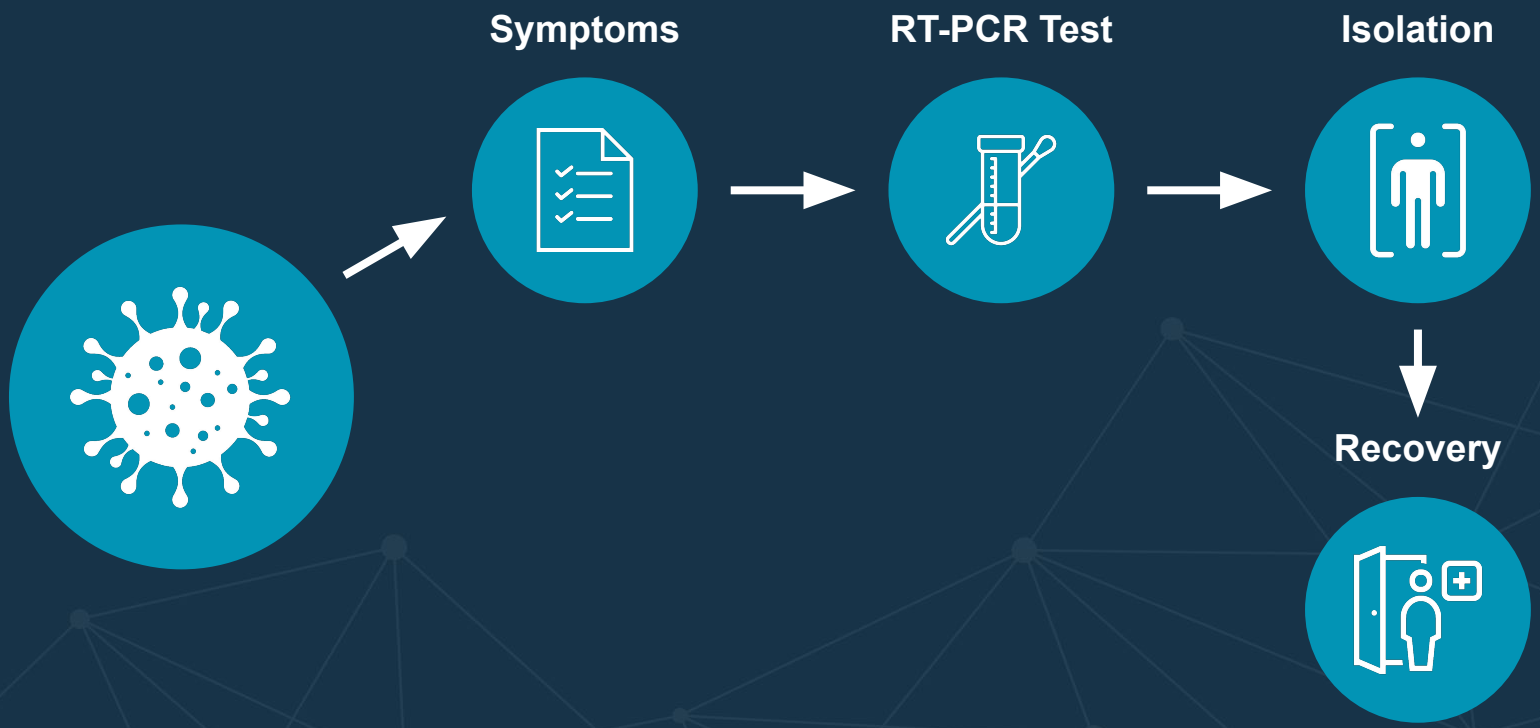
Quantori

is a Full-Service Scientific Informatics, Data Sciences, and Digital Solutions Provider for the Life Science and Healthcare Industries.

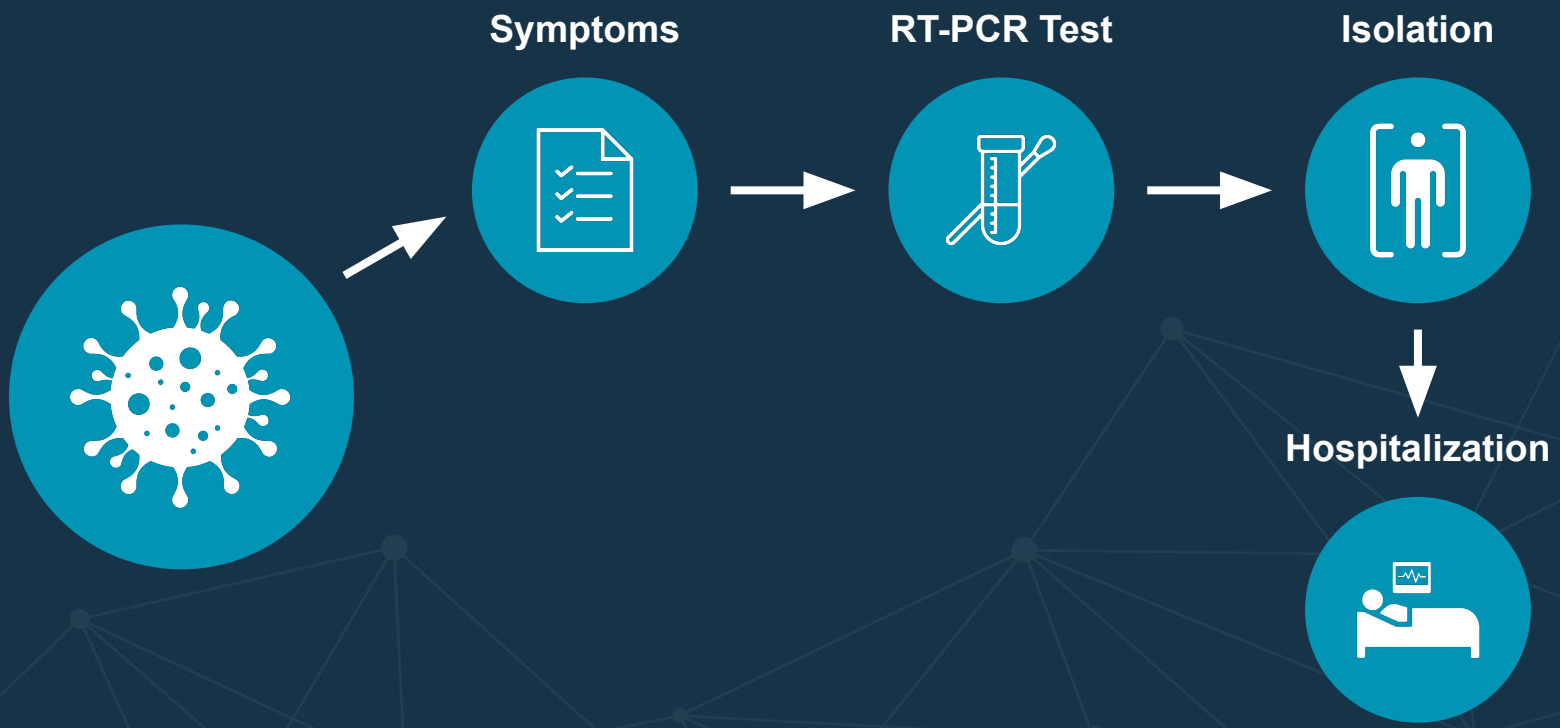
Using our domain knowledge and technical expertise, we develop cutting-edge data science, digital engineering, and technology platforms for biotech, pharmaceutical, and healthcare companies that accelerate drug discovery and improve patient outcomes.

Our innovative approach harnesses the power of data engineering and informatics, machine learning, emerging technologies, cloud, and HPC expertise to advance research and development and ultimately bridge the gap between meaningful data and patient success.

COVID-19 Diagnosis



COVID-19 Diagnosis



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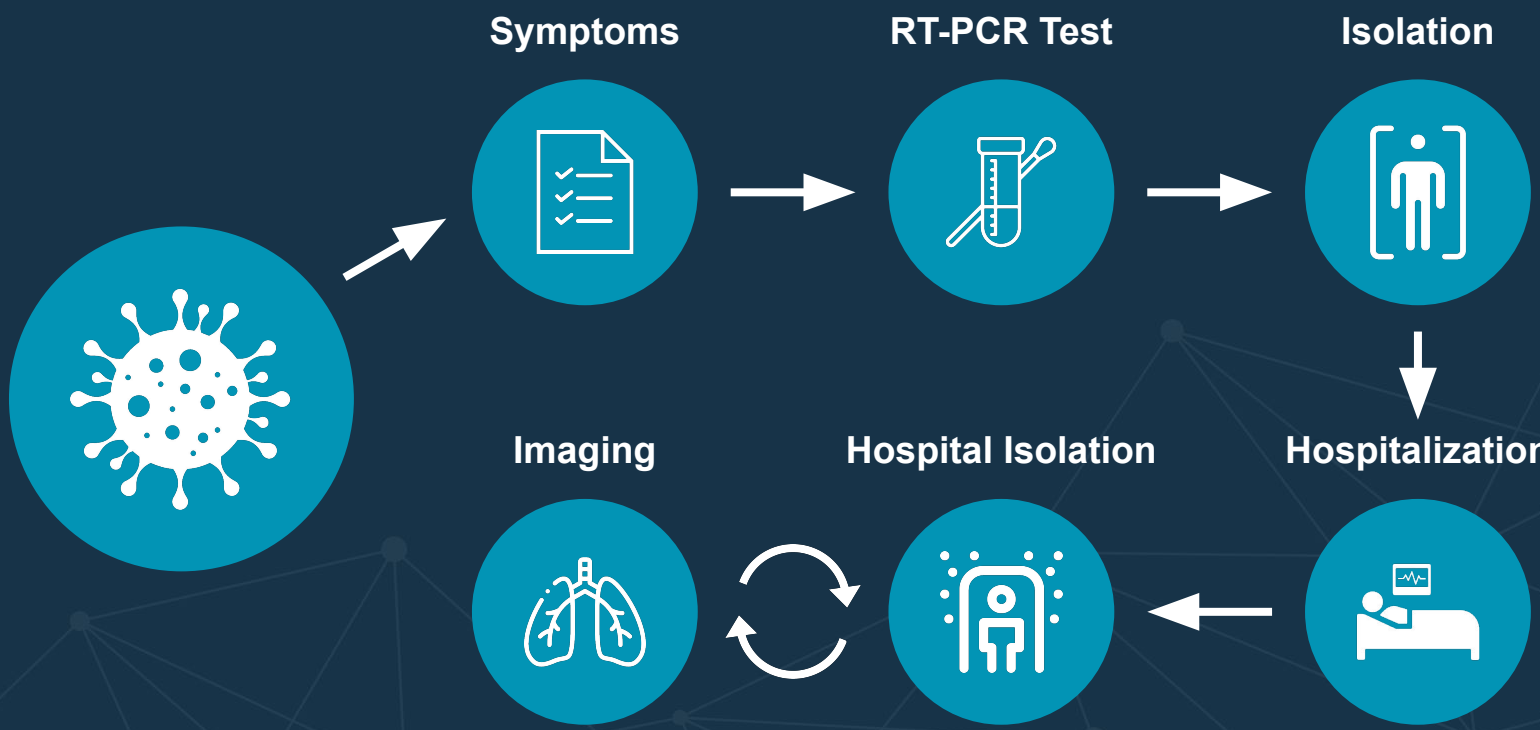
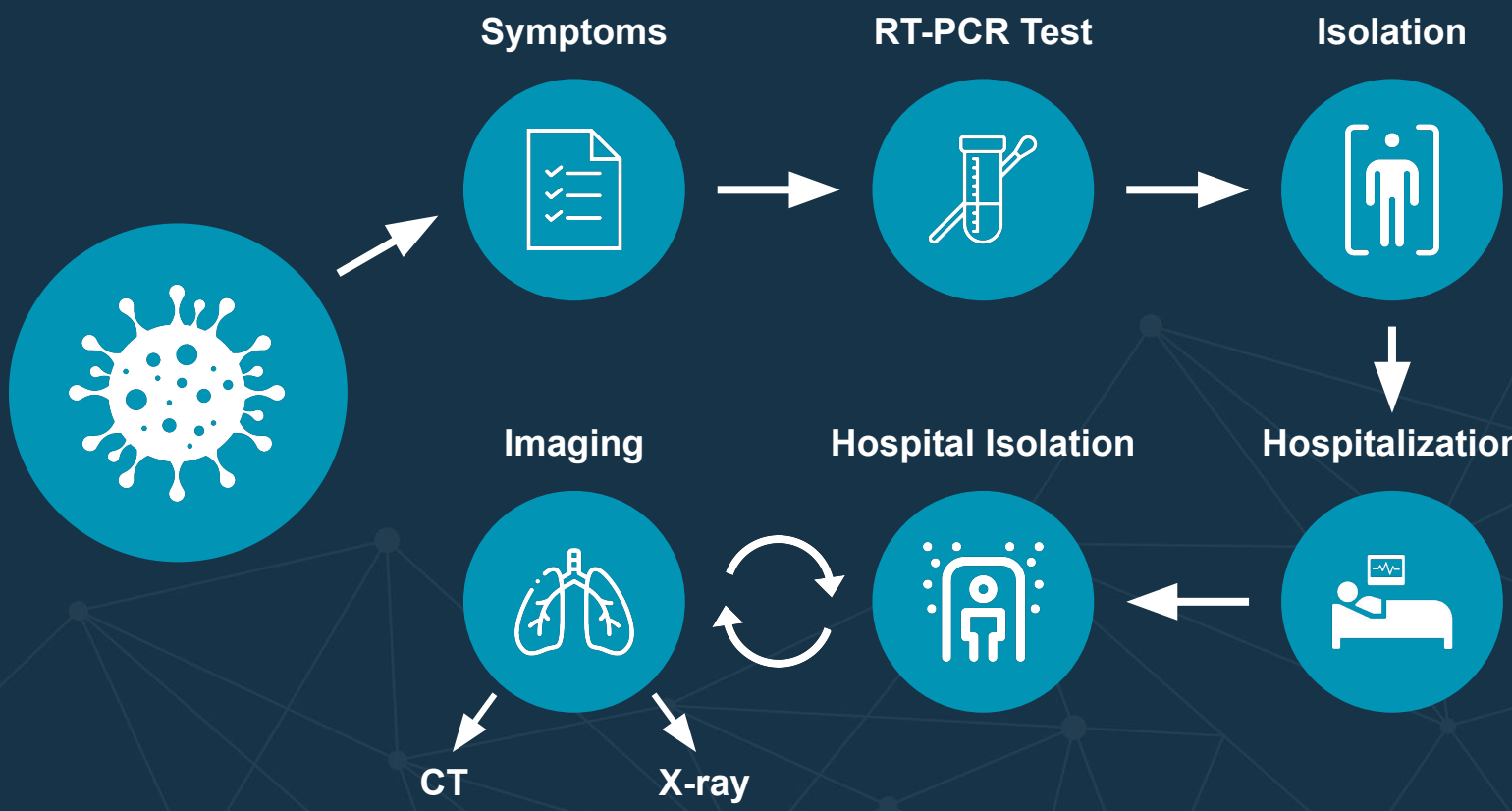


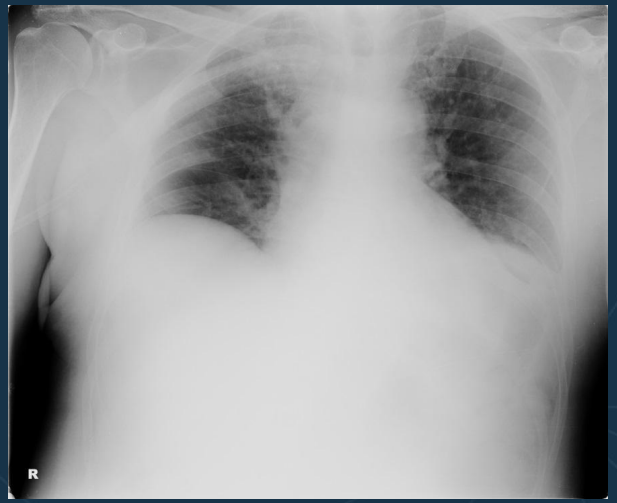
COVID-19 Diagnosis



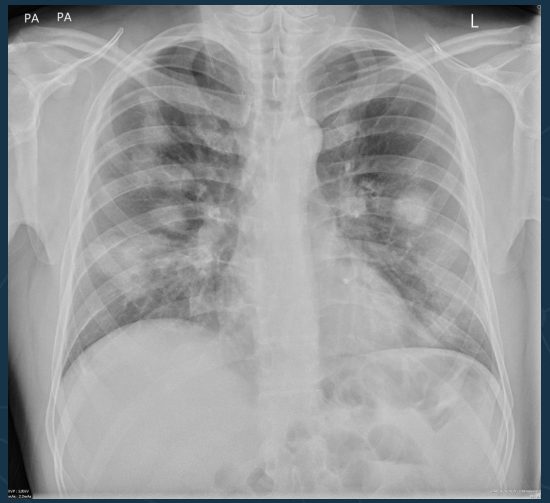
Study 1: COVID-19 Identification

Normal

Pneumonia



COVID-19



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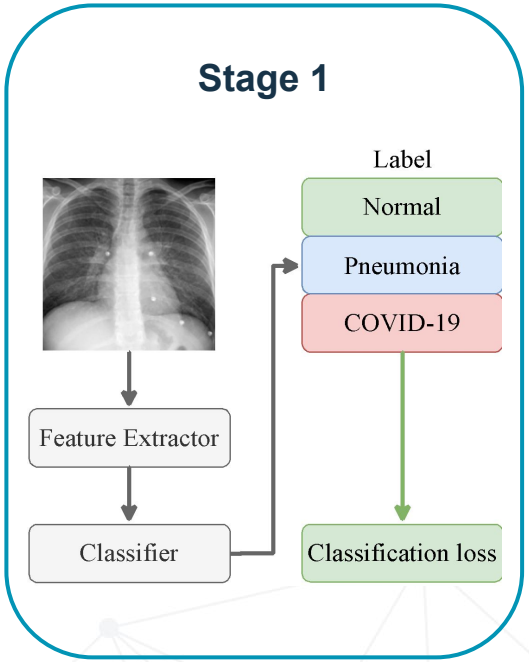

1. Danilov, V.V. et al. Indirect Supervision applied to COVID-19 and pneumonia classification. Informatics in Medicine Unlocked, 28, 100835 (2021)
2. K. Li et al. Tell me where to look: guided attention inference network, Proc. IEEE comput. Soc. Conf. Comput. Vis. Pattern recognit., IEEE computer society (2018)

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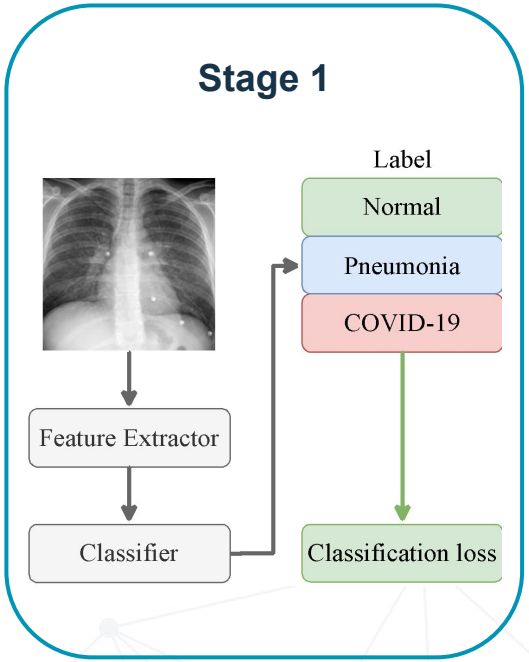

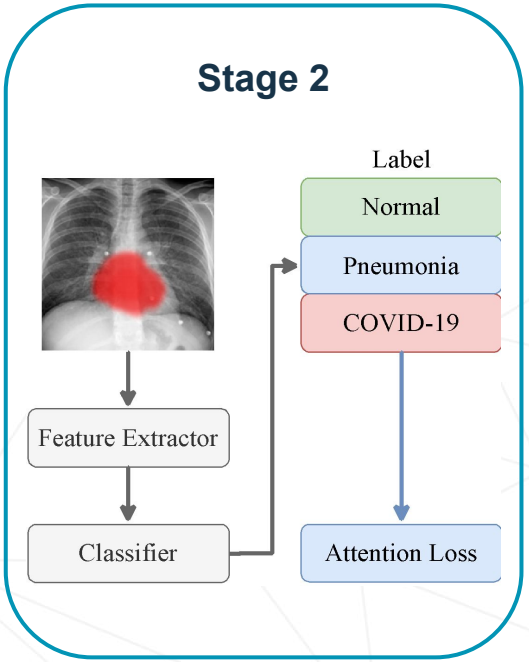

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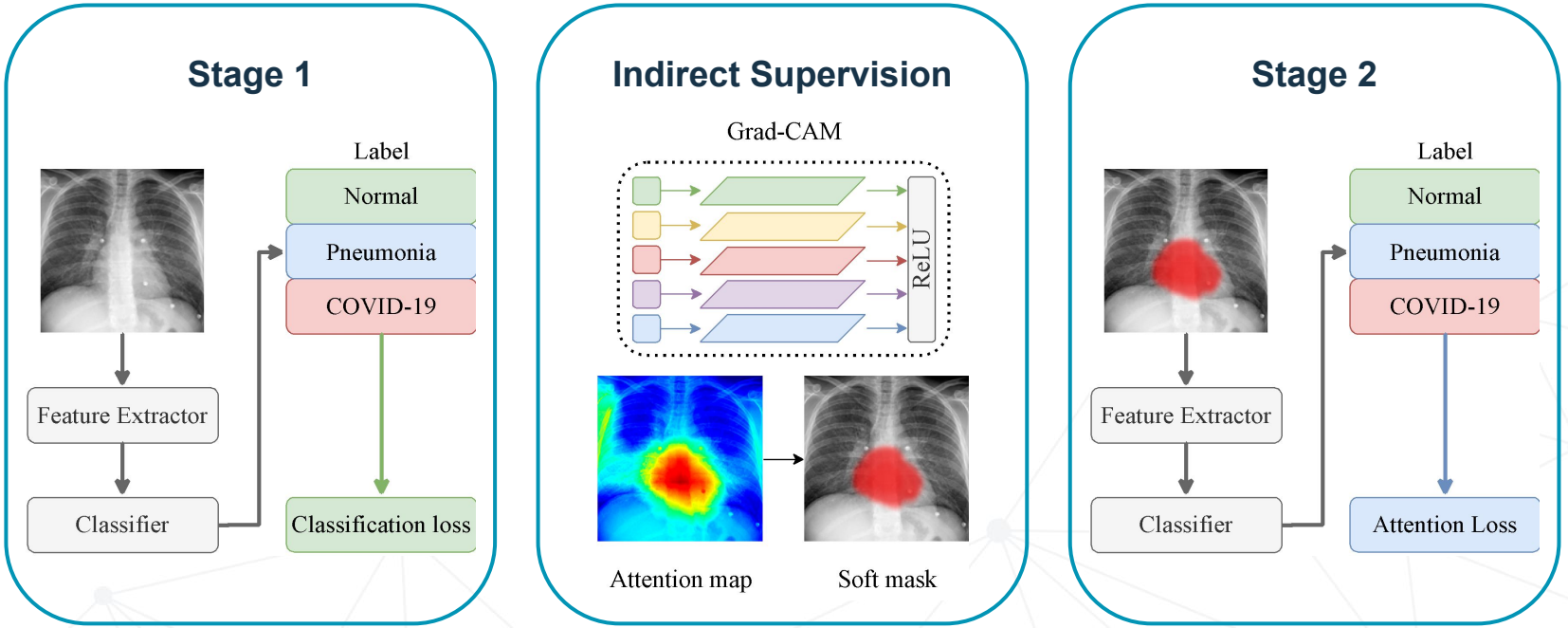

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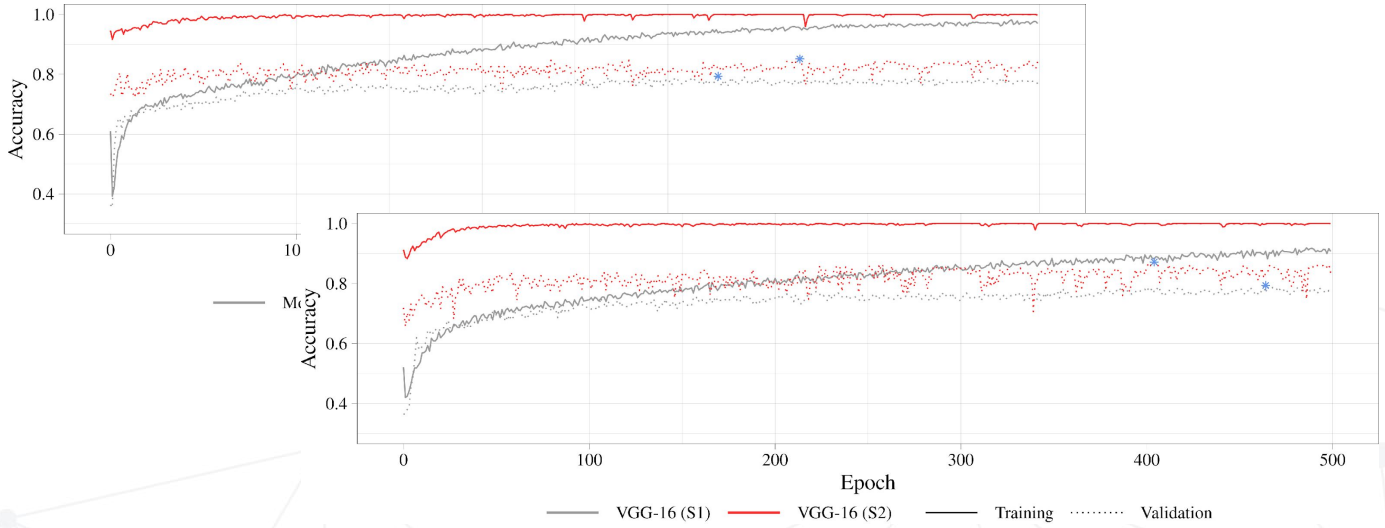
Study 1: COVID-19 Identification

Accuracy



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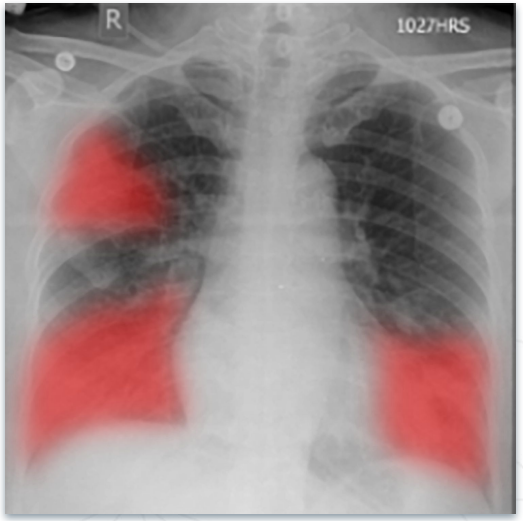
Study 1: COVID-19 Identification

Results

Source Image



Ground Truth Heatmap

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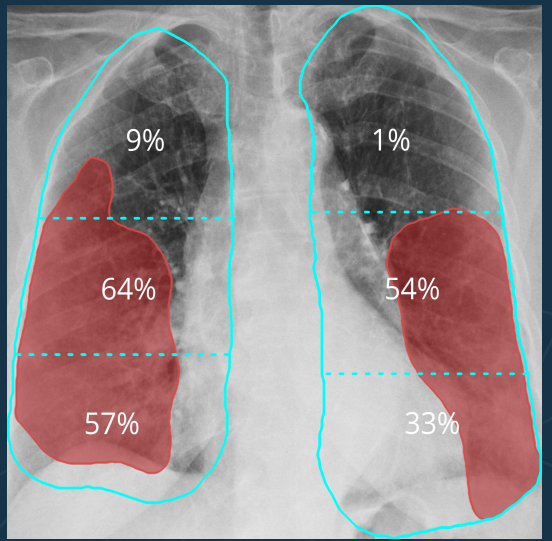
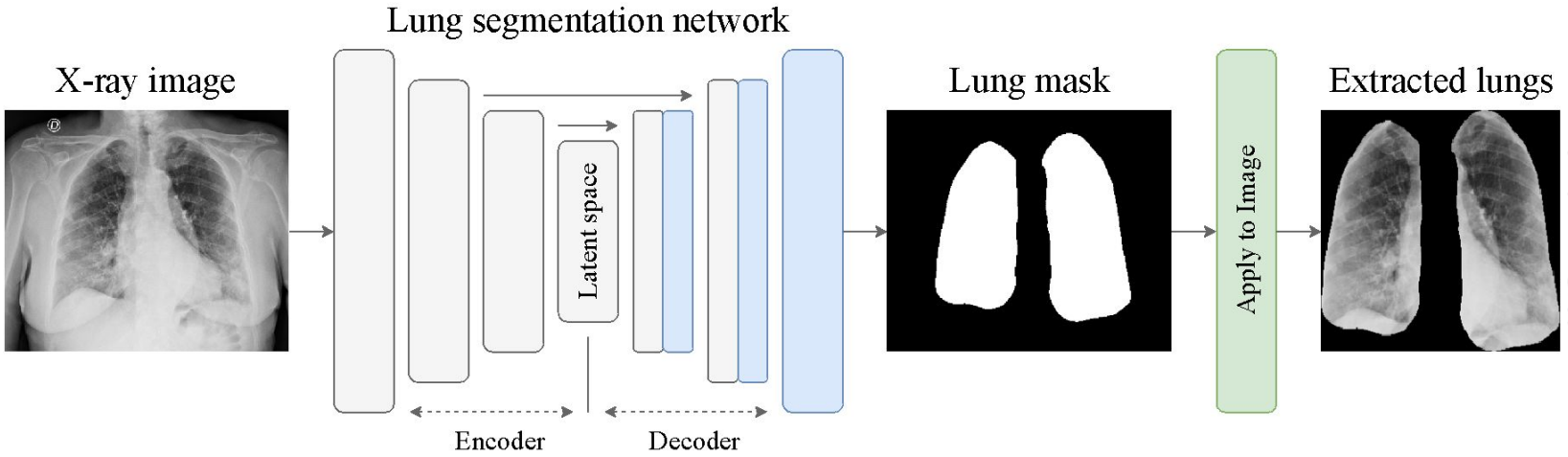
Study 2: COVID-19 Severity Scoring



Study 2: COVID-19 Severity Scoring

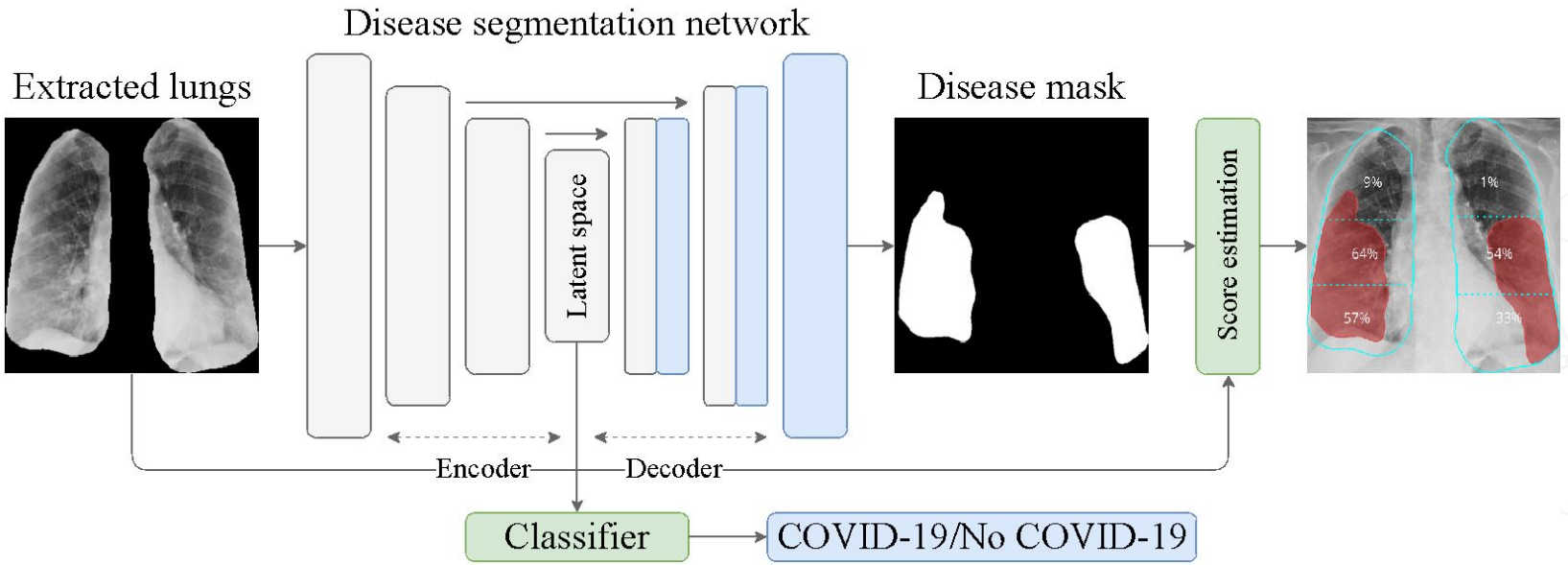
Stage 1



Danilov, V.V. et al. Automatic scoring of COVID-19 severity in X-ray imaging based on a novel deep learning workflow. Scientific Reports, 12, 12791 (2022)

Study 2: COVID-19 Severity Scoring

Stage 2



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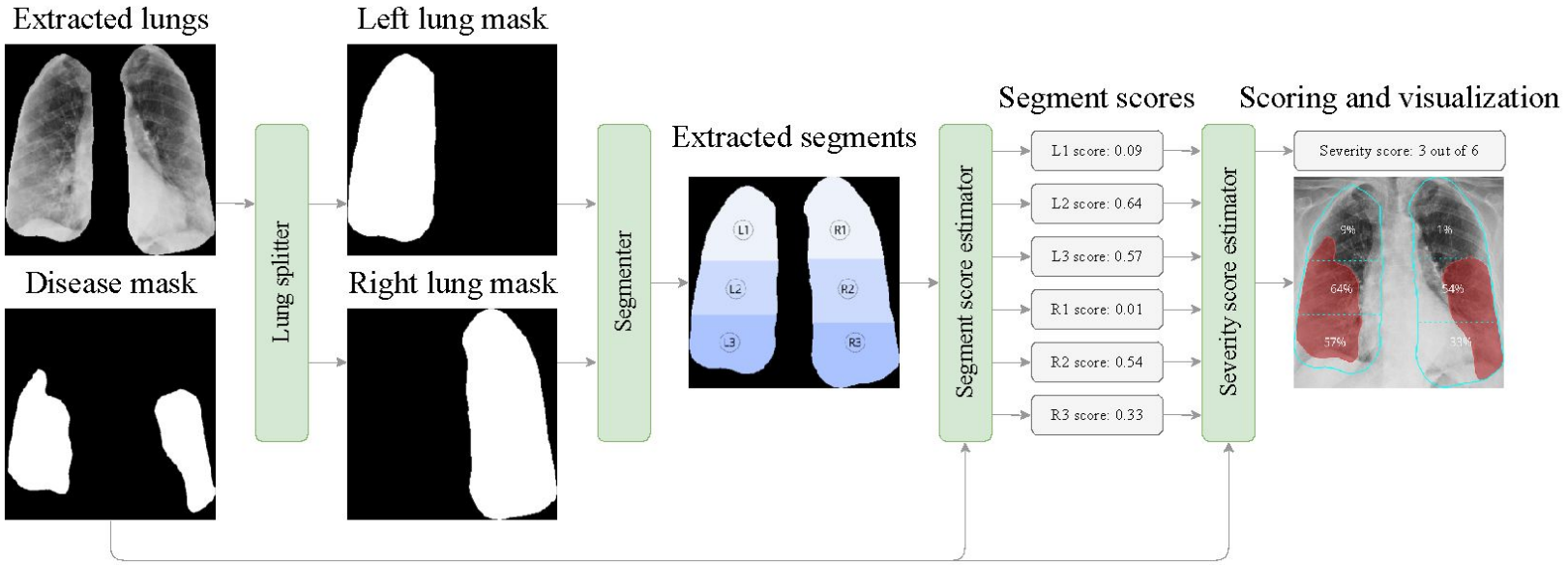
Stage 3



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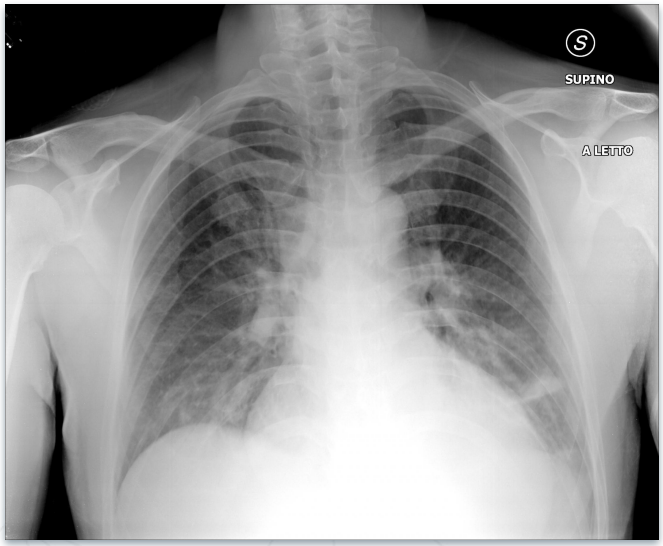

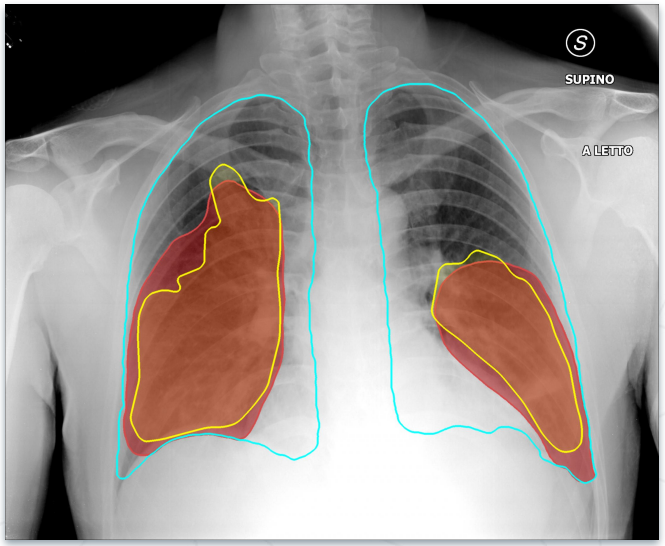

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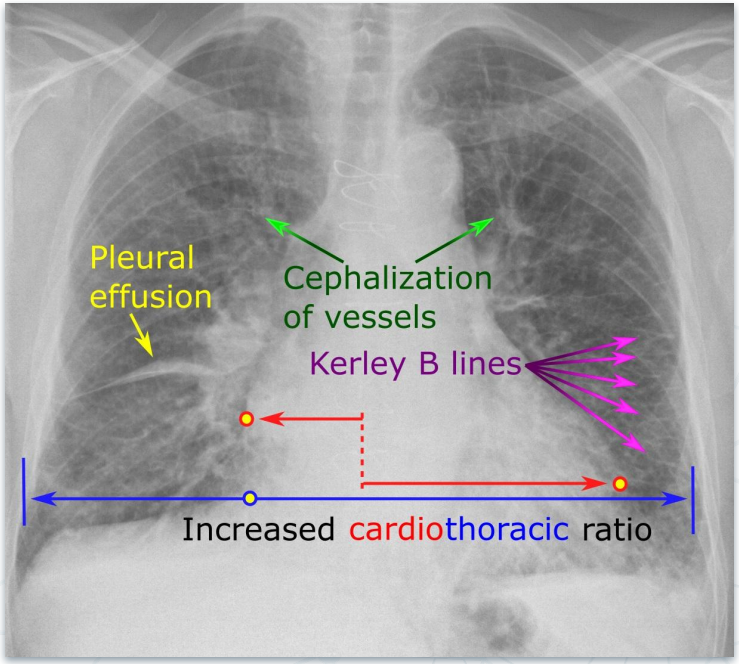
On-going Research

- **Quantori aims to extend the research by looking into various manifestations of Pulmonary Edema within a radiological image.**
- **Through a collaborative approach, Quantori aims to develop an explainable A.I. toolkit that will provide a *white box* solution.**



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Study 2: Automatic scoring of COVID-19 severity in X-ray imaging based on a novel deep learning workflow