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Edge AI for accelerator controls: beam loss deblending

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In the Fermilab accelerator complex, the Main Injector (MI) and the Recycler Ring (RR) share a tunnel. The initial design was made for the needs of the Tevatron, where the RR stored fairly low intensities of anti-protons. Currently, however, both the MI and RR often have high intensity beams at the same time. Beam loss monitors (BLMs) are placed at different points in the tunnel to detect losses. However, it is often difficult to attribute the beam loss to either the MI or the RR, causing the beams to be unnecessarily aborted in both machines. This causes unnecessary downtime that is costly to the running of the experiments at the Intensity Frontier.

In order to decrease the unnecessary downtime, a system has to attribute the loss to a particular machine in rea

In addition to describing the system, a second focus of the presentation will be on using hls4ml to translate th

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