

AISSAI Anomaly Detection Workshop



ID de Contribution: 27

Type: Non spécifié

Anomaly Detection algorithms applied to the Quality Control of detector components

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With the rapid development of advanced Machine Learning techniques, many new and efficient Anomaly Detection algorithms have been released. In the field of experimental High Energy Physics, interest for such Anomaly Detection algorithms is growing. In the production of new detectors, one of the critical aspects is to ensure the functioning of each component through extensive Quality Control procedures. Our proposal is to use advanced Anomaly Detection algorithms to improve the efficiency and reliability of such procedures. In particular, we focus on the Visual Inspection of detector components using Computer Vision algorithms. We established a strategy combining both unsupervised and supervised techniques in order to detect all kinds of defects in a given component. This strategy is demonstrated in the context of the upgrade of the ATLAS detector for the High Luminosity phase of the LHC. We use the components of the new ATLAS Inner Tracker (ITk) produced in Japan as a first test case. In future, we believe that such techniques can be generalized for the construction of many new experiment in High Energy Physics as well as in other fields.

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Classification de Session: Contributed