World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Machine Learning Application in Shovel Maintenance

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Abstract : Shovels are the main components in the mining transportation system. The productivity of the mines depends on the availability of shovels due to its high capital and operating costs. The unplanned failure/shutdowns of a shovel results in higher repair costs, increase in downtime, as well as increasing indirect cost (i.e. loss of production and company's reputation). In order to mitigate these failures, predictive maintenance can be useful approach using failure prediction. The modern mining machinery or shovels collect huge datasets automatically; it consists of reliability and maintenance data. However, the gathered datasets are useless until the information and knowledge of data are extracted. Machine learning as well as data mining, which has a major role in recent studies, has been used for the knowledge discovery process. In this study, data mining and machine learning approaches are implemented to detect not only anomalies but also patterns from a dataset and further detection of failures.

Keywords : maintenance, machine learning, shovel, conditional based monitoring
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020