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## Application of Deep Learning Methods for Beam Size Control at the Advanced Light Source

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Past research at the Advanced Light Source (ALS) provided a proof-of-principle demonstration that deep learning methods could be effectively employed to compensate for the significant perturbations to the transverse electron beam size induced by user-controlled adjustments of the insertion devices. However, incorporating these methods into the ALS' daily operations has faced notable challenges. The complexity of the system's operational requirements and the significant upkeep demands have restricted their sustained application during user operation. In this talk, we introduce the development of a more robust neural network (NN)-based algorithm that utilizes a novel online fine-tuning approach and its systematic integration into the day-to-day machine operations.

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