Application of 3D Surface Scanning with Positioning and Analysis of Fractures in Underground

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Abstract. Excavation in underground mining always encounters with some fractures which are very critical to the ground stability. Thus finding the locations of each fracture is an essential process for the stability analysis. However the underground environment does not allow the use of GPS to locating the fractures. Conventional surveying is not an efficient method to locate the fractures in 3D with the exact shape of the underground space because it takes too much time and effort.

Laser scanning of the fracture in 3D can be used to find not only the shape of the underground space but also the locations of the fracture. The location of the fracture can be expressed with its orientation of the fracture surface together with its relative coordinates.

Various analysis containing failure analysis can be fulfilled with these mutual orientation of fractures. This study helps an efficient scanning of natural surface such as rock surface in underground. When the backfilling of the underground space is required, these data of the fractures can be used as a locational basis for the further job in underground where other type of location based service is very limited.

Live presentation will show basic system of fractures positioning and analysis using the tablet PC. Produced surface with fractures will be analyzed by mobile sensors and the custom software.

Part of this presentation will be displayed on the notebook PC and this needs a basic area for the desk for notebook PC. Attendees can see how to
analyze fractures and stability of surface in the rock mass. They can try out acquiring of fractures data and basic analysis.

**Keywords.** Location in underground, 3D laser scanning, fracture

**Acknowledgement.** This research is supported by the Brain Korea 21 Plus Program (No. 21A20130012821).