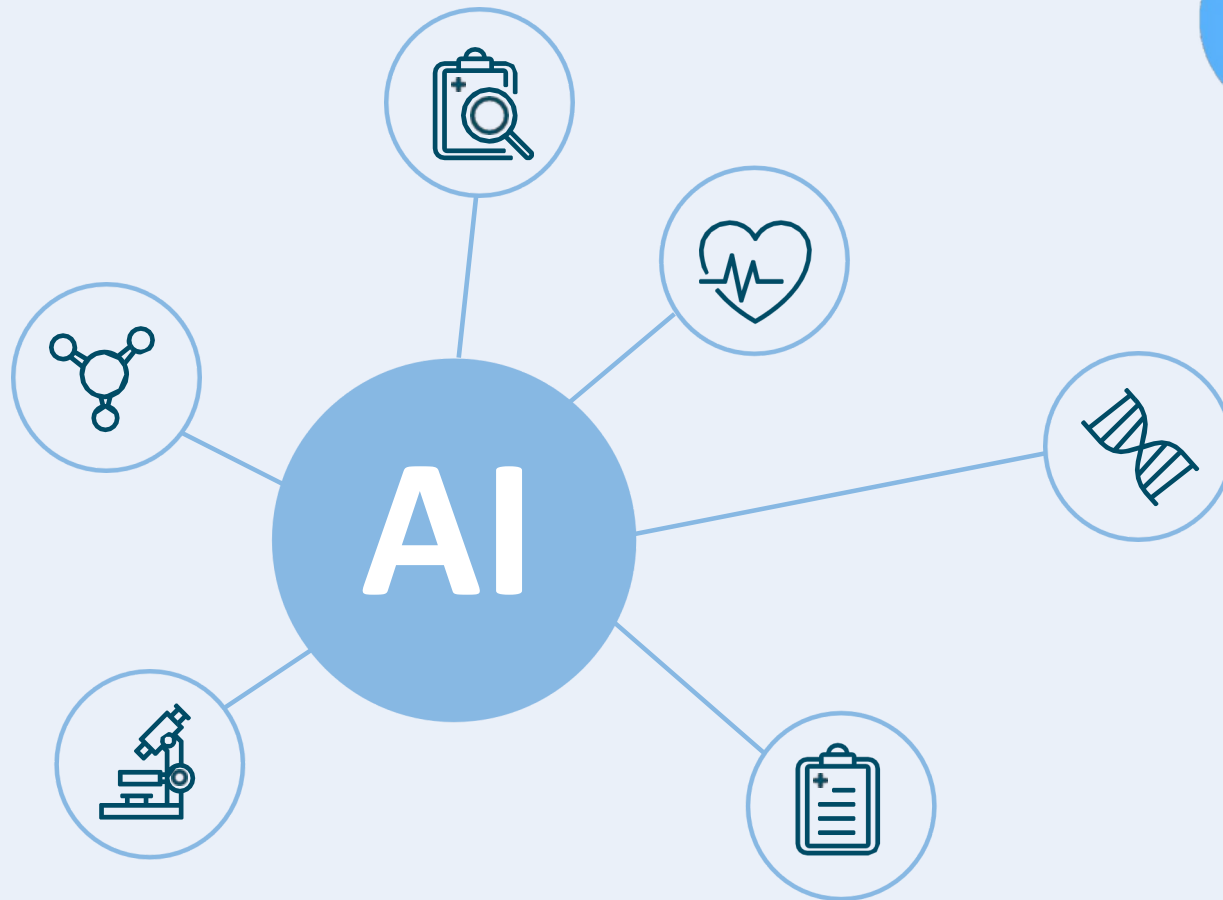




AI for image-based osteoporosis detection

Design and marketing of artificial intelligence
algorithms for image and clinical data
analysis.

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REGULATORY

ENS

ISO 13485, 27001, 9000

EC DECLARATION OF CONFORMITY IN
ACCORDANCE WITH THE MEDICAL DEVICES
DIRECTIVE 93/42/EEC AND ITS AMENDMENT
2007/47/EC

HL7 FHIR



An unmet clinical need

quantusOS is a non-invasive, fast, and easy-to-use test for the automatic detection of osteoporosis.

Based on an AP (anteroposterior) hip X-ray, either a full hip view (two femurs) or a half hip view (one femur) is valid, it is capable of **detecting the risk of osteoporosis**. Its technology is based on quantitative analysis of the texture of the femurs.

This study was carried out thanks to the collaboration of **the Ramón y Cajal University Hospital** in Madrid, Spain. The images were acquired by radiologists following the image acquisition protocol approved by the hospital's ethics committee.

Our expertise focuses on developing innovative medical technologies based on image analysis and processing to provide healthcare professionals with additional information that is not available with current technologies, substantially improving the quality of service they can offer to patients.



NON-INVASIVE



SAFE



FAST



COMPATIBLE

How to use quantusOS?



**1. Acquire magnetic
resonance images**



**2. Upload the slices to
the web application**



3. Obtain the results

Step 1: Acquire an X-ray.

quantusOS requires an X-ray in DICOM format. A simple guide is available within the application that shows how to acquire the image.

How to use quantusOS?

Step 2: Use the quantusOS medical application to analyze the image. This application allows you to send the image you want to analyze to the system.



Upload

Upload images to the web



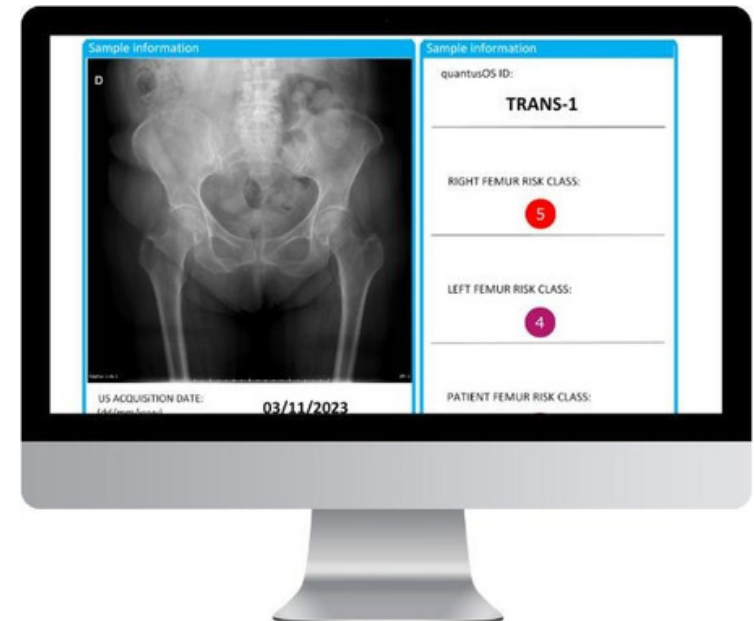
Select

The images you want
to be analyzed



Send

The sample to be analyzed



Step 3: Obtain the results of the application in a few minutes via a results report.

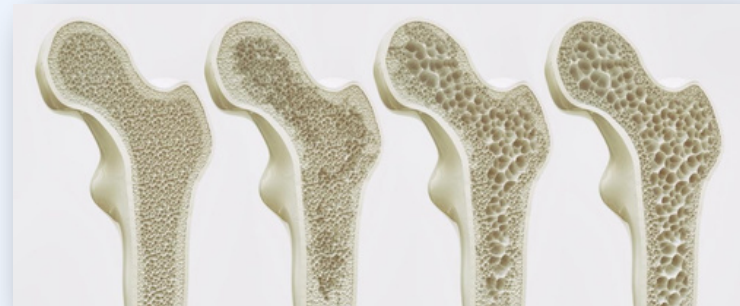
A REVOLUTIONARY SOLUTION FOR RESOURCE OPTIMIZATION

quantusOS classifies images into different categories according to the risk of osteoporosis. quantusOS has been designed as a tool to assist clinicians, which can be used at different stages of clinical practice.



A good example would be to use it as a tool for **reducing densitometry** or for incidental detection, allowing osteoporosis to be detected in patients without risk who undergo X-rays for other reasons.

quantusOS has been designed with a clear focus on helping the population, being of great help in screening patients with risk factors, monitoring patients, and prioritizing waiting lists.



ANALYSIS AND CLASSIFICATION OF OSTEOPOROSIS

Preliminary tasks were carried out, such as dividing images into simple femurs, excluding femurs with prostheses, and cropping the images at the top of the femur, in order to improve the training of the prediction algorithm.

In order to avoid confusion in the osteoporosis prediction algorithm, an additional deep learning algorithm was used. This algorithm automatically classifies femurs as "prosthetic" or "non-prosthetic" and was applied to all images in the dataset. Femurs classified as prosthetic were automatically discarded from the database.

Finally, a deep learning algorithm was used to automatically segment the **region of interest (ROI)**, delineating the upper part of the femurs. This process allowed each femur to be cropped into a square around the automatic delineations, facilitating data preparation for the osteoporosis prediction algorithm.

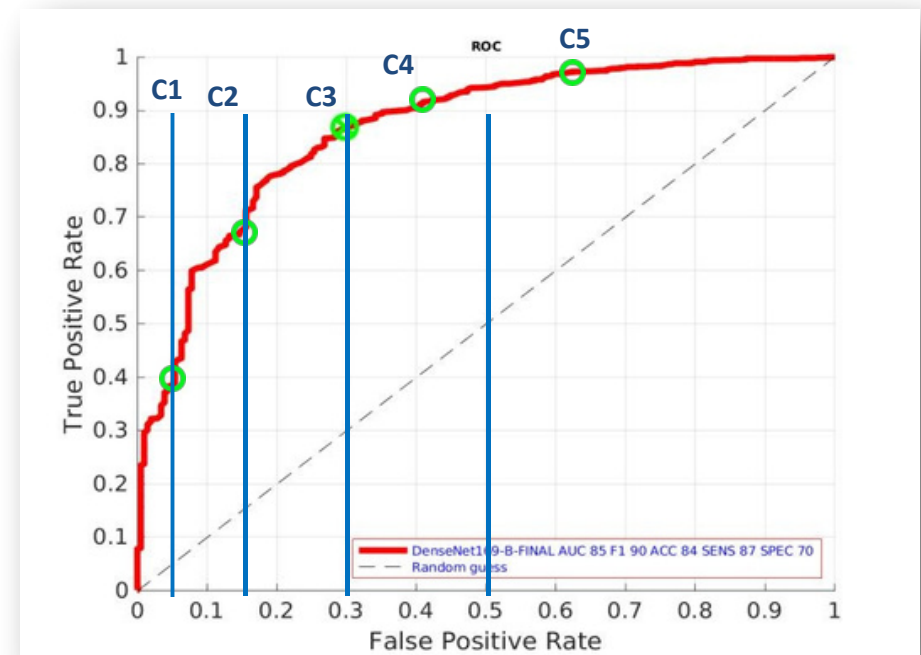


QUANTUSOS RELIABILITY

Reliability of quantusOS by class detection

	AUC	F1 -Score	ACC	SENS	SPEC	PPV	NPV
Class 1 (>95% SPEC)		55.1	47.0	38.4	95.1	97.8	21.7
Class 2 (>85% SPEC)		79.2	70.0	67.2	85.4	96.2	31.8
Class 3 (>70% SPEC)	86.6	90.4	84.3	86.9	70.2	94.2	49.0
Class 4 (>85% SENS)		92.1	86.7	92.2	57.6	92.3	55.9
Class 5 (>95% SENS)		93.3	88.2	97.3	37.6	89.7	71.3

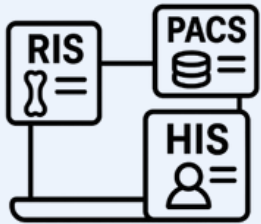
AUC ROC curve for osteoporosis



An unlimited experience



Unrestricted 24-hour **access**: With an internet connection, you can use quantusOS and review results anytime, anywhere.



Our service allows for seamless integration between **HIS**, **RIS**, and **PACS** systems, optimizing clinical work and ensuring centralized and secure access to medical information.



RESTful web services: Compatible with HL7 FHIR



No requires installation: or download of any type of software



High compatibility: quantusOS is compatible with most web browsers as well as with devices used in primary care practice.



Pay-per-use: Pay only for each analysis you request

Collaborate with us





Developing tomorrow's medical technologies today