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The use of Machine learning to improve quality control in electronics for CERN.

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This paper demonstrates how using deep neural networks can improve quality control of Low Voltage Power Supply (LVPS) Boards. Deep Neural Networks (DNNs) as a machine learning algorithm is used to analyze complex data from the LVPS Boards. The first initial testing done on the boards determines their reliability and performance. A total of eleven tests with a binary metric of PASS/FAIL make up the initial test station. The measurements are stored in a database. The multi-dimensional data that Is labelled is explored and then anlayzed by a DNN algorithm. The DNN model classifies the data, and produce significant insights with predictions about the quality of the LVPS boards. These forecasts will help the European Organization for Nuclear Research (CERN) with Quality Control of the Toroidal Large Hadron Collider Apparatus (ATLAS) Tile Calorimeter (TileCal) Phase-II LVPS Brick upgrading Bricks. Preproduction and production has been approved for this year, the LVPS boards will produce more data than prior research used. I will explain the importance of the LVPS bricks and how Machine Learning is improving the quality control of electronics.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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