

An Automated System for Inspecting Rock Faces and Detecting Potential Rock Falls Using Machine Learning Dataset

Dataset available at: https://digitalcommons.lsu.edu/transet_data/114

(This dataset supports report **An Automated System for Inspecting Rock Faces and Detecting Potential Rock Falls Using Machine Learning**)

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The related final report **An Automated System for Inspecting Rock Faces and Detecting Potential Rock Falls Using Machine Learning**, is available from the National Transportation Library's Digital Repository at <https://rosap.ntl.bts.gov/view/dot/61741>.

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Authors:

- John Stormont, University of New Mexico
- Fernando Moreu, University of New Mexico
- Amir Bagherieh
- Roya Nasimi
- Solomon Atcitty

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Abstract: Rockfall is a hazard in mountainous areas threatening infrastructure and human lives. Rockfall hazards are often mitigated by manual inspections using pry bars. The inspector must access the rock face, hit the rock surface, detect, and remove the loose rocks. This method is very labor demanding, unsafe, and challenging. This research presents a method that automatize the inspection of rock blocks that are prone to rockfall events. A robot is developed to replace the manual hammer tap process and collect the sound data remotely; subsequently, the sound signal is used to identify different types of the discontinuity in rocks in controlled laboratory environment. Machine learning is used to train the method to discriminate between intact rock and rock that may be prone to fall. This methodology was successfully applied to laboratory tests on rock. Finally, the research involves the implementation of this system in field to understand the potential and limitations of the proposing system in automatizing the rock inspections. This research enables the inspectors to collect data remotely, detect loose rocks, and save data for future references.

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Dataset description:

This dataset contains 1 file described below.

Data_Collection_20GTUNM02_Jan_5.xlsx:

The .xlsx and .xls file types are Microsoft Excel files, which can be opened with Excel, and other free available software, such as OpenRefine.

National Transportation Library (NTL) Curation Note:

As this dataset is preserved in a repository outside U.S. DOT control, as allowed by the U.S. DOT's Public Access Plan (<https://ntl.bts.gov/public-access>) Section 7.4.2 Data, the NTL staff has performed *NO* additional curation actions on this dataset. NTL staff last accessed this dataset at https://digitalcommons.lsu.edu/transet_data/114 on 2022-05-20. If, in the future, you have trouble accessing this dataset at the host repository, please email NTLDataCurator@dot.gov describing your problem. NTL staff will do its best to assist you at that time.