

Stability Analysis for Feature Conjugations based on Intensity-Coded LIDAR Datasets

Yan-Ting Lin¹, Jen-Yu Han²

¹Graduate Student, Department of Civil Engineering, National Taiwan University (NTU),
1, Sec. 4, Roosevelt Rd., Taipei 106, Taiwan, d01521004@ntu.edu.tw.

²Associate Professor, Department of Civil Engineering, National Taiwan University (NTU).
1, Sec. 4, Roosevelt Rd., Taipei 106, Taiwan, jyhan@ntu.edu.tw.

Abstract: Light detection and ranging (LIDAR) technique enables detailed spatial sampling of modeling in a fast and automatic manner. It provides not only 3-D coordinates but also spectrum information (reflective intensity) of a scanned object. However, the recorded intensities are not always stable due to various factors. Consequently, a subsequent analysis based on this spectrum information could become less reliable. In this study, LIDAR intensity-coded datasets under different scenarios were collected and used for a feature conjugation analysis. It was illustrated that the results could be significantly improved when proper intensity correction models were applied prior to a conjugation analysis. This gives solid evidence that the spectrum information inherent in LIDAR observables can provide reliable constraints when conjugate features are to be identified from multiple datasets.

Keywords: Light detection and ranging (LIDAR), reflective intensity, time-dependent variation, feature conjugation