

Client: Dr. Gabe Walton, Assistant Professor, Geology & Geological Engineering

Project Title: Developing an Android App for Geostatistical Analysis of Rock Core

Project Motivation: For any geological engineering project, strength data must be obtained from multiple rock specimens. But how many rock specimens exactly? Generally speaking, we know that rocks that are more variable in nature should be characterized using more specimens, since any individual specimen is less likely to be representative of the rock as a whole. To date, however, there is no practical guidance in terms of how to relate this principle to specific quantitative recommendations.

Recently, a Colorado School of Mines Ph.D. student has developed a method by which analysis of photos of rock core can be used to quantitatively estimate the degree of variability in rock strength, and therefore the number of specimens needed for testing. To turn this scientific advance into a practical engineering tool, all that is needed is a streamlined phone app that can allow for photo capture and cropping and implementation of the proposed analysis method in the context of a user-friendly interface.

Project Details: The complete methodology for the proposed analysis method has been finalized and is documented here:

https://www.sciencedirect.com/science/article/pii/S0013795217314175?casa_token=qe67OsJycdYAAAAA:A:B12C8iL1hJh9ifrVh2SEqTW5GuX-cBieInyVV1PsvpX_d5ofhbG593kqHTRNkd5kFt-9_eAUNeM

The app could be designed as a series of modules which will ultimately work in sequence: (1) photo capture and cropping; (2) geostatistical analysis; (3) interpretation/output.

Recommended Team Size: 3-4

Work Location: Anywhere

Associated Internship Possibilities: N/A