Notice of University Oral Examination

Geodesy and Geomatics Engineering

Doctor of Philosophy

David Mayunga

Friday, June 2, 2006 @ 10:00 am

Forestry/Geology Bldg – Room 202

Co-Supervisors:	Dr. Yun Zhang, Geodesy and Geomatics Eng.
	Dr. David Coleman, Geodesy and Geomatics Eng.
Examining Board:	Dr. Darka Mioc, Geodesy and Geomatics Eng.
	Dr. Julian Meng, Electrical and Computer Eng.
	Dr. Bernd Kurz, Computer Science
External Examiner:	Dr. Jonathan Li, Civil Engineering, Ryerson University
Chair:	Dr. Abdelhaq Hamza, School of Graduate Studies

Semi-Automatic Building Extraction in Informal Settlements from High-Resolution Satellite Imagery

ABSTRACT

This dissertation presents a new approach to semi-automatic building in informal settlements from high-resolution QuickBird satellite imagery. To accomplish this, a new algorithm called RCA has been developed and integrated into a modified snake model which makes use of unit weighted coefficients.

To test the extraction accuracy of this approach, reference data sets from three Test Areas within Dar Es Salaam City, Tanzania were compiled using existing software and compared to the data sets extracted using this approach.

The overall building extraction rate was 93%, while the mean overlap rate of buildings polygons was 82%. The developed approach also effectively saved time to extract a single building by 32% as compared to traditional manual building extraction process. The analysis also revealed that the ability to extract small buildings less than 2.0m was diminished if surrounded by other objects.

It has been demonstrated that this approach can provide the urban managers with appropriate spatial information for urban planning and upgrading of informal settlement areas in the developing world.

Faculty Members and Graduate Students are invited to attend the 20 minute presentation