

Master's Thesis (MA, 30 ECTS)



FMT

Key Block Analysis in Digital Outcrop Models

Description

Digital outcrop models and 3D point clouds provide robust datasets for characterizing rock mass structures and discontinuities. The impact of such models will be substantially enhanced by identifying individual rock blocks that meet criteria for 3D kinematic removability. Block Theory (Goodman & Shi 1985) is an ideal analytic tool for making such assessments, and can be further applied to characterize the potential risk of block failure (e.g. determination of whether the block is a “safe removable block”, “potential keyblock”, or “keyblock”).

Based on existing 3D point cloud models, this thesis shall examine optimal procedures for identifying kinematically removable blocks, determining their volume, and characterizing their stability condition. The ultimate goal is to elucidate methods (algorithms) for potential automated detection of removable blocks from massive digital datasets.

For this thesis, advanced Matlab capabilities and/or computer programming skills are necessary.

Templates for the scientific report can be found on the institute's homepage. There is also a guideline for scientific writing that can be downloaded from this homepage. The thesis may be written in English or in German.

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Start by appointment

Duration ca. 6 months

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