

Application of Machine Learning to Accelerator Operations at SACLA/SPring-8.

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We've introduced Machine Learning methods to accelerator operations at SACLA/SPring-8. One of them is an automatic beam tuning based on Bayesian Optimization. In the initial test, we tried to maximize the pulse energy by using the optimizer. Then we've introduced a new high-resolution single-shot inline spectrometer (resolution of a few eV) to maximize the spectral brightness. Today the optimizer is applied for various beam tuning. Another activity is to Anomaly Detection of Thyratrons. Based on the rate of misfiring and its grid waveform, Failure Prediction of working thyratrons are evaluated. These ML related activities and their status are reported.

Primary Keyword

bayesian optimization

Secondary Keyword

failure prediction

Tertiary Keyword

Primary author: IWAI, Eito (SPring-8)

Co-authors: MAESAKA, Hirokazu (RIKEN/JASRI); INOUE, Ichiro (RIKEN)

Presenter: MAESAKA, Hirokazu (RIKEN/JASRI)

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