

Optimising operation of European XFEL with artificial intelligence

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The European XFEL is a complex machine building on hundreds of subsystems, which might require frequent calibration. The automation of the latter frees operators' time and potentially increases the exploitation of allotted beamtime.

Three use-cases are shown in this presentation. A first use-case takes advantage of Bayesian Optimization to spatially align an optical laser to a camera. A second presented example shows the usage of the Mutual Information and Bayesian Optimization to optimize a coordinate transformation for data analysis. Finally, a third example uses Computer Vision to detect conditions that could damage imagers and take action if necessary.

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