

Potential use of LiDAR Technology in enhancing Field Archaeology of Sri Lanka

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LiDAR (Light Detection and Ranging) is a remote sensing method that measures distance to a target surface by timing the round-trip time of an illuminated laser light. Using these light pulses it is possible to generate a precise 3D model of an artifact, building or a landscape. The aim of this research is to study the potential of applying LiDAR Technology to enhance the field archaeology in Sri Lanka. The Qualitative research approach was followed and the data were gathered through literature survey case studies and focus discussions. Discovery of Mahendraparvata city (Cambodia), settlements of Mayan civilization (Guatemala and Mexico), VR Project of ancient Palmyra city (Syria) and 'Open Heritage Project' by Google and CyArk are some of the significant LiDAR based projects done in global level in the field of archaeology. However only few activities 3D documentation of the Temple of Tooth Relic Kandy and paintings of Sigiriya, 'Klassmate Project' and the initial phase of 'Digitizing Our Heritage' project are reported in Sri Lanka. The findings of the survey reveal that LiDAR technology could be applied in the areas of Archaeological field surveying Mapping and documentation Interpretation and Heritage education Virtual Reality etc. Through these case studies and expert views it is identified the highlighting benefits as the ability to penetrate through objects producing high resolution and precise 3D datasets usability for inaccessible surfaces and complex geometrical details non-destructiveness ability to work at night and in dimly-lit areas archival of heritage records saving great deal of time and effort and easy integration into GIS for analysis and interpretation. High cost of the equipment restricted budget allocations lack of abundant expert knowledge in data handling and interpretation are identified as the major challenges of its practical application in Sri Lanka. International joint ventures developing expert knowledge use of SLAM-based LiDAR Mapping technology industrial collaborations obtaining fund assistance from donors are some possible solutions to overcome those challenges. It is concluded that acquiring and effective implementation of LiDAR technology would lead Sri Lankan field based archaeological researches to a new dimension.

Key words: Archaeology, Heritage Management, LiDAR, 3D Models

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