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COMING EVENTS

2nd Year Meet & Greet
Tuesday, October 15, 2013

Reading Days
November 9-12, 2013

Schulich School of Engineering
Fall Convocation
Tuesday, November 12, 2013
9:30 am
Jack Simpson Gymnasium

Undergraduate Event
Paintball
Tuesday, November 19, 2013
12:00 - 5:00 pm

1st Year Recruitment Event
featuring Trimble
Wednesday, November 20, 2013
12:00 pm
Rosza Centre

FOCUS Undergraduate Event
Thursday, November 22, 2013

Message from the Head

Dear Valued Readers

I hope you are reading this after a relaxing summer break. It is with great pride that I write to you as the new Head of the Department of Geomatics Engineering. I have had a long association with the Department as a graduate student in the 1990s, as a sessional instructor on two occasions and as a faculty member since 2008 after having lived for nine years in Western Australia. I bring a strong commitment to ensure the Department's continued success and eagerly take up the challenges that we face.

Since joining in 2008, I have served in a dual role with Department and the Centre for

Bioengineering Research and Education (CBRE), fulfilling teaching and service commitments to both organizational units. During my five-year term as Head my appointment is 100% to the Department of Geomatics Engineering.

The Fall semester is quite busy with a number of key events planned. The first is the Second Year Meet and Greet on 15 October. The purpose of this social event is to welcome the Second Year students to the Department in an informal atmosphere and allow them to get to know the GESS Council and some of the faculty.

On 20 November we will host the First Year lunch event

Engineer a Better Future to be held at the Rosza Centre. The speaker will be alumnus Stephanie Spiller from Trimble Navigation Ltd, the event's corporate sponsor. The aim of the event is to enlighten first year students about exciting and challenging careers that will open up for them if they complete a degree in Geomatics Engineering.

Finally, congratulations are in order to the undergraduate Geomatics Engineering students for their brilliant Geopoly 2013 Frosh Week theme. Well done!

Derek Lichti
Professor and Head



2013-2014 Geomatics Engineering Student Society (GESS) Council

Back L to R: Sarah Demong, Jeremy Steward, Adam Clare, Claudia Potok, Mackenzie Budda, Praveen Mahendra
Middle L to R: Adam Bhavnani, Geoffrey Strandberg, Evan Thompson, Robyn Soroka
Front L to R: Kent Jones, Laura Norman, Thomas Kranjcevic

AWARDS & RECOGNITIONS

- Bill Teskey received the Fellow of Geoscientists Canada designation for his work on Turtle Mountain/Frank Slide which began in the early 1980s and restarted in 2004. Geoscientists Canada takes great pride in creating a fellowship that recognizes individuals who have made outstanding contributions to the geoscience profession through their professional accomplishments. Special thanks go out to Bill's graduate students Axel, Jacky, Ahmed and Daniel for their support on the project.

Other News

Survey Camp Kananaskis 2013

The annual excursion to the Kananaskis Valley for ENGO 501 – Field Surveys started on August 19, 2013 and ran for 10 days. By 9:30am on the 19th we had 1 instructor, 50 students, four TAs, and two survey technicians somewhat settled in at camp. The morning started with a brief introduction to camp life (and how not to attract the unwanted attention of local wildlife) by Judy Buchanan-Mappin, the facility coordinator.

Following lunch, the students embarked on the first of



3rd/4th year Geomatics students in the field.

their field activities: EDM calibration and RTK repeatability.

For the next six days, students followed a fairly regular pattern: work all day, eat, briefing for the next day, then fix problems. This year each team completed five survey activities: a cadastral retracement of the Kananaskis Camp Lease boundary, a deformation survey at the Barrier Dam wall, an RTK survey including sun observations, a Static GPS survey and precise levelling exercise, and new to ENGO 501 this year, a hydrographic survey on the Barrier Dam. Following these exercises the students completed a GIS

activity to compile/integrate their field data.

On the final day of camp students competed in the annual Lost Peg competition, which was won by the Orange Team (Matthew Herasymiuk, Kayoung Kim, Luke Meister, and Matthew Sakatch) with a distance of 0.05 m.

The final afternoon wrapped up with a series of presentations from industry. We would like to thank Paul Dixon, Jeff Adair, Andrew Moody, Eric Pellegrino, Mark McDonald, and Arlin Amundrud for taking time to meet and talk to the students on a range of survey practice topics.



Lost Peg Competition: Teams utilize the information they gathered in different hands-on exercises throughout the week to find the coordinates (or as close to as possible) and using the survey equipment to find the 'Lost Peg'. The team who measured the closest to the 'Lost Peg' wins the exercise and gets their names engraved on a trophy.



Traffic Accident Risk Mapping Framework

by Prof. Xin Wang

Road traffic accidents are a social and public health challenge, as they almost always result in injuries and/or fatalities. To reduce the traffic fatalities and serious injuries on public roads, we need to review the characteristics of traffic accidents and identify the hidden patterns behind the accidents' records, referring mainly to the actual knowledge contained in the collision data rather than the raw data records themselves. Over the years, various spatial concentration detection methods and tools have been proposed and applied to discover traffic accident concentration patterns. However, existing traffic accidents concentration detection studies have several limitations. These methods do not consider the inconsistency of conditions but only generate one single map as a result. Traffic analysts and the general public are actually interested in accident concentration areas in terms of specific conditions, such as different time intervals, and weather or road surface conditions.

This study designed and

implemented a GIS based framework which can help users to generate different concentration maps by using geo-spatial clustering based on their requirements. The "risk area" in this study is more similar as "hotspot" or "black spot" analysis, which represents a road segment where road traffic accidents have historically been concentrated and severity level of accident is also high. The spatial clustering methods can be classified into different categories, based on the underlying clustering technique used: Partition methods, Hierarchical methods, Density-Based methods, Grid-Based methods, and Model-Based methods. Among these methods, density-based clustering method is the most suitable method used here for traffic accident risk mapping because it can discover arbitrarily shaped clusters based on density. The study proposed Ontology-Based Traffic Accident Risk Mapping Framework (ONTO_TARM). The study structured and organized the core components of domain ontology and the newly proposed clustering algorithm to establish the Ontology-Based

traffic accident risk mapping (ONTO_TARM) framework. To demonstrate the GIS based ONTO_TARM framework, a system had been developed to generate traffic risk maps based on users' requirements and published maps on the web.

For example, the user's goal is to generate a risk map

of Calgary, she has two route options, as shown in Figure 2. These two routes have almost the same distance and travelling time. In this case, the user may refer to the "risk" to determine which route should be taken. The ONTO_TARM system can generate a risk map around these communities to help the



Figure 1: Risk map of 8:00 - 10:00 pm of the Calgary downtown area.

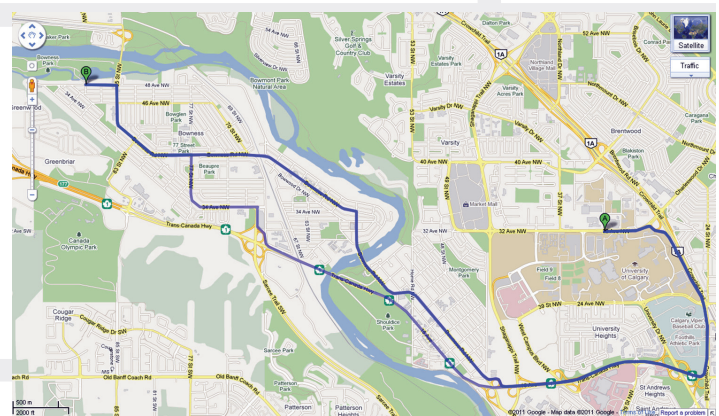


Figure 2: Two routes from the University of Calgary to Bowness Park.

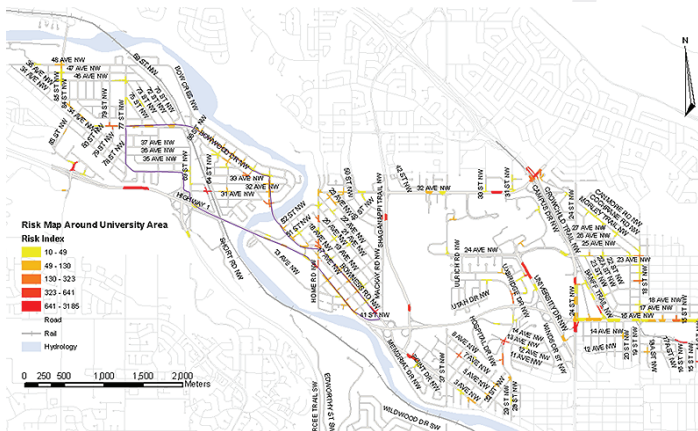


Figure 3: Risk map of the community around the University of Calgary.

"between 8:00 - 10:00 pm" and "under severe weather conditions" in the downtown area of Calgary. Figure 1 shows one of the final traffic accident risk maps between 8:00 - 10:00 pm in the downtown area. The map has been generated with the risk model parameters recommended by PIARC.

The system also has potential to assist personal navigation. If a user goes to Bowness Park from the University

user to determine which route is better, as shown in Figure 3.

To improve the road safety situation, it is important to identify the traffic accident concentration. This study provides innovative idea about mapping traffic accident risk using density based clustering which is integrated with user's requirement. We believe output of this study will help the user's to make their city safer from traffic accidents.

Department Activities

SSE Stampede Breakfast



Geomatics staff enjoying and assisting at this year's Schulich School of Engineering Annual Stampede Breakfast



Thank You Ayman!

A special event was held to thank Prof. Ayman Habib for his 4 years of service as the Department Head.



FROSH WEEK



Excited Geomatics students returning for another great and eventful year.



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