Master of Science in Engineering

Titus Tienaah

Wednesday, March 2, 2011 @ 2:30 pm

Head Hall – ADI Studio (C-level)

Board of Examiners:	**Supervisor:**	**Dr. Susan Nichols, GGE**
	Examining Board:	**Dr. David Coleman, GGE**
		Dr. Ian Methven, Centre for Property Studies
		Dr. Michael Sutherland,
		University of West Indies
	Chair:	**To Be Announced**

Design and Implementation of a Coastal Collaborative GIS to Support Sea Level Rise and Storm Surge Adaptation Strategies

ABSTRACT

The ICURA C-Change is a collaboration of universities and eight communities in Canada and the Caribbean to develop adaptation strategies for the effects of sea level rise and storm surges. These vulnerable communities have topographic and sea level data, ranging from high to low precision for developing scientific scenarios of coastal threats. Scientific scenarios without precise data lead to gaps in quantifying the extent of threats in coastal communities, which is vital in developing adaptation strategies. This research develops an online Coastal Collaborative GIS (CCGIS) using local knowledge as input in threat mapping to supplement existing data.

The CCGIS developed using the *Zend Framework*, *OpenLayers* and *ExtJS* provide both server-side and client-side programming to embed Google and Bing Maps as base layers to capture spatial input described with multimedia. The purpose was to develop a low cost, user-friendly system, which could be used in any community. Local knowledge acquired in a coastal community is digitized as point, line, and polygons representing a location, linear and area features respectively. Descriptions of spatial objects with rich attributes such as video, audio, pictures, and text captured in a local environment compliment the CCGIS spatial abstraction. A prototype review mechanism and a peer review process to maintain a degree of trust in contributors and their contributions was implemented.

This research evaluated the developed CCGIS prototype based on user and system requirements. User tests indicated functional requirements were achieved with more improvements required in some areas.

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