

Application of Modern Technology of LIDAR in Checking Verticality of Piles

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Abstract: *LIDAR imaging systems are one of the hottest topics in the optronics industry. However, the diversity of state-of-the-art approaches to the solution brings a large uncertainty on the decision of the dominant final solution. LIDAR has various applications in today's industrial world as security cameras, event lighting, in autonomous vehicles, etc. which enables a picturesque images of projected area along with distance. It's widely used in thick forest surveys which produces better results as compare to photogrammetry. It has been used for surveying a large area but not into the construction repairs and maintenance industry. This paper represents the application of LIDAR system in the distress management and repairs and rehabilitation of an off shore structure which got disrupted in tauktae in 2021 and by using the technology an attempt to check the verticality of piles of jetty is made. LIDAR data have been proven beneficial in the last few years, since it provides information like the height and properties of objects, statistics for wide areas, and it all becomes available by recording the intensity of backscattered pulse in addition to the 3D coordinates. Using the different types of LIDAR help us to discover places we could not see before, like top of mountains, sea floors and other places in our wide world, depending on airborne system or bathymetric system. In this paper, an overview of LIDAR components and basic principle to measure eccentricity in piles are provided and the methodology is explained. Also, a list of the effective parameters which cause errors while collecting data is provided, and how to minimize the error of estimated values by processing many correction steps. Finally, for extraction of eccentricity occurred in piles of jetty structure in the region of Maharashtra and Gujrat in Arabian sea, the obtained data is overlapped with original data and eccentricity is calculated.*

Keywords: LIDAR.

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