



## **Possible use of small UAV to create high resolution 3D model of vertical rock faces**

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One of the newest and mostly emerging acquisition technologies is the use of small unmanned aerial vehicles (UAVs) to photogrammetry and remote sensing. Several successful research project or industrial use can be found worldwide (mine investigation, precision agriculture, mapping etc.) but those surveys are focusing mainly on the survey of horizontal areas.

In our research a mixed acquisition method was developed and tested to create a dense, 3D model about a columnar outcrop close to Kő-hegy (Pest County). Our primary goal was to create a model whereat the pattern of different layers is clearly visible and measurable, as well as to test the robustness of our idea.

Our method uses a consumer grade camera to take digital photographs about the outcrop. A small, custom made tricopter was built to carry the camera above middle and top parts of the rock, the bottom part can be photographed only from several ground positions. During the field survey ground control points were installed and measured using a kinematic correction GPS. These latter data were used during the georeferencing of generated point cloud. Free online services built on Structure from Motion (SfM) algorithms and desktop software also were tested to generate the relative point cloud and for further processing and analysis.