

IoT Innovation in Mining

Overview

A mining company with a fleet of haul trucks across multiple sites wanted to shift from a reactive “repair after failure” mode to a proactive “repair before failure” stance to increase availability of its trucks.

Execution Strategy

The entire project was performed in four phases :

First Phase

A suitable gateway device was selected and installed to facilitate the transfer of data from the haul truck to the EnrichAI cloud.

Second Phase

EnrichAI’s platform was used for real time ingestion and storage of not only sensor data but also data from external sources such as operator data from ERP system, TPMS data, maintenance logs, oil testing data and GPS data.

Third Phase

Real time stream analytics was performed on the data-sets to benchmark against OEM recommended performance parameters. Results from this step was also shared as notifications/alerts to drivers and the mining company through an intuitive dashboard and mobile app.

Fourth Phase

Proprietary machine learning algorithms (decision trees, correlation matrices etc.) were run on historical and real time data to capture patterns and predict probability and reason for failure at an individual truck level.

Results

The health condition was communicated back to driver and maintenance teams for pre-emptive actions. In the process of data collection and analysis, some of the sensor data that were captured in real time were - fluid temperatures, levels, pressures, contamination; bearing rotations, temperature, and vibrations; frame rack, bias, and pitch (affected by load and road conditions); engine speed and gear position; brake pressure and temperature; drive train performance; and vibrations at various locations in the truck (especially bearings). The client was able to observe the benefits of the platform from first week of deployment itself in the form of greater visibility into its asset’s performance and impact of different factors on overall health. Over the next few months, tangible ROI of the software was established as the client acted on the predictive health alerts of the software and called for maintenance ahead of schedule. The monetary impact of this was in the form of decrease in downtime and thus enhanced yield from the equipment. After, a successful pilot in one of the mining sites, we are now integrating EnrichAI’s platform for all trucks across all sites operated by the mining company.