NOTICE OF
UNIVERSITY ORAL

GEODESY AND GEOMATICS ENGINEERING

Master of Science in Engineering

Travis Maxwell

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@ 9:00 am
ADI Room – C Level, Head Hall

Board of Examiners:	**Supervisor:**	**Dr. Yun Zhang, GGE**
	Examining Board:	**Dr. David Coleman, GGE**
		Dr. Julian Meng, EE
	Chair:	**Dr. James Secord, GGE**

Object-Oriented Classification: Classification of Pan-Sharpened QuickBird Imagery and A Fuzzy Approach to Improving Image Segmentation Efficiency

ABSTRACT

Today's very high spatial resolution satellite sensors, such as QuickBird and IKONOS, pose additional problems to the land cover classification task as a consequence of the data's high spectral variability. This problem is further emphasised in the use of fine resolution pan-sharpened imagery in the place of coarser multispectral data for land cover classification. To address this challenge, the object-based approach to classification demonstrates considerable promise.

In general, the object-oriented classification methodology is better able to deal with highly textured data. We hypothesize that an object-oriented approach is better suited to reveal the true benefits of fused imagery in land cover classification. In pursuit of this goal, we propose to use eCognition, an object-oriented classification application developed by Definiens Imaging, to test the classification accuracy achievable using both original multispectral and UNB Pan-Sharpened QuickBird imagery.

Furthermore, the success of the object-oriented approach remains highly dependent on the successful segmentation of the input image. Image segmentation using the Fractal Net Evolution Approach has been very successful by exhibiting visually convincing results at a variety of scales. However, this segmentation approach relies heavily on user experience in combination with a trial and error approach to determine the appropriate parameters to achieve a successful segmentation. This thesis proposes a fuzzy approach to supervised segmentation parameter selection to optimize the selection of segmentation parameters in a time efficient manner.

Results demonstrate that UNB Pan-Sharpened imagery offers a noticeable visual improvement over classification with original multispectral data. In addition, testing of the fuzzy segmentation parameter selection tool demonstrates significant promise to improve the object-based classification workflow. This improvement is realized by producing excellent segmentation results in a highly efficient manner suitable for the first time user without an understanding of the underlying segmentation process.

Faculty Members and Graduate Students are invited to attend this presentation.