



SCHULICH
School of Engineering

DEPARTMENT OF
GEOMATICS
ENGINEERING

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UPCOMING EVENTS

Summer Convocation

Schulich School of Engineering
Tuesday, June 5 @ 2:00 pm
Jack Simpson Gym

Fall Term Start Date

August 27

Block Week

August 27-31

Orientation

September 4-5

Classes Start

September 6

Engineering in the Movies

September 2018

'In the Robot Skies'

presented by Dr. Mozdeh Shahbazi

October 2018

'The Hunt for Red October'

presented by Dr. Kyle O'Keefe



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DEPARTMENT OF GEOMATICS ENGINEERING

Geomatics News

WINTER 2018 • Volume 15, Issue 2

Dear Valued Reader,

The winter semester was a very exciting time for the Department. In February, a team of our undergraduate students participated in the first ever National Geomatics Competition (NGC) in Fredericton, NB. I am very pleased to report that placed third in the competition. They truly did an excellent job under extremely challenging circumstances and represented the Department very well. Please join me in congratulating them on this very impressive achievement should you have the opportunity. More details about the event, as well as the planning for the 2019 NGC in Calgary, can be found inside this newsletter.

The Department moved into newly renovated space in the third floor of D block in the engineering complex. Several new research labs, upgraded graduate student offices and a new meeting room totaling 520 m² were handed over to us in early 2018. This gives us greatly increased research capacity in indoor navigation, imaging, GIS and Earth observation as well as modern spaces for our students.

We also look forward to further renovations. The southern part of E block is scheduled for a major upgrade starting this summer. The first, second and third floors will be completely revitalized over the course of about one year. Plans are under development for this project that will give us much-needed upgrades to the main office, faculty offices, student spaces, classrooms and the epicentre of our undergraduate program, the microlab. It will be a disruptive time, but arrangements for temporary spaces are being made and the improvements will be well worth it once completed.

This is my final message as my term as Head concludes at the end of June this year. Though the Department has faced some challenges, we had many noteworthy successes. We managed to acquire new spaces in D and G blocks and a completely renewed survey stores, improve our curriculum with a number of important changes, acquire new equipment to keep our undergraduate program current and hire four new energetic faculty members since 2014. In addition, we have just been awarded Level 1 accreditation of our undergraduate degree program from the Canadian Board of Examiners for Professional Surveyors (CBEPS). I am grateful to the many colleagues who

have helped us achieve these great outcomes.

The department enjoys good relationships with government and industry and regularly meets with two advisory bodies: the Geomatics Engineering Advisory Committee (GEAC) and the Geomatics Engineering Liaison Committee (GELC). Meeting with GEAC and GELC has been a highlight of my job as Head. The dedication of the external committee members speaks volumes about the passion geomatics engineers have for their discipline. My sincere thanks goes to GELC and GEAC members for donating their time and providing invaluable advice to help us continually improve our academic programs.

Our department engages in many outreach activities, both within the university and external to it, in order to promote our profession to prospective students. Over the past few years I have been extremely impressed by the role our undergraduate and graduate students, staff and faculty play in these efforts. The dedication to geomatics engineering mentioned above genuinely originates in the Department. Several times during the year we call upon our volunteers to give their time for these events. They do so very willingly and always exhibit great enthusiasm and professionalism. Thanks to all those who have helped spread the word about geomatics engineering.

I am fortunate to work with a group of extremely talented and dedicated faculty members who share the job of teaching and supervising our great students. In particular, I have received incredible support from Associate Heads who oversee the undergraduate and graduate degree programs. Enormous gratitude goes to the current, Kyle O'Keefe and Michael Sideris, and past Associate Heads, Danielle Marceau, Mark Petovello and Andrew Hunter, for their hard work. Thanks also goes to past Heads Ed Krakiwsky and Gérard Lachapelle for helpful advice and insight along the way. Last but not least, it is no secret that the Department is served by the best office staff in the university. Tanya, Monica, June and Courtenay make sure the operation of the Department runs as smoothly as possible in a friendly atmosphere. Big thanks to each of you.

Best regards,
Derek

schulich.ucalgary.ca/geomatics

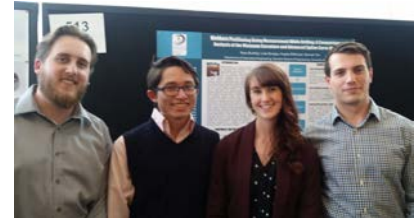
AWARDS & HONORS

- Recent graduate PhD student, Shao-hua Chen, will be presented the ION GNSS+ 2018 Student Award this September 24-28 in Miami, Florida, for his paper titled “*Kinematic Performance Analysis of Joint Vector Architecture Based Carrier Phase Tracking*”.
- Dr. Ruisheng Wang and his co-authors, Lei Xie and Dong Chen were presented the 2nd Honorable Mention for the 2018 Talbert Abrams Award for their paper titled “*Modeling Indoor Spaces Using Decomposition and Reconstruction of Structural Elements*” at the ASPRS Annual Conference and International LiDAR Mapping Forum on February 7 in Denver, Colorado.
- The Institute of Navigation (ION) presented its Thomas L. Thurlow Award to Dr. Yang Gao at the ION International Technical Meeting (ITM) and Precise Time and Time Interval Systems and Applications (PTTI) meeting held January 29-February 1, 2018 in Reston, Virginia. The Colonel Thomas L. Thurlow Award is granted in recognition for outstanding contributions to the science of navigation and Dr. Gao

was recognized for significant and sustained contributions and leadership in the development and application of Precise Point Positioning (PPP) and high-precision GNSS technology.

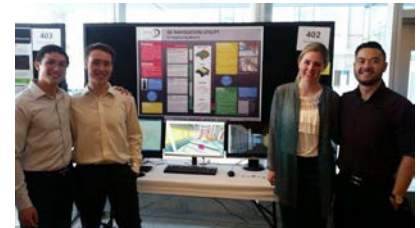
- Congratulations to Sergey Krasovski who was received a 40 Under 40 award by the **Remarkable Geospatial Professionals Magazine** earlier this year. Sergey is in his third year in the new Trimble recruit program, which he began at the Trimble Munich offices where he worked on GNSS and image processing. This was followed by rotations in various technical areas in the Colorado offices. He is now a strategic marketing manager for transportation solutions. Sergey completed his MSc in Geomatics Engineering in 2015 under the supervision of Drs. Gérard Lachapelle and Mark Petovello.
- Congratulations to Dr. Yang Gao for receiving the 2018 APEGA Research Excellence Summit Award, please check out this short video honouring Dr. Gao and his research team <https://www.youtube.com/watch?v=ZKIIUgKnZqo>

- Congratulations to all those that presented Capstone Projects at the 2018 Engineering Design Fair. A great deal of time, effort and commitment were put into the projects. ENGO First Place went to ‘Wellbore Positioning Using Measurement while Drilling: A Comparison and Analysis of the Minimum Curvature and Advanced Spline Curve Methods’.



L to R: Ryan Buckly, Samuel Vito, Angela Ellithorpe and Luke Bungay

- ENGO Second Place went to ‘Navigation Utility for a 3D Model of Engineering Block G’.



L to R: Braedon Kwok, Calvin Bochulak, Jennifer Busser and Nathon Patton



Photo from http://www.godinos.com/roster.aspx?rp_id=5820&path=wvball

Undergraduate student, Kate Pexman was honoured for Women’s Volleyball as one of a record 149 University of Calgary Dinos student-athletes that earned U SPORTS Academic All-Canadian status in the 2016-17 season, and they were honoured on February 28 at the Enterprise Rent-A-Car Academic All-Canadian Breakfast in MacEwan Hall.

To become an Academic All-Canadian, a student-athlete must achieve an average of 80% or higher while representing their institution on a varsity team.

To be eligible to compete for the Dinos, students must maintain a full-time course load in addition to the 30-40 hours per week dedicated to training and competition with their teams. The Dinos field 19 varsity teams with more than 450 student-athletes competing each year for Canada West and U SPORTS championships.

GELC 2018 Committee



Back L to R: Mark Hatcher (*Natural Resources Canada/Government of Canada*), Nathan Sikkes (*McElhanney*), Arlin Amundrud (*Morrison Hershfield*), and Dr. Kyle O'Keefe

Front L to R: Sandra Davies (*Global Raymac Surveys*), Dr. Derek Lichti and Dr. Elena Rangelova

GEAC 2018 Committee



L to R: Ian Westlake (*City of Calgary*), Dr. Derek Lichti, Dr. Kyle O'Keefe, Natasha Spokes (*FarCloser Travel & Seisland Survey*), Stephanie Michaud (*Trimble Navigation*), Damian Gillis (*VP Business and Development Geomatics, WSP*), Ryan Walker (*Veerum Inc.*), Kevin Swabey (*President, Midwest Survey*), Kris Morin (*Leica Geosystems*), Mark Hatcher (*Natural Resources Canada/Government of Canada*) and Brent Hall (*ESRI Canada*)

Geomatics Exposition 2018



Back L to R: Michael Ah-Kiow, Steven Schroeder, Jeffery Plett, Nathan Patton, Jennifer Busser (President), Braeden Kwok, Jed Kroeker, Calvin Bochulak, Christine Cao

Front L to R: Angela Ellithorpe, Brandon Langton, Sophie Croteau, Miriam Deitz, Mikko Ramos (missing, Keira Fulton)

Geomatics Exposition Week, organized by the Geomatics engineering Student Society (GESS), was held from January 15 -18. The week started with a Networking Workshop followed by industry information sessions and interviews, the Annual Beef 'N' Bun (sponsored by ALSA, ABCL, SLSA & AMLS) with the annual Geomatics Exposition and reception wrapping up the week.

Thank you to all the participants, industry partners, exhibitors, faculty and staff for another successful year!

Student Awards Night

The Annual Student Awards Night was held on Thursday, March 15 in the MacEwan Student Centre.

In memory of Dr. Alex Hittel, P.Eng (1931-2017), the Alex Hittel Memorial Bursary in Geomatics Engineering (established by colleagues) was awarded for the first time. Dr. Hittel, a land surveyor, was instrumental in establishing the survey engineering program at the University of Calgary in the 1970's, which later became the Department of Geomatics Engineering. The department was honoured to have Jim Hittel, his son, Jennifer Hittel, his daughter, and Alexander Hittel, his grandson, as our guests.

Thank you to all the students, faculty, staff, donors and industry partners for making the evening a success. And congratulations to all the 2017 Undergraduate and Graduate student award recipients!



L to R: Jim Hittel, Alexander Hittel, Jennifer Hittel and Dr. Gérard Lachapelle

February 16-19, 2018, the University of New Brunswick hosted the 1st Annual National Geomatics Competition (NGC). Teams across Canada were invited to partake in the event, promote Geomatics, and discuss the future of the field. We were excited to be selected as the University of Calgary representing team. The goal, to increase the visibility of the Geomatics profession and respective programs, to give Geomatics students an opportunity to showcase their knowledge and talents, as well as provide a network platform for students and industry members.

THE CHALLENGE

The teams were tasked with creating a proposal for a flood mapping and monitoring system located in the flood-ridden state of Karonga, in the northern region of Malawi, Africa. Then given 6 hours to come up with their solution and presentation. At the end of 6 hours, the teams were individually given 15 minutes to present their proposal to the panel of industry judges. Judging was based on a rubric reference given to them by the NGC committee. The rubric outlined key things that had to be included: Societal benefits, Economics (a functional budget), Data storage and GIS, feasibility, and education.

ADDITIONAL EVENTS

Trivia Night, hosted by GoGeomatics, provided students, sponsors, and faculty to mingle and meet competitors and the organizers.

Following the day of the competition, a conference took place at the Fredrickton Conference Center. It was an excellent opportunity for students, industry and professors alike to mingle and share ideas related to the field of Geomatics. Guest speakers presented on different career opportunities and potential, ranging from surveying to navigational positioning to technological innovation in the industry. Sponsor booths were set-up to

offer delegates the opportunity to speak candidly with companies throughout the day. During the afternoon, an open panel discussion was held to discuss issues of raising awareness for the field, as well as the future potential that Geomatics holds with the escalating technology in the world today. It was invigorating and exciting to discuss the growth of Geomatics, with different perspectives from across Canada ranging from surveying to GIS to positioning. We left the weekend feeling

tional Geomatics Competition. The level of competition was very high, and the judges noted that all competing teams were close in final rankings.

WHAT WE GOT FROM THE EXPERIENCE

We gained experience working under time constraints to produce a feasible and practical solution to the problem. We found allocating our time properly to be a difficult task in order to be ready to present a final product at the end of the 6 hour allotted time and developing this skill will prove very useful in future professional and academic situations. We also gained experience creating a functional budget under a deadline, in which we had to research the financial feasibility of our proposal and modify our final presentation according to what we thought would be an appropriate budget. Additionally, we gained experience developing an intricate solution to a real-world issue through the entirety of the problem. We used our skills gained thus far in our education to select a specific solution we found suitable for the problem, perform some calculations in order to ensure this selection was viable, and then consider the societal effects of implementation as well.

NGC 2019

We are proud to be hosting the competition next year. We hope to combine the event with the existing successful Geomatics exposition in January 2019, bringing industry together from across the country.

<http://www.nationalgeomatricscomp.ca/>

Top Photo L to R: Jennifer Busser (*delegation representative*), 3rd place winners—Miriam Deitz, Edmond Leahy, Kelly Harke, Dr. Derek Lichti (*UofC Geomatics Engineering Department Head*)

Bottom Photo L to R: Neil Grerein (*Novatel Inc, judge*), Terry Dietz (*Callon Dietz Inc, judge*), 3rd place winners, Alex Turner (*UNB Geomatics Graduate Student Program Designer*), Tim Steeves (*Challenger Geomatics, judge*)



passionate about the industry and excited for future opportunities in Geomatics.

A banquet was held to wrap up the weekend where awards were presented to the winners. It offered a final opportunity to mingle, reflect back over the events of the weekend and provide feedback regarding the competition.

RESULTS

We are very excited to have received 3rd place in the 1st Annual Na-

January 22

SCHULICH SCHOOL OF ENGINEERING

Engineering Career Panel: Infrastructure, Design & PM

ENGINEERING CAREER CENTRE

Learn from and connect with professionals with civil and geomatics engineering backgrounds.



L to R: Dr. Janaka Ruwanpura, Jingjing Dou (*Urban Systems*), Lauren Cooper (*Ledcor Construction*), Mike Howarth (*Aecon Transportation West*) and Jordan Zenner (*WHISSELL Contracting Ltd.*)

February 1

SCHULICH SCHOOL OF ENGINEERING

Geomatics Engineering Coffee Chats

ENGINEERING CAREER CENTRE

Network with professionals with geomatics engineering backgrounds while enjoying coffee and snacks!



Screenings:

- February 8, **"The Englishman Who Went Up a Hill But Came Down a Mountain"** a romantic comedy involving engineers! Dr. Kyle O'Keefe had the audience consider the social and economic impacts of surveying and cartography.
- March 1, **"Power: One River, Two Nations"** an educational documentary based on the James Bay II hydro-electric project in which 15,000 Cree living in the region stood up against the utility company. Dr. George Jergeas, Professor and Director of the SSE Centre for Project Management Excellence, spoke on what engineers must seriously consider when delivering such projects. The closing was performed by the Eya-Hey Nakoda Drumming Troupe.



Front L to R: Drummers Christopher Pegram, Rod Hunter, and Anders Hunter

GUEST PRESENTERS



Dr. Andrea Masiero presented 'An Introduction to Particle Filtering for Indoor Navigation', April 20

Dr. Stéphane Guerrier presented 'An Introduction to Inertial Sensor Stochastic Calibration', April 17



Course Guest Lecturers:

ENGO 343
Kate Cairns (Alumni 2011),
McElhannery Land Surveys Ltd.

ENGO 351
Scott Fraser, Altus Geomatics
Davor Gugolj, ESRI Canada

ENGO 431
Kris Morin
Leica Geosystems

ENGO 455
Fred Cheng,
Natural Resources Canada,



Another successful year promoting Geomatics Engineering to students from Grades 5 to 12 at the annual Calgary Youth Science Fair April 14, 2018 University of Calgary Olympic Oval

Thank you to
 (L to R:) Lucy Freeman (*our young helper*),
 Monica Freeman (*Undergraduate Administrator*),
 Chandra Tjhai, Bahareh Yekkehkhany (*Graduate Student Volunteers*)
 and Dr. Elena Rangelova



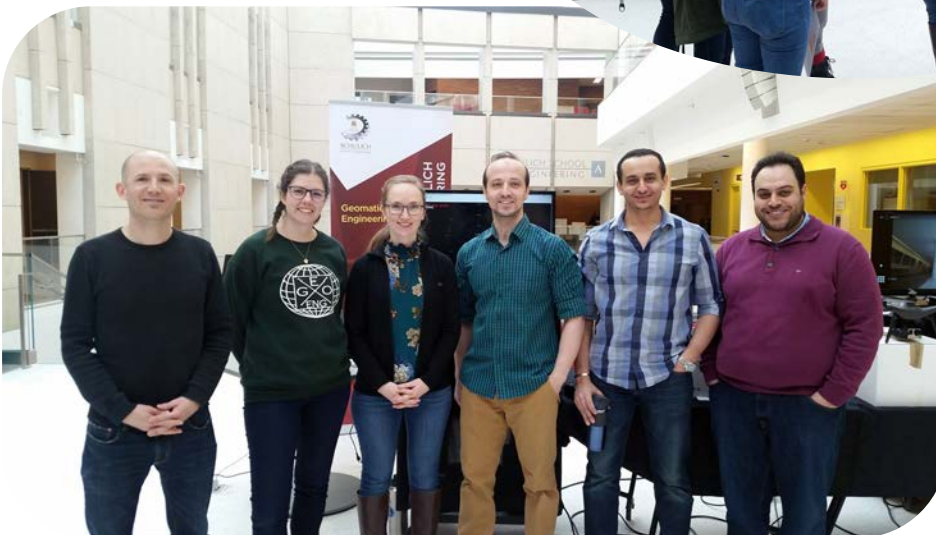
Women in Engineering

February 19, 2018
 SSE Canadian Natural Resources Ltd. Atrium

Approximately 200 high school girls from around Calgary took part in demos and workshops. Geomatics Engineering proudly showcased recent drone and UAV research.



Left Photo:
 Morgan explaining the drone's video capturing feature



L to R: Dr. Alex Bruton, Jamie Horreht, Morgan Moe (*Undergraduate volunteers*), Shady Zahran, Ahmed Elborae Radi and Mohamed Hassanein (*Graduate volunteers*)



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