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Machine Learning Techniques in the ATLAS TDAQ Network Monitoring System

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Network monitoring is of great importance for every data acquisition system (DAQ), it ensures stable and uninterrupted data flow. However, when using standard tools such as Icinga, often homogeneity of the DAQ hardware is not exploited.

We will present the application of machine learning techniques to detect anomalies among network devices as well as connection instabilities. The former exploits homogeneity of network hardware to detect device anomalies such as too high CPU or memory utilization, and consequently uncover a pre-failure state. The latter algorithm learns to distinguish between port speed instabilities caused by, e.g. failing transceiver or fiber, and speed changes due to scheduled system reboots.

All the algorithms described are implemented in the DAQ network of the ATLAS experiment.

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