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Artificial Intelligence Applied Researches on Online Monitoring System

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The online monitoring system is an essential component of the data acquisition system, delivering swift, efficient, and comprehensive real-time monitoring for the readout chain. However, traditional online monitoring systems primarily rely on preset rules for data selection and inspection, which are unable to cope with complex operating conditions and large data volumes in real time. There are also problems that rely on manual monitoring and inspection, which is prone to omissions and inefficiency. This limitation makes it difficult for monitoring systems to accurately predict abnormal situations, severely impacting production efficiency and equipment safety. To address these challenges, the application of artificial intelligence technology has become a choice. A solution that combines machine learning and large language model technology for application on online monitoring systems has been designed to enhance the accuracy and efficiency of data inspection. Machine learning algorithms, through learning from historical data, can adaptively adjust monitoring models to more accurately identify potential risks. Meanwhile, by leveraging the inferential capabilities of large language models combined with past expert experience, the system can perform root cause analysis and provide real-time alerts, enhancing predictive capabilities to handle complex monitoring scenarios and provide more valuable references. The detailed research and application of the system will be presented in this poster.

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