Chest X-ray  
AI Analysis Package  
Powered by Lunit INSIGHT CXR & RUBEE™  

Embedded intelligence, supporting the clinical workflow
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RUBEE for AI and the significance of the Enterprise Imaging platform

Healthcare systems across the globe are exploring the potential application and benefits of Artificial Intelligence when it comes to improving quality care, focused on outcomes. The path towards realizing the benefits opens another opportunity: addressing the interoperability and integration aspects. Already, there are hundreds of start-ups and AI developers working in the healthcare arena, each focusing on highly specific applications. Selecting which ones you need, and then integrating them into your system and workflows is far from simple!

RUBEE for AI, as part of your Enterprise Imaging platform, offers a seamless AI experience for your clinicians. Carefully curated 'packages' embed best-of-breed AI apps that work seamlessly to support your real clinical workflow from start to finish.

With RUBEE for AI, you get more out of your AI investments, while enriching the value of your Enterprise Imaging. It’s a win-win-win for your hospital, your clinicians and your patients!

What is RUBEE for AI?

With RUBEE for AI, you can embed our AI specialty packages into your clinical workflows.

RUBEE visualizes the metadata generated by algorithms such as deep learning, machine learning, image analysis and natural language processing. It also uses that information to automate and optimize your workflows, all within your Enterprise Imaging ecosystem.

Future-proof and clinically relevant

'Augmented Intelligence' does just that: offering a set of tools that let your clinicians maximize the value of their own expertise, increase their productivity and enhance diagnosis. But to get the real benefits to your clinicians, the tools need to be embedded right into the workflows and systems they use every day.

Your Enterprise Imaging already offers a future-proof, multi-specialty platform that consolidates your hospital’s wealth of data. With RUBEE for AI, it also becomes your AI enabled ecosystem.

Standards-based workflows are embedded with niche and specialty-focused AI apps, delivering clinical relevance. No need for an additional, complex and costly dedicated AI platform or marketplace. And, instead of worrying about which apps to select and how to integrate them, you are leaping ahead with an ecosystem of seamlessly embedded AI.
Best-of-Class AI apps, Specialty Packages

We have taken the guesswork out of your AI journey. Our AI specialty packages have been carefully curated to enable interoperability and integration of best-of-class algorithms. You can be confident that all the algorithms come from reliable companies, and trained on evidence-based data.

Most of all, they are powered by RUBEE for AI, ensuring that they meet your specific clinical needs from start to finish. So, there’s no ‘trial and error’: just proven value.

Enrich your Enterprise Imaging workflows

With AI fully embedded in your Enterprise Imaging platform, your clinicians see benefits all along the line.

- Task assignments and case distribution are smoothly automated, based on the metadata generated from the AI apps.
- Hanging protocols get ‘smart’, with dedicated reading protocols.
- Report automation by auto-including AI results into the reporting workflow.

Offering advanced visualizations, workflow optimization and automation, RUBEE for AI helps your clinicians to focus their efforts on cases that require immediate attention.
Clinical challenges in X-ray Analysis

- High volume of cases assigned to each radiologist, can create backlogs at healthcare facilities
- Unable to intelligently sort or prioritize workflow
- Incidental findings that might be otherwise missed
- Looking for actionable nodules on PACS workstation can be tedious
- Detection of Tuberculosis on CRs remains a labour and time-intensive task that requires expert’s interpretation

When it comes to detection of lung nodules, machine automation and deep learning algorithms can provide an added value to help address challenges associated with high volume of cases, identification of actionable nodules and workflow prioritization.

Introducing the Chest X-Ray AI Analysis package
Powered by RUBEE™ and INSIGHT CXR

- Agfa’s RUBEE for AI enables EI Desktop and XERO Universal Viewer AI visualizations
- INSIGHT CXR is CE cleared
- INSIGHT CXR helps detect 10 common chest x-ray findings and generates the analysis result which indicates the presence and the location of chest abnormalities.
Detection

- Atl: Atelectasis
- Calc: Calcification
- Csn: Consolidation
- Fib: Fibrosis
- Ndl: Nodule
- PEf: Pleural effusion
- Ppm: Pneumoperitoneum
- Ptx: Pneumothorax
- Cm: Cardiomegaly
- MW: Mediastinal widening

- Detection of areas of suspicious abnormal radiologic findings
- Automated analysis of chest radiographs via deep learning technology
- Visualization and quantitative estimation of the likelihood of the presence of each abnormality

Tuberculosis screening option can be turned on

- Excellent and consistent performance in the detection of active pulmonary tuberculosis on CR, outperforming physicians, including thoracic radiologists

Chest X-ray AI Analysis Package

detects 10 abnormal radiologic findings with 97-99% accuracy and supports tuberculosis screening on chest x-ray images.

Product may not be available in all regions, contact your Agfa HealthCare representative for details.
Detection and Analysis

Detected Location
The AI generates the location information of detected lesions in the form of heatmaps and/or contour maps.

Abnormality Score
The AI generates an abnormality score which reflects the AI’s calculation of the actual presence of the detected lesion.

AI report
The AI provides a “case report” that summarizes the overall analysis result. The analysis results are narrowed down to each finding if multiple findings are detected.

Chest X-ray AI Analysis Package – Major features

1. Fast triage of normal cases:
   Triage normal cases quickly and focus on reading abnormal cases where lesions might exist.

2. Efficient reading via exam prioritization:
   In reference to the abnormality scores on the worklist, radiologists can prioritize exams in their reading order, resulting in a 13% reduction in reading time, and a 33% reduction time for normal cases.¹

3. Improved reading performance:
   Non-radiology physicians, general radiologists, and even thoracic radiologists can improve their diagnostic accuracy for major chest abnormalities.⁵ ⁶ ⁷ ⁸ ⁹ ¹⁰ ¹¹

4. Reduced overlooked lung cancers:
   Automatic detection of small and subtle pulmonary nodules overlapped in the hilar shadow, ribs, heart, and diaphragm enables radiologists to reduce overlooked lung cancer cases, especially during regular check-ups.¹²

5. Streamlined ED workflow:
   Radiology residents can improve their diagnostic performance¹³ and reduce their reading time¹⁴, which ultimately accelerates the decision-making process and treatment in the ED.

6. COVID 19 patient triaging and monitoring:
   AI-aided chest radiograph interpretation can help medical professionals detect COVID-19 infected pneumonia quickly¹⁵ and accurately¹⁶, enabling prompt isolation and timely treatment.
AI embedded Xray – Major features

1. Small nodule detected
   - Abnormality score: 63%

2. Multiple findings including atelectasis, pleural effusion
   - Abnormality score: 98%

3. COVID-19 infected pneumonia detected
   - Abnormality score: 77%

References: