

Beyond Diagnosis

Quantify your X-Ray

TiSepX



AI-Powered Digital Twin

At the intersection of technology and the clinical expertise,
we have been leading the paradigm change of medical imaging solution
with reliable AI imaging analytic and Digital Twin technology.
Experience unprecedented imaging solution and Transform your Medicine!

Product Information

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Our Spirit & Endeavour

MEDICAL IP strives to develop technologies and products with the philosophy that technological innovation is directly connected to the development of medical care and saving lives. We support UN Sustainable Development Goals (SDGs) to achieve our mission and responsibilities.

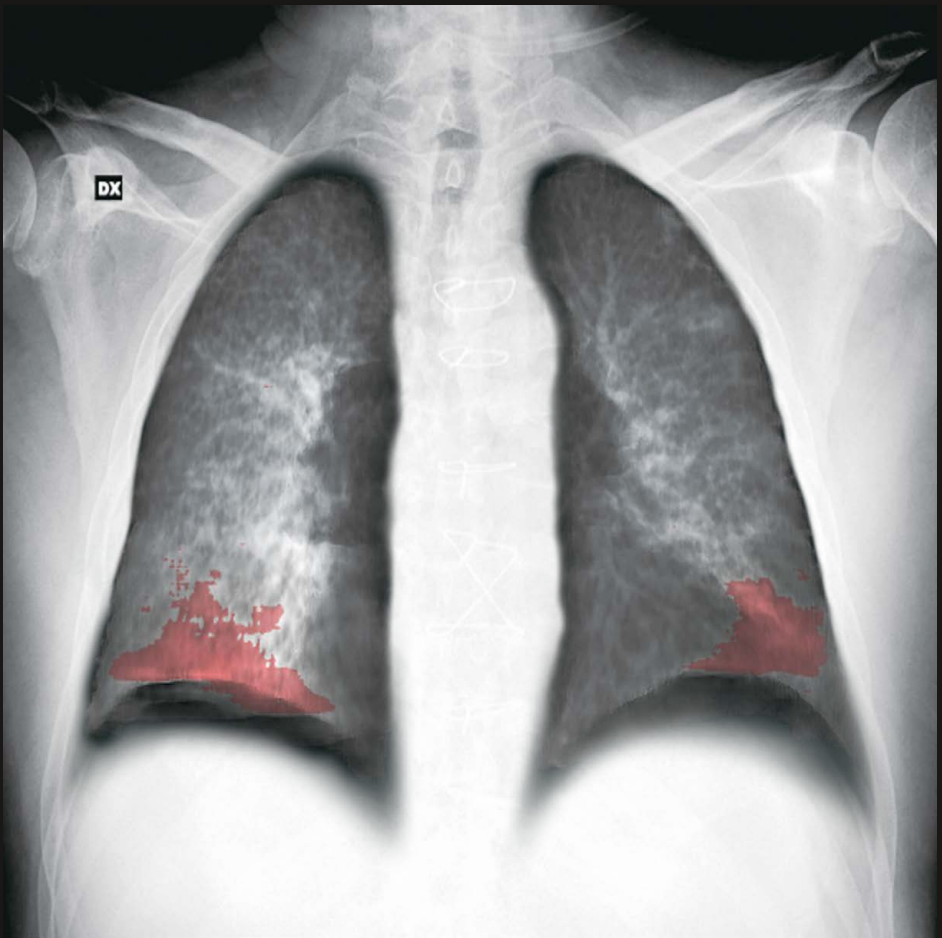


Overview

TiSepX is an X-ray quantitative analysis and tissue separation solution processed by the unique algorithm of MEDICAL IP.

TiSepX provides numerical information of the lungs and lesions with the augmented images of a single X-ray image.

Quantification and progress monitoring of tuberculosis and COVID-19 as well as Lung Volumetry are available with TiSepX. The application of TiSepX continues to expand.



Lung Area : **5833.6** cm² Pneumonia Area : **450.8** cm² Pneumonia Extent : **7.7** %



Lung Area	Pneumonia Area	Pneumonia Extent
1463.0 cm ²	217.0 cm ²	14.8 %



Lung Area	Pneumonia Area	Pneumonia Extent
2569.4 cm ²	120.2 cm ²	4.7 %

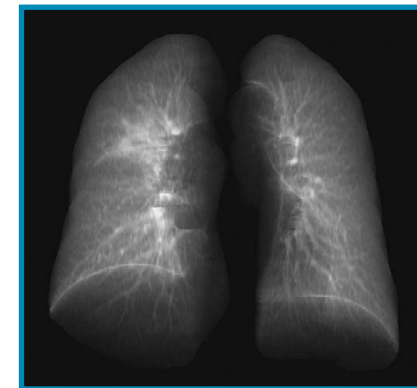
01

TiSepX

Multiple tissue separation
from single X-ray image with AI

TiSepX

X-Ray Tissue Separation Solution



Lung



X-ray Image



Lesion

Tissue analysis from X-ray images

From chest X-rays, structural components such as bones, lungs, and lesion are automatically identified, enabling rapid reading and diagnosis.

Quantifying lung lesions

TiSepX can provide numeric information about the area and proportion of lesions under conditions like COVID-19 and tuberculosis.

Optimal monitoring solution under pathologic condition

Disease and treatment progression can continuously be monitored through 3D information of lungs.

Product Line-up

TiSepX TB

TiSepX COVID-19

TiSepX Lung Volumetry

Accuracy

The average validation result with Structural Similarity Index (SSIM)

Lung Separation

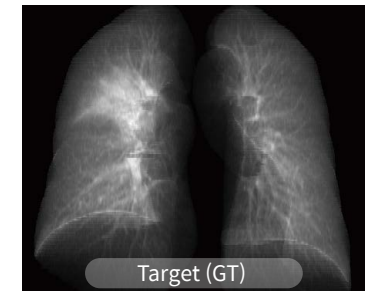
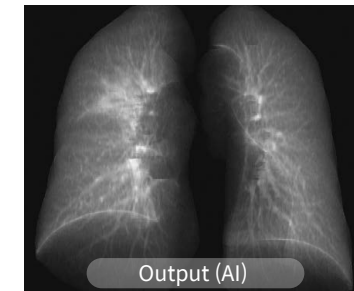
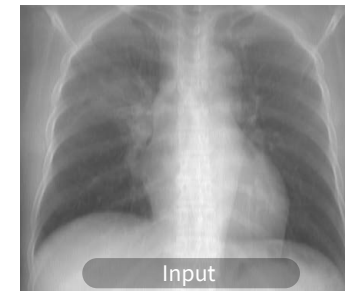
99.52%

Lesion Separation

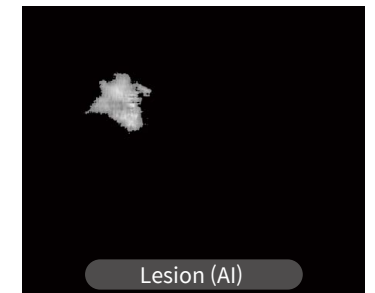
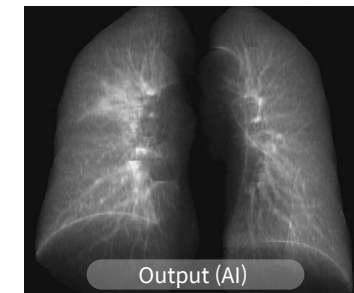
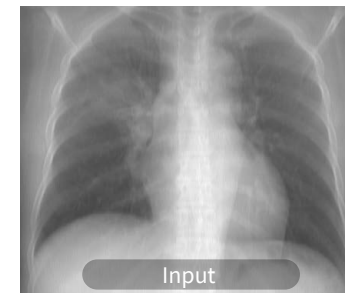
99.42%

Data Result (case study)

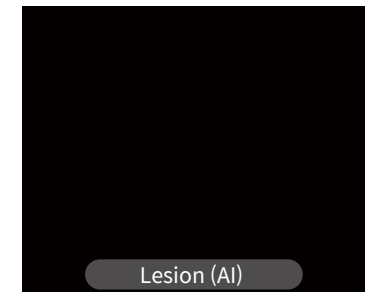
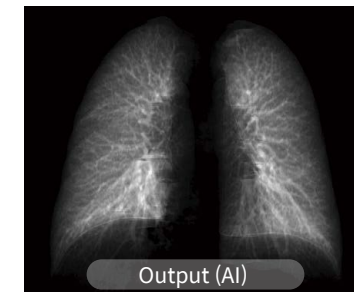
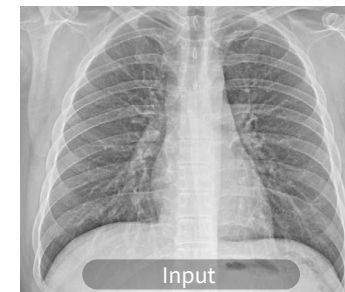
Lung Separation Result



Abnormal Lung Lesion Separation Result



Normal Lung Lesion Separation Result



02

TiSepX TB(Tuberculosis)

X-ray based tuberculosis scoring and monitoring solution

TiSepX

The algorithm of TiSepX is based on the largest dataset of tuberculosis for its deep-learning. Thus, active pulmonary tuberculosis and inactive pulmonary tuberculosis patients can be selected.

It is possible to quantify the level of TB activity and establish an anti-TB treatment strategy.

It is possible to accurately monitor disease progression or response to therapy.

Publication

Classifying tuberculosis and treatment monitoring

TiSepX can identify and classify active and inactive pulmonary tuberculosis from chest X-ray images. It can also quantify the level of disease activity, which can be useful in monitoring patients who are under anti-TB treatment.

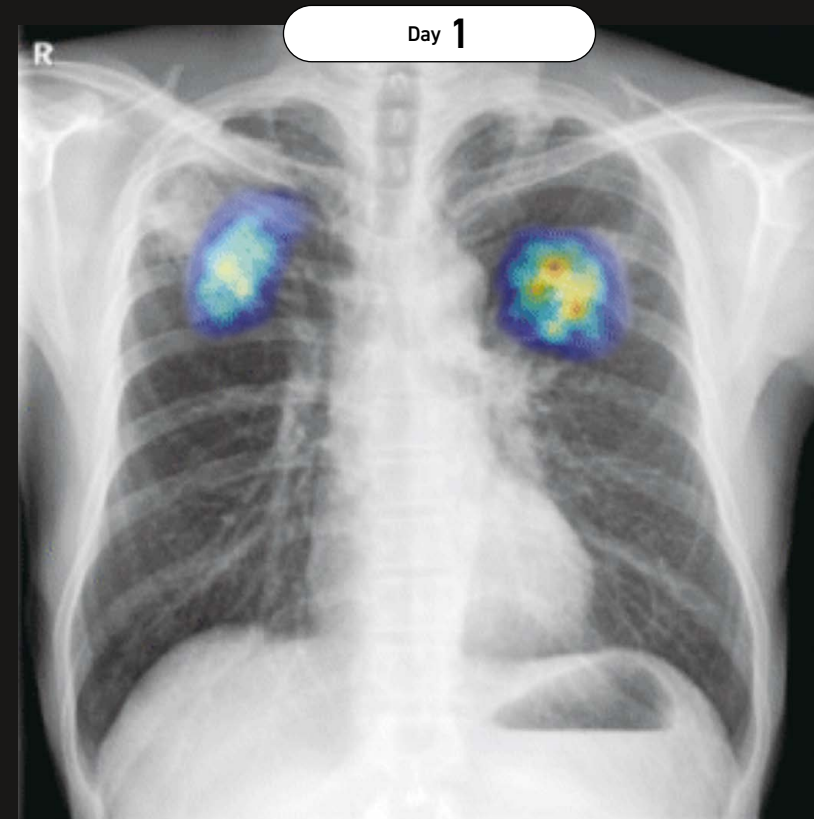
AUC Comparison of Randomly Selected Pre- and Post-treatment Radiographs
<TiSepX TB & Human Expert>

TiSepX TB	Human Expert			
	Pulmonologist 1	Pulmonologist 2	Thoracic radiologist 1	Thoracic radiologist 2
0.84	0.71 (p < 0.001)	0.74 (p = 0.001)	0.79 (p = 0.08)	0.80 (p = 0.06)

Seowoo, Lee et al., "Deep Learning to Determine the Activity of Pulmonary Tuberculosis on Chest Radiographs," Radiology, 2021;301(2):435-442.

TUBERCULOSIS MONITORING SOLUTION WITH THE LARGEST DATASET FOR ITS DEEP-LEARNING

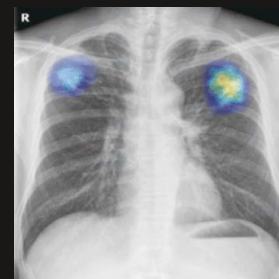
TB Scoring and Treatment Monitoring



Active Tuberculosis Probability

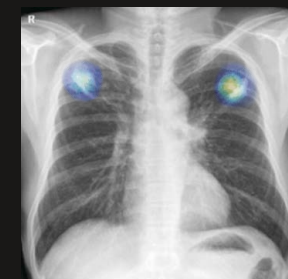
95.0%

Day 14



84.1%

Day 56



68.8%

Day 84



43.4%

03

TiSepX COVID-19

X-ray based COVID-19
quantification solution

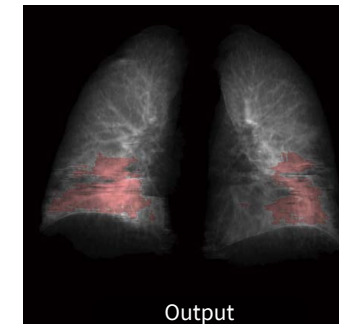
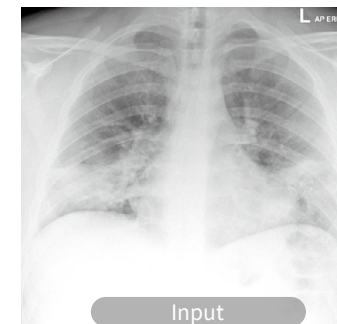
TiSepX

It is the only AI solution that quantifies COVID-19 in South Korea which underwent deep-learning with accumulated data from confirmed cases.
(Collaborative research with South Korea, Japan, China, Spain, and Germany)

It is possible to triage patients more rapidly by calculating data, including the area and ratio of lung lesions, in COVID-19 patients in a matter of seconds.

Compatible with cloud system and SDK settings, TiSepX can be used in many clinical settings without extra equipment.

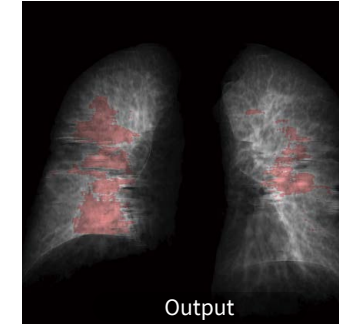
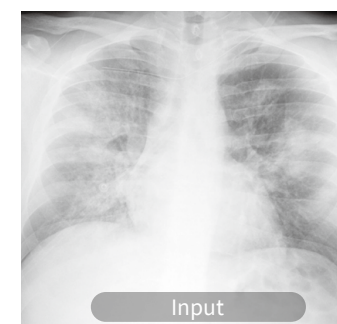
Case study 1



Quantifying Information

Lung Area : **1343.4** cm²
Pneumonia Area : **161.6** cm²
Pneumonia Extent : **12.0** %

Case study 2



Quantifying Information

Lung Area : **1450.9** cm²
Pneumonia Area : **160.9** cm²
Pneumonia Extent : **11.1** %

Jin Young, Kim et al., "Stratifying the Early Radiologic Trajectory in Dyspneic Patients with COVID-19 Pneumonia," PLoS One, 2021;16(10):e0259010.





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