

# REILI TECHNOLOGY REVIEW

# 18



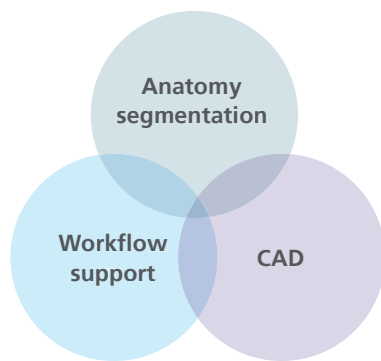
## Artificial Intelligence

<http://reili.fujifilm.com/en/>

REiLI, which in Japanese means “intelligent and resourceful”, represents a new frontier in diagnostics and will improve medical care thanks to the collaboration between health professionals and Artificial Intelligence. The union of the technologies of Image Processing and Artificial Intelligence will allow to obtain an even more accurate diagnosis.

## How do we imagine this innovation?

The merger of REiLI with PACS will support the workflow of diagnostic imaging by leveraging the combination of AI technology deep learning and our image processing assets. This synergy is based on three cornerstones: Region Segmentation (automatic identification of anatomical regions), CAD (Computer Aided Detection) and workflow support.



### Anatomy Segmentation

AI technologies to extract organ and sub-organ regions accurately and consistently, regardless of deviations due to individual variation, disease, and imaging conditions.

#### Brain Segmentation

AI technology to segment and quantify the volume of each brain regions.

This technology can be used for pre-surgery simulation or calculation of the atrophy rate for each region between past and current exams.

#### Bone Temporal Subtraction

This technology visualizes the bone density temporal difference by performing image registration between the past and current image of the same patient.

The increase and decrease in CT value will be highlighted.

#### Bladder volume measurement

We are developing a technology to recognize urinary bladder area and measure the volume automatically. It will make it possible to measure residual urinary easily, and support urination management at home medical care.

#### BMD

This technology which developed by deep learning will

automatically detect the lumbar spine and femur bone that enhanced by energy subtraction, and calculate the bone mineral density.

### CAD

AI technologies to automatically detect and quantify suspicious lesions from captured images.

#### Interstitial lung disease classification

This technology identifies various findings of interstitial pneumonia that appear on CT images, such as consolidation, reticular pattern, ground glass opacity and honeycomb, and calculates their distribution and volume.

This will assist in the diagnosis of the severity and therapeutic efficacy of interstitial pneumonia, which are conventionally performed qualitatively, by providing a quantitative value for assessment.

#### On demand CAD

After taking Chest X-ray image, detect the abnormal lesion immediately to support the physician especially for emergency case. We are developing AI-CAD which detects Main Chest Abnormality such as Pneumothorax, Nodule, Consolidation and so on.

#### Colonic Polyps CAD

We are developing a technology to assist real time detection of colonic polyps. It supports both white light and LCI (Linked Color Imaging) modes. And we are also developing a technology to assist characterization of colonic polyps under BLI (Blue Light Imaging) mode.

### Workflow Support

AI technologies to utilize the results from Anatomy Segmentation and CAD algorithms in various applications to streamline workflow.

#### Reporting Workflow Support

We aim to assist the reading workflow by utilizing the findings from diagnostic imaging in all stages of the workflow, including worklist, viewer, reporting and alert communication.

Technology to optimize reading resource and autopopulate reports are being developed.

#### Positioning Assist

We are developing a technology that recognizes a patient direction and laterality from the camera image to reconfirm the positioning before exposure.

This technology will reduce retakes and avoid an additional dose to the patient.

#### Exposure Condition Navigation

The sensor integrated in the X-ray system will recognize three-dimensional information from the patient's body. It will then automatically suggest the optimized exposure conditions and adapt proper image processing.

## A platform also opens to third-party AI technologies

AI technologies from different manufacturers can work together to provide the best result for health improvement. Fujifilm has already taken the following actions:

*Scan the QR code or click over the link to discover more about.*



- Establishment of FUJIFILM AI Academy “BRAIN (S)” in Tokyo for the development of the next generation of advanced Artificial Intelligence technology and to improve collaboration with academic institutions  
<https://www.fujifilmholdings.com>

**Brain(s)**  
FUJIFILM Creative AI Center



- Partnership with the LPixel startup of the University of Tokyo for the development of AI for the support of diagnostic imaging using endoscopy systems  
<http://www.fujifilm.com>



- Fujifilm and Kyoto University jointly developed AI-based diagnostic support technology for interstitial pneumonia  
<https://www.fujifilm.com>



- Fujifilm to develop AI-based technology to aid COVID-19-induced pneumonia diagnosis and assess the effectiveness of treatments  
<https://www.fujifilm.com>



- REILI, FUJIFILM’s Artificial Intelligence in support of operators involved in the fight against COVID-19 at the “Ca’ Granda Ospedale Maggiore Policlinico” hospital in Milan  
<https://synapse.fujifilm.eu>



- Fujifilm’s New AI-based Technology for Lung Nodule Detection Now Approved for Use in Japan  
<https://www.fujifilm.com>

## Synapse 5 and REILI

Synapse 5: the server-side-rendering technology and the centralized processing of Synapse 5 allow the easy application of the Artificial Intelligence technology within the normal workflow management tool to support of health professionals.

This is where our revolution in Medical Imaging starts with the AI technology of REILI

**More stories to come about Fujifilm Artificial Intelligence initiatives...**