The IEEE Geoscience and Remote Sensing Society Western New York Chapter presents a technical seminar:

Semi-automated DIRSIG Scene Modeling from 3D Lidar and Passive Imagery

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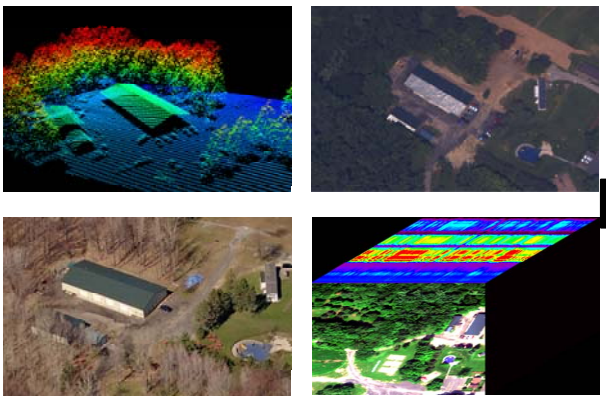
6 pm, Tuesday, January 22, 2008 (pizza and refreshments served at 5:30 pm)
Carlson Auditorium (Room 1125)
Chester F. Carlson Center for Imaging Science (Building 76)
Rochester Institute of Technology Campus
54 Lomb Memorial Drive, Rochester, New York

Abstract

The Digital Imaging and Remote Sensing Image Generation (DIRSIG) model is an established, first-principles based scene simulation tool that produces synthetic multi-spectral and hyperspectral images from the visible to long wave infrared (0.4 to 20 microns). Over the last few years, significant enhancements such as spectral polarimetric and active Light Detection and Ranging (lidar) models have also been incorporated into the software, providing an extremely powerful tool for algorithm testing and sensor evaluation. However, the extensive time required to create large-scale scenes has limited DIRSIG's ability to generate scenes "on demand." To date, scene generation has been a laborious, time-intensive process, as the terrain model, CAD objects and background maps have to be created and attributed manually. To shorten the time required for this process, we have developed a comprehensive workflow aimed at reducing the man-in-the-loop requirements for many aspects of synthetic hyperspectral scene construction. Through a fusion of 3D lidar data with passive imagery, we have been able to partially-automate many of the required tasks in the creation of high-resolution urban DIRSIG scenes. This presentation provides a description of the techniques we have implemented.



Multi-source remote sensing imagery

DIRSIG simulation result

Biography

Stephen Lach is a doctoral candidate in the Chester F. Carlson Center for Imaging Science at the Rochester Institute of Technology. His current research is based on autonomous 3D scene reconstruction which has entailed work in the fields of photogrammetry and computer vision, advanced lidar processing, hyperspectral image analysis, modern morphological processing, and multi-source data fusion. He received his B.S. and M.S. degrees in Electrical Engineering from Villanova University in 1996 and 1998, respectively.

Information on the Western New York Chapter of IEEE GRSS is available at http://ewh.ieee.org/r1/new_york/grss/.