

Masterprojekt (MP, 5 ECTS)

Measurement of Displacements by Digital Image Analysis

Rock falls often occur in alpine regions. This is, among other things, due to ongoing movements of rocks, until a critical amount of displacements have occurred and the rock mass detaches. Unfortunately, these regions are often remote and inaccessible. Thus, the initial movements before the instability can hardly be measured.

In this thesis, the possibility of monitoring the displacements of targets on the rock mass in relation to a reference target by analyzing digital images shall be investigated. The following questions shall guide the elaboration:

- Is the monitoring of displacements with digital image correlation and analysis possible and practical?
- What accuracy – depending on the distance between camera and target – can be achieved with this method?
- What parameters influence the results?

The elaboration of the thesis is based on the following steps:

- Elaboration of a work plan with a task schedule and mile stones
- Literature research
- Development of an algorithm to analyze the digital images and measure the displacement (e.g. detection of targets and calculation of their spatial position related to a reference target)
- Sensitivity study to capture the possible influence parameters and accuracy of the measurements
- Writing of a technical report with the findings of the research

Templates for the scientific report can be found on the institute's homepage. There is also a guideline for scientific writing free downloadable at the homepage, whose compliance is mandatory. The language for the report can either be in English or in German.

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