

XSpectra: the most advanced AI real-time quality control system

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XSpectra is Xnext groundbreaking technology, which is a result of a 8-year in-house development and a €8-million investment.

XSpectra is a X-Ray detector with a three-layered innovative combination: photonic, nuclear electronics and artificial intelligence algorithms.

Currently Xnext can count a team of 22 highly talented physicists and engineers, including 9 data scientists specialised in machine learning.

The data collected at Xnext consist of X-Ray absorption spectra produced by a pixelated detector: 384 pixels generating spectra at typically 128 energy bins every millisecond, for acquisition times of some seconds. Therefore, very large data clusters need to be stored, analysed, and real-time processed for quality control. Nevertheless, such a critical amount of data is easily and successfully managed using machine learning tools - like clustering, anomaly detection, dimensionality reduction, neural networks - which have shown to provide a fast, automatic, efficient and elegant solution.

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