

MLOps for Beam Controls

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Machine learning operations (MLOps) is the standardization and streamlining of the ML development life-cycle to address the challenges associated with large-scale machine learning applications. The full MLOps pipeline consists of open-source tools: DataHub, MinIO and MLflow. It is being used for dataset management and model development to handle changing data dependencies, varying business needs, reproducibility, and diverse teams working with differing tools and skills. To demonstrate the completion of an MLOps pipeline for particle accelerator operations, we are deploying a simple script that computes settings for the Booster's gradient magnet power supply. Once the demonstration is complete, we will develop and deploy ML-based optimization algorithms to improve Booster's overall efficiency. This MLOps pipeline opens the gate to systematically develop and deploy ML applications for accelerator controls and diagnostics.

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