User Report

More than just nodule detection: Radiologists at the Imapôle Lyon-Villeurbanne group benefit from the support of contextflow AI to detect lung anomalies

Medical imaging, a central pillar of modern medicine, has become indispensable - a cornerstone of patient diagnosis - and it will be even more so moving forward. Looking towards the future, Imapôle Lyon-Villeurbanne, the medical imaging department of the largest private healthcare establishment in the Lyon region, Médipôle Lyon-Villeurbanne, is fully committed to this belief and has thus integrated contextflow ADVANCE Chest CT into its clinical routine. To better understand the reasons for adopting contextflow, the selection criteria, the deployment experience and the benefits observed, we spoke to Samir Lounis, CEO & General Manager at ImaOne. He manages and directs the Imapôle group's activities.

Hello Mr. Lounis, could you tell us about Imapôle Lyon-Villeurbanne?

The Imapôle group consists of 10 radiologists responsible for reporting the medical images from two sites: Médipôle Lyon Villeurbanne, Europe's largest private hospital with over 850 beds, and the Pôle Médical d'OL Vallée in Décines. These two sites carry out more than 800 examinations a day and around 170,000 examinations a year.

Our team manages this workload, and we are strongly committed to the use of artificial intelligence solutions. We firmly believe in AI's potential to support our radiologists and transform them into "augmented radiologists" in order to provide more accurate diagnoses and be able to manage a much higher volume of examinations.

What were the motivations and determining factors that led your radiology department to consider adopting contextflow in your clinical practice at Imapôle Lyon-Villeurbanne?

At Imapôle, a significant proportion of our work (~1/3) is in oncology. This means that we have to interpret a large number of images to monitor or detect pathologies in our patients. In this context, we had been looking for a solution that could help us detect nodules and monitor their evolution in terms of size, particularly in terms of growth or shrinkage.

Measuring a nodule is a complex task, subject to many variations. It depends on the anatomical plane used for the measurement and the inclination of the nodule itself. In addition, we wanted the measurements to be volumetric and reproducible. With all these factors in mind, we decided to use software.

We are also involved in a lung cancer screening program at Médipôle - in France, studies are currently being carried out in this field. At Imapôle Lyon Villeurbanne, we have a large pneumology department, and we wanted to offer a solution that was reproducible, efficient and independent of the operator behind the screen.

Of the various solutions we had identified, contextflow was one of the three finalists, and appeared to be the most efficient and comprehensive, meeting our needs.

What were the selection criteria and what preliminary evaluations were carried out before choosing contextflow's software for your radiology department?

We explored the market to find solutions suited to our mission, which is to detect and monitor lung nodules over time. We also took into account other criteria such as the time taken to return results. It was essential that the analysis could be carried out quickly, with a return to the PACS and the doctor in around five minutes, in order to maintain our patient management flow. After a comparison of contextflow to other vendors, we chose contextflow because it offers more than just nodule detection and integrates very well into our PACS.

The other point that was a "game changer" in our choice was contextflow's ability to look ahead and offer incidental pulmonary embolism detection in the near future. This gives us a tool capable of responding to several of our problems, particularly in oncology, for long-term monitoring, analysis and reproducibility of measurements, as well as analysis and quantification of other pulmonary pathologies like emphysema.

Can you retrace the history of the integration of contextflow's software in your radiology department, from its implementation to the present day?

contextflow's technical teams have been extremely responsive. We were able to put them in touch with our IT and PACS teams, and all three teams quickly managed to install the virtual machine to carry out all the tests. We had a fairly tight deadline to achieve a level of integration that would enable us to use the system seamlessly without the doctor having to leave his environment. This was a key factor.

contextflow's solution is fully integrated into our workflow. Sending is automatic from the modality to the AI solution, and the results are sent back to PACS. So when the doctor reads the examination, they have the contextflow results at their fingertips. The technical support provided by the teams during the start-up phase was extremely responsive, which is very positive for contextflow. The level of integration with PACS is very high.

What were the key stages in the process of implementing contextflow's software in your radiology department in terms of training, customization and change management?

As far as contextflow is concerned, training took place in two stages. First, there was a preliminary training session which essentially consisted of a product presentation, followed by a second session where the application of the product in clinical routine was presented. We examined a concrete case and analyzed the results obtained. This training was given by videoconference on different dates to suit the availability of the various doctors involved in the project, which was much appreciated. We were able to start using the solution with remote support from both contextflow and our IT and PACS teams. Everything went very smoothly.

After about a month's use, contextflow offered to accompany our medical teams on site to benefit from their experience. This would also enable us to make personalized adjustments to the use of the product and help discover functionalities that might not have been fully grasped during the initial training sessions.

This support is still ongoing. An application engineer will come next week to meet our teams, and he will also come back if the doctors feel the need.

Now, as far as contextflow is concerned, the big advantage is that it is not limited to detecting and monitoring nodules over time, which is essential and very important for lung cancer screening, for example, and for monitoring smokers. Rather, it also offers analysis of other pathologies, notably emphysema, which is a very important quantification, especially with a view to the future.

In the future, it will also enable the detection of incidental pulmonary embolism, a crucial diagnosis in radiology. At Medipôle Lyon Villeurbanne, the largest private emergency department in France, we see around 250 patients a day, about half of whom go through the imaging department, and many of whom benefit from a CT scan. We're very pleased to be supported by AI-based detection software for these 250 patients because radiologists' workload is ever-increasing. You end up with 400 to 500 images to analyze per patient. So it's great to have an artificial intelligence that can accompany you in this detection phase and highlight areas at risk.

That's why contextflow's ability to handle new pathologies to be analyzed was a decisive factor in our choice of solution.

How was contextflow's software integrated into Imapôle's existing radiology information system to ensure compatibility, interoperability and synchronization of clinical data?

What's most important is the whole preparatory integration phase. This involves a considerable amount of work over several weeks, during which all the players involved can discuss technical constraints. The end users, in particular the radiologists, can express their expectations and objectives, particularly in terms of how they wish to find the results in his workflow.

The success of this stage is reflected in the fact that, in the end, the radiologist doesn't need to leave their usual work environment. They open their PACS and work within it - the contextflow results are there without having to open a new program or change windows. The user is not confronted with a totally different interface. In addition, contextflow's results can be adapted by the radiologist when they disagree, for example, in the case of a false positive nodule. The more transparent we can make

the use of contextflow within the PACS and the more successful the integration, and the more the radiologist will use it.

How do you measure the overall satisfaction of contextflow users in your radiology department in terms of user-friendliness, performance and contribution to clinical decision-making?

Every click costs radiologists time and money, so having a well-integrated AI solution with as few clicks as possible was a priority for us. This is a key element in the use of the solution. If we suggest to a radiologist (who is already very busy and subject to the heavy mental workload linked to medical image analysis) additional constraints such as having to navigate between different windows or files, it's certain that the solution will not be used. They may try it once or twice but will soon realize that it's time-consuming, and they'll end up saying to themselves "I'll do without it" and never come back to it.

If, on the other hand, the whole process is automated, (i.e. the images are acquired by the scanner, automatically sent to contextflow for analysis, and results are sent back to the radiologist in their native working environment) then all they have to do is validate or invalidate the AI's results for inclusion in the report. The number of clicks is reduced to a minimum. This makes the system extremely user-friendly. What's more, the degree of integration of the solution with our PACS is extremely advanced, making our dependence on the solution even more beneficial.

What performance indicators and evaluation criteria are used to measure the effectiveness and clinical impact of contextflow's software in your radiology department?

In terms of our prescribing physicians, we have a large number of pulmonologists and pulmonary oncologists in our department. So we have a team of doctors who specialize in lung diseases. They have been very satisfied with the contextflow software at an advanced level of pulmonary analysis, especially here in Lyon. They have particularly appreciated the ability to detect and track lung nodules over time and to compare results.

When a patient is sent for assessment after three or six months of chemotherapy, it is extremely valuable to have a tool like contextflow to ensure reproducibility of analysis and measurements. This has really been a major asset for our prescribing physicians.

Today, the use of the tool is practically demanded by prescribers, as they have become accustomed to its use. They therefore refer their patients to our center so that their scans can benefit from this additional in-house analysis. As far as our own doctors are concerned, as I mentioned earlier, the more transparent the interface in the workflow, the more it is used. As a result, 100% of lung scans now go through contextflow, benefiting from both medical and AI-assisted dual analysis.

The feedback we've had from talking to doctors clearly shows that the tool has been adopted and used in the same way as the other AI tools we have in our fleet. We have a team of doctors who are forerunners in the adoption of AI, and they are aware of the benefits that artificial intelligence can bring them.

How would you like to see the contextflow solution evolve in the future?

I would love to see contextflow provide a solution for the detection of pulmonary embolism, as this is a real need for all emergency medical imaging departments. This will be of considerable help to emergency physicians and doctors, speeding up patient management and reducing the time lost in analysis. The contextflow team took our feedback seriously and is working towards this.

Still, we are very satisfied with the current solution. contextflow is continuously improving the specificity and sensitivity of the nodule detection algorithm. Next, they plan to extend the possibilities of thoracic pathology analysis, not only for the lungs, but also for the vessels and heart, as well as for all organs located in the thoracic region. If contextflow could also provide analysis for these elements in the future, that would be a real asset.
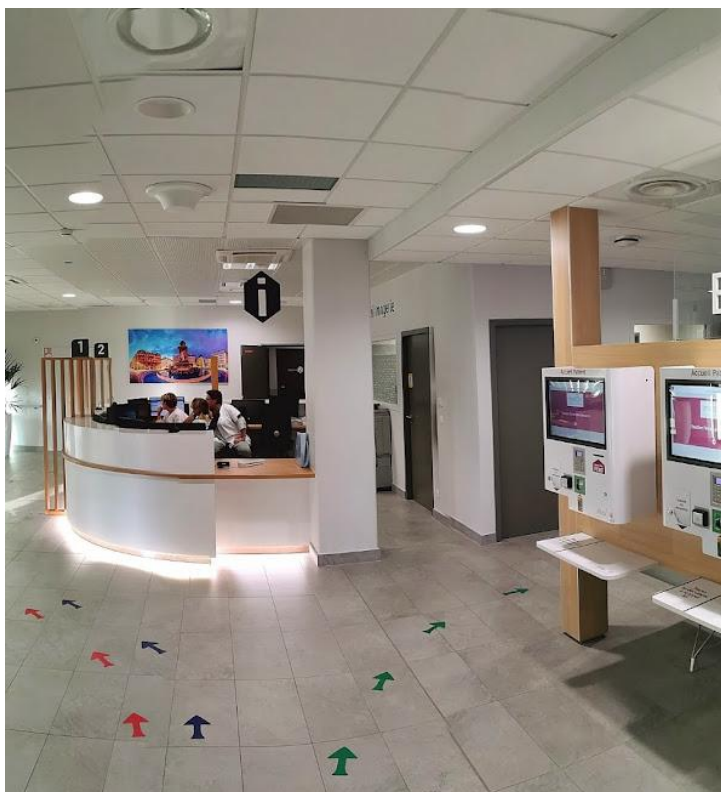
AI is seen as the future, but it also raises fears. As a user, you may be both enthusiastic and reticent about certain applications. However, as a human being, you are aware of the implications and limits of AI. It can open the door to a wide range of possibilities. What is your opinion on this subject?

In today's world, where everything is evolving rapidly - much faster than a human being can adapt - data, both medical and non-medical, is multiplying exponentially. The analysis of this data must also be multiplied.

However, human beings do not have the capacity to adapt instantly to such a flow of data. We may be able to do so in X years' time, but today, we need solutions that support us in managing this data flow. Sorting and analyzing this data and information is crucial.

As far as I'm concerned, I can say that AI can raise concerns in certain areas. However, I believe that AI will not replace doctors. This is a fact that I have experienced by using these solutions for several years and observing them in our practice.

What is certain, however, is that the doctor who uses AI will replace the doctor who does not. And therein lies the real challenge. The world has evolved faster than human beings can adapt. It therefore needs technological tools. So, the doctor who integrates AI into his practice will surpass the doctor who doesn't, plain and simple.