The Best Climbing Places in the Yosemite Valley, determined using LIDAR

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Executive Summary

Yosemite Valley is a ~1-km-deep, glacially carved canyon in the Sierra Nevada mountains of California that hosts some of the largest granitic rock faces in the world. El Capitan is a ~1-km-tall, vertical southeast face, that making it the tallest single face in North America, Yosemite Falls is the tallest waterfall in United States, Camp 4 is regarded as the birthplace of modern rock climbing.

With the appraisal of laser scanner technologies in geosciences, used for imaging relief by high-resolution digital elevation models (HRDEMs) or 3D models, **we can use light detection and ranging (LIDAR) techniques to determine the best places for climbing in the Yosemite Valley, and compare the results with already existing information** to assess the accuracy. There have been studies involving LIDAR in the area, with a focus on rock falls and landslides.

Because there are many overhangs, I expect there would be *shadows* (*zones* of no data) that result in holes in the 3D point cloud, that would impact the 3D interpolation. Those errors could be corrected using GPS coordinates from the routes collected by climbers, or LIDAR data from the ground, if this kind of data would be available for free. Also, determining the best climbing place is a subjective exploration.