



Message from the Head

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COMING EVENTS

ENGO 501
Geomatics Field Surveys
Kananaskis Field Station
Kananaskis, Alberta
August 18-28, 2013

Fall Term Begins
September 3, 2013

Block Week
September 3-7, 2013

Fall Term Lectures Begin
September 9, 2013

Once again, we have completed a great academic year in Geomatics Engineering. The final term for 4th year students was capped off by four afternoons of

Nathan Turner won the ENGO Design Fair Award for their project "Creation of a 3D Model of the Energy Environment Experiential Learning (EEEL) Building

the largest number of PhD degrees conferred in any year in the Department's history, and it continues our tradition of training and graduating top quality students.



Capstone Design Fair 2013, held April 9, department winners (L to R): Ryan Horton, Jeffery Marsden, Shana Davis, Jordan Maretzki and Nathan Turner.

Using Close Range Photogrammetry". Thirty-seven of our students worked hard to complete their undergraduate program, and a large majority secured jobs prior to graduation. Congratulations to each one of you!

My term as Head of Geomatics Engineering was completed on June 30, 2013, and I would like to take this opportunity to thank faculty, staff and students for their support during my term as Head. I would like to welcome Dr. Derek Lichti to his appointment as the new Head of Geomatics Engineering, beginning July 1, 2013.

design course presentations in April, and the Schulich School of Engineering annual Design Fair, where the design group of Shana Davis, Ryan Horton, Jordan Maretzki, Jeff Marsden, and

to congratulate our graduate students who completed advanced degrees at the Master's and Doctoral levels. In 2013, a record sixteen Geomatics students received a PhD. This is

If you would like to receive our Geomatics Newsletters on a regular basis, contact June Au Yeung at jrauyeun@ucalgary.ca to be placed on the email list.

Congratulations to the Class of 2013!



Back Row L to R: Michael Harpur, Shana Davis, Nicole Crawford, Stephen Chan, Kevin Chan
Front Row L to R: Ryan Horton, Vaasu Khurana, Kathie Chan, Adam Hussein

Photo by Riley Brandt

AWARDS & RECOGNITIONS

- Congratulations to students who completed their graduate studies: Tasnuva Tahia Hayden, MSc; Bei Huang, MSc; Mohamed Ali Ahmed Attia, PhD; Ahmed Adel El-g hazouly, PhD; and Abdelrahman Sand Ali, PhD.
- The Head of the Department, Dr. Ayman Habib, is pleased to announce the promotion of Drs. Mark Petovello and Derek Lichti to Professor and Drs. Steve Liang and Xin Wang to Associate Professor as of April 1, 2013.
- Dr. Michael Collins was named this year's Geomatics Engineering Professor of the Year at the 2013 Schulich School of Engineering Graduation Banquet held March 23rd. Michael was selected for this honour by the members of the 2013 graduating class.
- Negin Sokhandan, senior doctoral candidate under the supervision of Professor Lachapelle, won a Student Paper Award at GNSS+ 2013, held in Nashville on September 16-20, for her paper on *A Novel Multipath Estimation and Tracking Algorithm for Urban GNSS Navigation*. The award will enable Ms. Sokhandan to travel to Nashville to present her paper and participate in the conference.
- Dr. James Curran, post-doctoral fellow in the PLAN Group, and co-authors Professors Lachapelle and Petovello won a CSNC Excellent Paper Award for their contribution on *A design paradigm for multi-system multi-frequency software receivers* at the China Satellite Navigation Conference (CSNC 2013) held in Wuhan, China.
- The Department of Geomatics Engineering had a strong presence at the 4th China Satellite Navigation Conference (CSNC) which took place in Wuhan, China, May 15-17, 2013, which was attended by about 2500 attendees. Professor Gérard Lachapelle offered the opening lecture; Professor Naser El-Sheimy offered an invited presentation and was also a member of the International Expert Panel on Integrated Navigation Systems: Professor Yang Gao offered an invited presentation; PhD student Yuan Zhuang, under the supervision of Professor Naser El-Sheimy, won the 'Best Youth Paper Award' for his paper titled *A MEMS Multi-Sensors System for Pedestrian Navigation* co-authored with PhD student Hsiu-Wen Chang and Professor Naser El-Sheimy.
- Dr. Gérard Lachapelle received 25 Years' Service Recognition Award and Dr. Naser El-Sheimy received 15 Years' Service Recognition Award during the UofC 2013 Recognition Awards Reception which took place on May 17, 2013.
- As part of the *Eyes High* vision of becoming one of the top five research institutions in Canada, congratulations go out to our Discovery Grant recipients Drs. Michael Collins, Naser El-Sheimy, Yang Gao, Ayman Habib, Gérard Lachapelle, Steve Liang, Derek Lichti, Danielle Marceau, Ruisheng Wang, and Xin Wang. Congratulations also go out to Discovery Accelerator Grant recipients Drs. Naser El-Sheimy and Gérard Lachapelle.
- Professor Elizabeth Cannon, member of the PLAN Group and President of the University of Calgary, received an honorary doctorate from the University of Ottawa Friday, June 7 for her research and leadership.

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Alumni Voice

Anna Jarvis (MSc'08)

Coming to Calgary to begin my Masters degree in 2006 was a great decision that I am glad to have made. Reflecting on my experience in the Digital Photogrammetry Research Group (DPRG), I can see how it has helped me become the professional I am today and forged my current career path. After graduation, I started working as a Product Support Analyst for the mobile mapping company Applanix Corporation. In my current position, I interact with customers on a daily basis, often traveling to their location to provide on-site training (to places such as Australia, Vietnam, Thailand, Hong Kong, etc.). The customer interactions range from discuss-

ing various Geomatics principles, describing the operation of the Applanix equipment, as well as the functionality of our GNSS-inertial data processing software and troubleshooting any problems they may be facing with either their collected data or hardware. This requires a lot of problem solving and thinking outside the box, to solve issues that have not been previously encountered and I enjoy the challenge, as I am always discovering and learning new things. In addition I enjoy the regular interactions with customers from various industries whom have different areas of expertise and I am thankful my degree from UofC has led me to this enjoyable and fulfilling career.



Research Spotlight

Michael Barry – John Holmlund Chair in Land Tenure and Cadastral Systems

The research group designs and tests tools that may improve tenure security, examines Canadian land surveying issues, and examines the strategies that people adopt to secure their tenure in developing world cities and if they are likely to use the tools that are made available to them. Studies are being done in Ghana and South Africa, and studies have been completed in Nigeria and Somaliland in recent years.

The global land tenure

challenge is enormous, but simplistic, quick-fix solutions imposed by outsiders often cause conflict instead of reducing it. For example, there's no point in setting up large titling and registration programmes to "help" people if they don't want registration. Only 30% of the land in the developing world is registered or on some form of official record. Some 1.1 billion people live in slums, and there are 370 million indigenous people in 90

countries who occupy some of the most biologically diverse territory, which is under threat. Left unaddressed these issues are at the root of social unrest and violent conflict and impede local development and international business. Armed conflicts and court room battles have long been articulated over boundaries and access to natural resources. Nowadays, most conflicts are internal and localised. It is easy to mobilise conflict around land as it is a symbol of identity, livelihood and economic opportunity, albeit the root causes are often also related to political and

economic exclusion and social discrimination. In recent years, land tenure security and land related conflict have attracted a great deal of attention in various UN agencies, the World Bank and other development agencies in recent years. The Millenium Development Goals have focused attention on land tenure security as it is crucial to the goals relating to extreme poverty alleviation, education, gender equality, environmental sustainability and global partnerships for development. The following are brief descriptions of three projects in which the team is engaged.

Land Administration and Theory on Land Registration Usage and Strategies that People use to Secure their Land: South Africa and Ghana

South Africa is an interesting case as it has excellent land registration and cadastral survey systems, but there were always concerns whether these were the appropriate tools to support tenure for the 3 million houses that have been built as part of

poverty alleviation strategies since 1994. There are numerous reports of these houses being sold off-register, which places the new owners at risk of eviction and fraud schemes, and also freezes the land market as it is very difficult to unravel a cloudy chain of title. Common reasons given are that people cannot afford to register or they do not understand the implications of transacting off-register. Dr Mike Barry and recent PhD Lani Roux have conducted a number of case studies in recent years to try to explain these situations in depth. These included door to door interviews with landhold-

ers, interviews with officials, lawyers and NGO's and checking the field work against the register and municipal records. The cases show that the situation is far more complex than merely reducing the costs of registration or educating people about registration. While most people see registration as useful, financial distress, signing the house over to loan sharks, inability to pay for municipal services, mistrust of the government, and notions that a house should stay in the family forever and should never be sold are just some of the interrelated factors that may cause people to transact off-register.

fiduciary position and are supposed to administer land in the best interests of the customary society, in peri-urban areas many leaders have abused their positions and sold off land under long term leases for residential purposes and kept the proceeds. The case study had three people contesting the chieftaincy, each one signing off on deeds to be registered in the land registry. The same piece of land may be sold to multiple buyers by different people. In the ensuing conflict, militias had driven people off their land, and a number of people had been murdered. The study revealed that people who had bought land from customary leaders found registration to be useful. However, people in the customary unit saw registration as having limited use. They did not trust members of their own clan, the government or the customary leadership. For them, it was more important to have the strength in numbers to defend their land and to have the resources to go to court.

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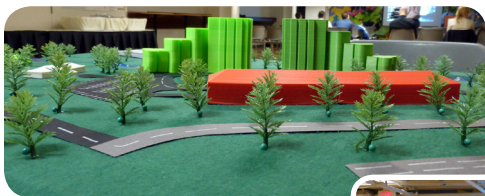


Talking Titler Land Records System: Identifying Social Networks in Semi-Structured Land Records

The Talking Titler system is a tool for designing and testing different tools and concepts that may be applied to land tenure records. It started out as a simple database system that might incorporate unstructured data items such as video clips and sound clips, so that people could provide evidence in their own language, and lay claim to their land at a later date if they were forced off it. MSc student Kwame Asiedu is applying data mining and social network analysis to land records data based on the Ghana case. This analysis portrays who is part of a customary group, who is entitled to land and the proceeds from land sales, and who the major actors are in land administration. Network analysis may reveal fraud patterns, identify people who are participating in fraud, and identify mistakes in the chain of title.

Awards & Recognitions *continued...*

- Dr. Mark Petovello, BSc'98, PhD'03 was invited by the University of Calgary Alumni Association as a notable member of the alumni to participate as the Distinguished Graduate at this year's Schulich School 2013 Convocation.
- The Department is pleased to announce that Dr. Derek Lichti has accepted appointment as Head, Department of Geomatics for the term July 1, 2013 to June 30, 2018.
- President Elizabeth Cannon received a Gold Metal at the annual Engineers Canada Awards Gala, June 8, for her world-leading work in research and teaching about satellite navigation for land, air and marine applications.
- Jacky Chow, an iCORE, NSERC and Killam scholar pursuing his PhD, has been awarded a 2013 Scholarship by SPIE, the international society for optics and photonics for his potential contributions to the field of optics, photonics, or related field.

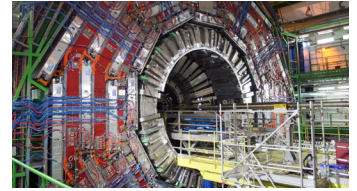


ENGO 500
Final Project Presentations
April 10 - 12



Other News

3rd & 4th Year Switzerland Trip



A group of 21 students, accompanied by Dr. Mike Barry, went on the Schulich School of Engineering Trip to Switzerland in May. In Geneva, the group visited the United Nations office, and then CERN (European laboratory for particle physics) where physicists who actually conduct the experiments took the group around the facility. A highlight was a visit to the Compact Muon Solenoid (CMS) particle detector built on the Large Hadron Collider, a part of the CERN facility which is seldom accessible to the public. The developments in particle physics at CERN have been rewarded with a number of Nobel prizes in physics. Spin-offs of the project have been the World Wide Web and the development of a number of high precision sur-

veying instruments. Following this, the group spent a day at the Leica instrument manufacturing plant in Heerbrugg, a day at ETH Zurich where the professors presented their research projects and then ETH and Calgary students had a most enjoyable social gathering. The last site visit was to Swisstopo, the national mapping agency. Our hosts kindly extended the visit to include a trip to the high precision telescope plus the satellite ranging telescope at the Zimmerwald observatory outside Bern. Apart from the thrill of international travel, this is a valuable educational trip as students visit a number of facilities that are not available to them in Calgary.



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ENGINEERING

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