

# Fast prototyping of medical imaging detectors using AI methods

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Computationally expensive physics simulations involving Monte Carlo runs form the backbone of designing improved medical imaging detectors. We show initial results, from an EU-sponsored grant, leveraging uncertainty quantification (UQ) techniques to drastically reduce simulation time with negligible loss in fidelity. We outline the use of embedding such UQ techniques within a machine learning surrogate-based optimiser to achieve optimised detector configurations quickly.

As part of our software democratisation efforts, we showcase our Quair platform which can be used by non-specialist users to deploy and run such AI-driven simulation workflows in the cloud. We discuss other features unique to Quair which help engineers, data scientists, operators, and experimentalists to integrate simulations, machine learning, and real-world data; these features accelerate decision-making under uncertainty, rapid prototyping, collaboration, and standardisation.

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