

## Upgrading of 3D model creation by SfM photogrammetry in a dark and narrow place

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SfM (Structure from Motion) photogrammetry is one of the methods for creating 3D models. Those models constructed automatically by extracting feature points in images by using special software for SfM. The technic was incorporated widely in many research fields and technologies in these decades. However, it is still existing difficulties to create 3D models at dark and narrow places. Thus, the present study attempts to upgrade the technique for constructing 3D models for such places. The Taya Cave, located in Yokohama City, was artificially made around 800 yrs ago. It has a length of 570m, three-layer structure, and dark and narrow internal area. Because the cave has about 300 reliefs carved on the wall surface, preservation activities of Taya Cave have continued since 2015. The procedure for taking photographs as the resource images for creating 3D models was compared with previous research. Even using a hand-held camera, the SfM photogrammetry methods improved.

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