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## 3-D Spatial Objects Modeling and Visualization Based on Laser Range Data

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Jie Du<sup>1</sup>, Apisit Eiumnoh<sup>1</sup>, Xiaoyong Chen<sup>2</sup>, Fumio Yamazaki<sup>2</sup> and Michiro Kusanagi<sup>2</sup>

<sup>1</sup>Natural Resources Management, School of Environment, Resources and Development,

<sup>2</sup>Space Technology Application and Research Program,

Asian Institute of Technology,

P.O. Box 4, Klong Lung, Pathumthani, 12120, Thailand

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### Abstract

Laser technology has been brought into photogrammetry and cartography fields as a tool for mapping. The main application of laser scanning systems are concerned with large-scale and precise topographic Digital Elevation Models (DEMs). The main research problem are: automatically interpreting range images for extracting geo-spatial features and the reconstruction of geo-objects. The objective of this paper is to develop the algorithms and methods for the modeling and visualization of 3-D spatial data on a large scale, based on processing laser-scanning data. A set of algorithms should be developed for processing airborne laser range data. Those algorithms are mainly include: TIN (Triangulated Irregular Network) based range image interpolation, MM (Mathematical Morphology) based range image filtering, features extraction and range image segmentation, feature generalization and optimization, 3-D objects reconstruction and modeling, CG (Computer Graphic) based visualization and animation of virtual environment.

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