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Artificial Intelligence for improved facilities operation in the FNAL LINAC

Thursday 11 May 2023 16:30 (2 hours)

The energy consumption in accelerator structures during beam downtimes is a significant fraction of the overall energy budget. Accurate prediction of downtime duration could inform actions to reduce this energy consumption. The LCAPE project started in 2020 and develops artificial intelligence to improve operations in the FNAL control room by reducing the time to identify the cause of a beam outage, improving the reproducibility of labeling it, predicting their duration and forecasting their occurrence.
We present our solution for incorporating information from ˜2.5k monitored devices in near-real time to distinguish between dozens of different causes of down time.
We discuss the performance of different techniques for modeling the state of health of the facility and we compare unsupervised clustering techniques to distinguish between different causes of down time.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

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