NOTICE OF THESIS PROPOSAL PRESENTATION

Geodesy and Geomatics Engineering

Doctor of Philosophy

Enuenweyoi Daniel Okunima

Wednesday, May 16, 2018 @ 10:30 am
Head Hall – Room E-11

Supervisor:	Peter Dare, Geodesy and Geomatics Engineering
Supervisory Committee:	Raid Al-Tahir, Geodesy and Geomatics Engineering
	Jennifer Day, Department of Earth Sciences
Chair:	To Be Announced

AUTOMATED HANDLING OF REFLECTION FOR ELIMINATION OF INCORRECT POINTS AND OBJECT RECONSTRUCTION FROM LASER POINT CLOUD

ABSTRACT

Terrestrial laser scanning is a useful technology that is applicable to several industries including cultural heritage, topographic surveying, volume estimation, reverse engineering, and as-built surveying of facilities and buildings. Reflective surfaces are usually encountered during the 3D laser scan capture of buildings and facilities. These reflective surfaces are a challenge because they lead to incorrect point cloud, due to a wrong distance determined from the laser scanner to a surface. Hence, these points are considered noise because they appear in incorrect locations and may share the same location with data in their correct locations but obtained from other scan positions. In contrast, reflective surfaces can be used to facilitate laser scan capture of hard-to-reach objects and in situations it is impossible to set up a scanner. At present, researchers either consider reflection as noise or consider it as a means to capture hard-to-reach part of objects. The state-of-the-art requires knowing the location and the dimension of the reflective surface in order to eliminate the incorrect point cloud data or reconstruct objects. The available methods to reconstruct objects are only applicable to single objects and are not sufficiently robust to deal with multiple objects in the real-world. In addition, these methods do not address the problem of object reconstruction on a large scale. Therefore, the objective of this work is to develop a robust solution that can automatically eliminate incorrect point cloud and correct the incorrect point cloud in reconstructing different hard-to-reach part of objects. The solution will be capable of addressing object reconstruction on a large scale without a need for prior information on the location and dimension of a reflective surface.

Faculty Members and Graduate Students are invited to attend the presentation