Managing Data from One Hundred Thousand Internet of Things Devices Globally for Mining Insights

Authors : Julian Wise

Abstract : Newcrest Mining is one of the world's top five gold and rare earth mining organizations by production, reserves and market capitalization in the world. This paper elaborates on the data acquisition processes employed by Newcrest in collaboration with Fortune 500 listed organization, Insight Enterprises, to standardize machine learning solutions which process data from over a hundred thousand distributed Internet of Things (IoT) devices located at mine sites globally. Through the utilization of software architecture cloud technologies and edge computing, the technological developments enable for standardized processes of machine learning applications to influence the strategic optimization of mineral processing. Target objectives of the machine learning optimizations include time savings on mineral processing, production efficiencies, risk identification, and increased production throughput. The data acquired and utilized for predictive modelling is processed through edge computing by resources collectively stored within a data lake. Being involved in the digital transformation has necessitated the standardization software architecture to manage the machine learning models submitted by vendors, to ensure effective automation and continuous improvements to the mineral process models. Operating at scale, the system processes hundreds of gigabytes of data per day from distributed mine sites across the globe, for the purposes of increased improved worker safety, and production efficiency through big data applications.

Keywords : mineral technology, big data, machine learning operations, data lake

Conference Title : ICAMT 2020 : International Conference on Advances in Mining Technologies

Conference Location : Rome, Italy

Conference Dates : April 08-09, 2020