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CSIR AUDIO BASED ROCK HAZARD ASSESSMENT FOR UNDERGROUND MINES





The CSIR Acoustic Rock Hazard Management system is a mobile application that analyses the sound produced during barring in underground mines. It classifies the rock response as safe or unsafe.

The conventional method of barring and listening can be subjective, especially in noisy underground conditions. Recording audio with technology allows gathering of rock response data which could be used to improve decision-making.

TECHNICAL ABILITIES

The workflow records the sound of each strike, processes it on device and returns a simple “Safe” or “Unsafe” classification. It also calculates performance through a Friability Index, i.e. the number of unsafe classifications versus the total number of recorded strikes. The mobile application is designed for data capture and classification without relying on a live network connection.

Technical elements comprising the system include an iOS mobile application, an external microphone and on-device audio processing. The CSIR is improving the system with industry partner Peralex by developing a mobile workflow that uses an external microphone and on-device audio analysis.

HOW IT IS USED IN INDUSTRY

The tool is intended for underground crews and supervisors, rock engineers, safety practitioners and researchers involved in ground-condition assessment. It could improve the understanding of loose rock occurrences through consistent records, resulting in targeted training around barring observations.

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