

WATMOVES

UW-ITE STUDENT CHAPTER NEWSLETTER



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Message from the Editor



“UW ITE-SC proudly promises to endure the great efforts in attaining the chapter goals!” Akram Nour

UW ITE-Student Chapter seasonal newsletter was released first one year ago in Winter 2012. Since that time the chapter members continue the great work and effort on improving the contents of WatMoves. Today by releasing the fourth issue, we are celebrating the first WatMoves anniversary, special thanks for the chapter executive board and members who make the release of this issue happen. It is an honor for me to edit and write the preface of this special edition of WatMoves (issue #4); this also would be my last official task as an executive member of UW ITE-SC after being honored serving in different positions since 2007.

UW ITE-SC proudly promises to endure the great efforts in attaining the chapter goals! Winter term was a rich season for our student chapter members academically and socially. More than 50 graduate students have been offered to attend academic seminars, guest lectures, and broadcasted webinars offered in different transportation areas such as traffic engineering, road safety, ITS, pavement, etc. Moreover, the UW-ITE Student Chapter members enjoyed getting-together and having

fun at the organized social events that help to facilitate networking between the students and faculty members.

We are also proud to announce that UW ITE-SC was designated as one of five winners out of 21 US and Canadian student chapters in response to ITE request for proposal to collect relevant parking generation data that will be utilized for the future edition of *Parking Generation Manual*.

At the end, I would like to get this opportunity to thank our sponsors for their generous financial support and the chapter executive members for their voluntarily contributions. Last but not least, on behalf of the former and current executive members, I kindly thank UW transportation faculty members for all of their helpful advices and endless support especially our chapter advisor Professor Bruce Hellinga.

Akram Nour, PhD Candidate

UW-ITE Executive

Academic Events



During this semester, we hosted and broadcasted different academic seminars and webinars in different topics in the transportation engineering field.

The first seminar was held on October 16, 2012 by hosting Dr. Chris Lee who received his BSc and MSc from University of Toronto, and his PhD from University of Waterloo. Currently, he holds a position at the University of Windsor as assistant professor. The seminar was entitled “Capacity Analysis for Roundabouts with High Truck Volume Using Gap Acceptance Theory and Traffic Simulation”.



**Dr. Chris
Seminar
October
2012**

On December 11, 2012 UW-ITE SC hosted Prof. Persaud, a professor of Civil Engineering at Ryerson University and adjunct professor in Civil Engineering, University of Waterloo. In this seminar he is presented a talk about “Safety Performance Assessment for

Management of Roadway Infrastructure – State Of Research, Recent Applications, International Transferability and Future Directions”.

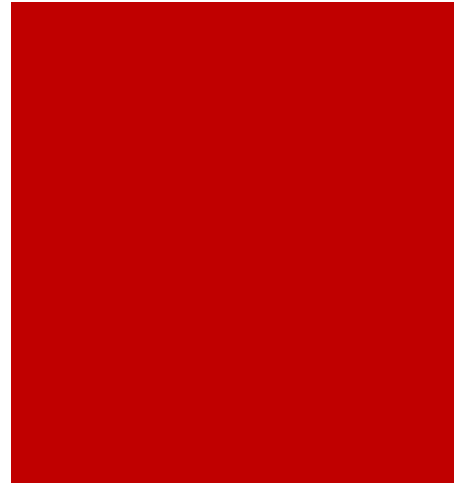
Dr. Vincenzo Gallelli, postdoctoral fellowship from University of Calabria, Italy was the other presenter of the UW-ITE SC Seminar Series. He talked about his research under the topic “Analysis of Road Safety Performance Using GPS Equipped Smartphone Probes” and demonstrated his work.

Paul Godsmark, previous senior transportation specialist at EBA delivered a presentation on ‘Autonomies’ on 1st of March 2013. In this presentation, he addressed the issue of the two separate technological tidal waves that we face in automotive and communications technology.

In addition, UW-ITE SC offered the opportunity for our members to participate in some of the webinar organized by ITS Canada:

- 1- “Transit App: Advanced Public Transit Systems.” by Carol Schweiger, Eve Wyatt and Gerry Akkerman.
- 2- “Cutting Edge Technology in Traffic Signal Modeling” by Marshall T. Cheek, Jim C. Lee and Thomas Urbanik.

Social Events



In the Fall term, we hosted our traditional UW-ITE-SC Meet and Great event, The Annual Transportation Graduate House Reception, to welcome our new graduate students. This “Pizza, Pop, and Play” event was a great opportunity to Great new graduate students joining UW transportation group and for them to Meet with current graduate students and faculty members.

On Wednesday December 18th, the UW-ITE-SC hosted its second annual Christmas Luncheon. Unlike the first party, the Christmas Luncheon was held off-campus at the Mandarin Buffet Restaurant in Kitchener. Approximately 25 students, professors and their families came out for the festive event. This event allowed for networking

opportunities between students and professors, where they could talk shop over the delicious Chinese cuisines.



Project Highlight



Recycling and Testing of Recycled Asphalt Pavements

Recycling and Testing of Recycled Asphalt Pavements

Dr. Susan Tighe and Doubra Ambaiowei

This research is a partnership between the Centre for Pavement and Transportation Technology (CPATT), the Ministry of Transportation Ontario (MTO), the Ontario Tire Stewardship (OTS), the Ontario Hot Mix Producers Association (OHMPA) and the Natural Science and Engineering Research Council of Canada (NSERC). This research is aimed at fostering innovation for greener roads in Ontario, Canada.

The research is in recognition of the overwhelming need to seek alternative and innovative methods of providing safe and durable pavements that maximize the use of recyclable materials. As well as optimal use of aggregates and asphalt binders to ensure sustainability by fostering ***“...development that meets the needs of the present without compromising the ability of future generations to meet their own needs”***. This includes the use of recycled materials such as Reclaimed Asphalt Pavement (RAP) from milling existing flexible pavements, and incorporation of Crumb Rubber Modifiers

(CRM) from waste rubber tires in pavement applications is sustainable. Both of these materials provide a good substitution for virgin materials and allow for the opportunity to save non-renewable resources and provide economic benefits by reducing extraction and transportation costs of virgin materials.

“...development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

Ontario’s experience with low percentages of RAP in Hot Mix Asphalt (HMA) has proved satisfactory in terms of fatigue, rutting, thermal resistance and durability. However, the opportunity to consider higher percentages is present. Currently RAP is limited to between 15 – 20 percent since performance of the resultant

HMA mixture is influenced by characteristics of the RAP material, quality control during production and processing including mix design considerations and specification requirements. In the case of CRM, laboratory and field trials in various states in America have indicated that the mix modification improves pavement performance in terms of rutting, fatigue, thermal cracking resistance, and noise levels. However, the degree of improvement, CRM incorporation methods, and cost effectiveness has not been firmly established in Canada. To address these concerns, this study reviews in-depth the asphalt pavement and scrap tire recycling processes and procedures, and implements the superior performing asphalt binder specification system for mix designs (Superpave) in a comprehensive laboratory investigation to understanding the mechanistic

properties, behavior and overall performance of HMA mixtures containing these recycled materials. Also, field studies of rubberized asphalt pavement from previous trial and newly paved sections in Ontario will be examined and evaluated. Finally, predictive pavement performance analysis will be conducted for moisture damage, rutting distress and resistance to thermal and fatigue cracking using results from laboratory performance tests. It is also expected that this research will create opportunities and proffer solutions that will resuscitate and sustain roads in the developing nations of the world.



Transportation Undergrad Program Highlight

Kevin Yeung



Transportation engineering is one of the main disciplines taught within the undergraduate civil engineering program at the University of Waterloo. Students in the program have the option of taking several courses in the field of transportation if they are interested. In second year, all civil undergrads are provided with a fundamental understanding of statistics and economics, typically taught by transportation professors. Starting in third year, students take their first introductory transportation course and can then begin selecting transportation courses for their technical electives. These electives provide a good background on key transportation concepts and include courses on traffic engineering, transportation planning, pavement design, and public transit planning. A number of civil engineering students are choosing to supplement these technical electives with other courses offered by the School of Urban Planning, which discuss infrastructure planning and simulation models for city planning and development.

Co-op experience sets the Waterloo undergrad program apart from others in the country. All civil engineering students alternate between four-month academic terms and four-month work terms. This arrangement provides an opportunity for civil engineering students to apply the concepts learned in the classroom

and gain insight on the transportation industry. Through co-op, undergrads have worked in municipal transportation departments, public transportation agencies, and engineering consulting firms. Some of the major projects that undergrads have been involved in include the Waterloo Light Rail Transit line, Ottawa Light Rail Transit line, Milton GO Corridor expansion, City of Sudbury Transportation Master Plan, and the Gardiner Expressway Ramp Removal EA Study.

Throughout 2012, Waterloo undergrads have been successful in attaining several transportation awards. Two Waterloo students, Rebecca Chung and Kevin Yeung, placed 2nd and 3rd, respectively, in the inaugural Canadian Capacity Guide competition organized by the Canadian Institute of Transportation Engineers (CITE). Additionally, Kevin was honoured with two undergraduate scholarships – one from CITE and another from the Canadian Urban Transit Association (CUTA).

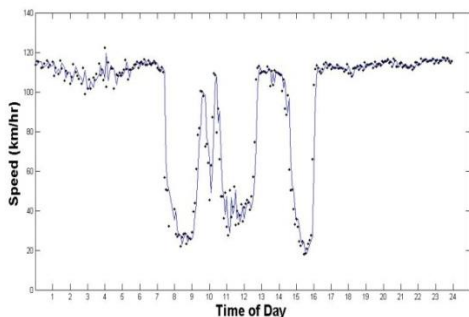
Transportation engineering is an integral part of the civil engineering undergraduate program at the University of Waterloo. There are many exciting stories and experiences to share as the program continues to grow. Keep an eye out in a future edition of WatMoves for highlights focused on an individual undergraduate!

PhD Candidate Highlight

Reza Noroozi



Reza is a PhD candidate under the supervision of Dr. Hellinga. His research focuses on the real-time characteristics of travel time on freeways. Basically, he is developing a simulation framework to proactively predict traffic conditions and travel time characteristics along a freeway route using real-time and historical measurements of fixed point detectors. The simulation framework would be able to predict the mean and variability of travel time in real-time, and provide additional inputs to conventional travelers' information systems and proactive traffic management systems. He has published 2 journal papers and 2 conference papers to-date, and has some more in the works.



Reza has been actively involved in UW-ITE professional, academic, and social activities since 2010. He has been serving UW-ITE as Communication Director, and Vice President.

After earning his master's degree, Reza experienced working in transportation industry for several years. He was involved in various consulting projects in the field of public transport, regional traffic improvement plans, and road safety. Getting to learn more about transportation industry, he decided to pursue his education / passion in the transportation field.



Year 2012 was a busy one for Reza. Not only he had to focus on his research, but also he started building a new life with his lovely wife, Narges. Enjoying indoor activities during the winter, they are looking forward to discovering new places/adventures in the next spring.

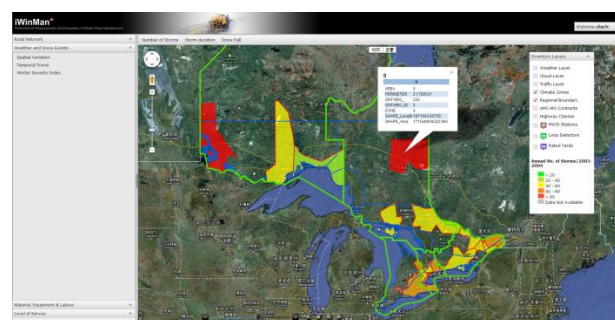
Masters Candidate Highlight

Johnny Cao

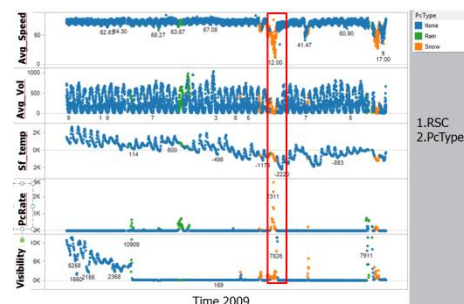


Johnny Cao is a Transportation Engineering master's candidate in the Department of Civil and Environmental Engineering at the University of Waterloo, working under the supervision of Professor Liping Fu. As a 2+2 student, majored in Geomatics and Computer Science, Johnny completed his undergraduate studies in 2011 and gained bachelor's degree both at the University of Waterloo and China University of Geosciences (Wuhan).

His graduate research focus is study the impact of winter weather and road surface conditions on the average vehicle speed of rural highways, and examine the feasibility of using traffic speed as a performance measure of winter road maintenance. This project is under the scope of winter road maintenance performance measurement, and is funded jointly by the Ministry of Transportation Ontario and the AURORA program. As a web application developer and GISer, Johnny is also responsible for designing and developing a web based prototype of Ontario Winter Road Maintenance Performance Measurement tool – 'iWinMan' and providing technical support to his research group.



Johnny's research work was accepted and presented in the 2012 9th. International Transportation Specialty Conference of the Canadian Society for Civil Engineers (CSCE), Edmonton, Alberta as well as in the 2013 92nd Annual Meeting of Transportation Research Board (TRB), Washington DC, USA. "The UW-ITE Student Chapter is not only the organizer of various academic and social events in our department, but also a great platform for making friends and building connections with professionals from the industry as well as other academic agencies."



Alumni Highlight

Stephanie Simard



I graduated from UW in 2010. I was co-supervised by Professor Casello and Professor Hellinga. My thesis work involved the Development and Deployment of a GIS Tool to Facilitate Transit Network Design. We worked with the Region of Waterloo to implement a GIS tool that helped identify desire lines or major travel demand corridors from which trunk transit routes were proposed and evaluated.

For the past 2.5 years I have been living in Ottawa working for Dillon Consulting Limited. Dillon is professional services firm providing a wide range of consulting services in transportation, planning, engineering and environmental management. We have 16 offices across Canada.

Given my diverse educational background I have been involved in a number of things at Dillon. I have had the chance to work on transit master plans, fire master plans, traffic analysis studies, community secondary plans and asset management work. I've been involved in all aspects of these projects from GIS analysis to running public consultation workshops to writing reports. I love the variety

of projects that I get to work on. Given that Dillon is a national firm I've also been lucky enough to travel across Canada, from Vancouver to New Brunswick to Yellowknife to Manitoba. I've travelled a lot these past 2.5 years! In my spare time I enjoy exploring Ottawa. It's a great City and there's always something going on. I enjoy riding my bike along the canal in the summer and skating in the winter and checking out all of the festivals that go on year round. This spring I will be transferring to our Toronto office. I am looking forward to new adventures in a new city!



Recent Publications

By UW-ITE Student Chapter Members



The members of the UW-ITE participated in many different conferences by presenting their renowned work during the last administrative year. In particular, more than fifteen UW-ITE members presented their research work in both lectern and poster sessions at the Transportation Research Board (TRB) 92nd Annual Meeting held in Washington D.C. in mid-January 2013.

Further to this, following the long tradition of the UW-ITE, we hosted the TRB UW reception where more than a hundred members of the UW-ITE including professors, transportation industry professionals, graduate students, alumni, and friends were invited for networking and social gatherings. It was such a success and we truly look forward to hosting the event again in year 2014!

The UW-ITE has proven to be the leading chapter amongst others by actively producing research papers. In 2012-13, we have published nearly 80 journal/conference papers in the field of transportation.

We have given promises to our chapter members to publish the list of their publications on WatMoves current issue; however, as editors committee, we have a limited number of pages that would have been exceeded if we kept that promise!

Therefore, the list is published online on the UW Transportation Research Group website with the following address:

[http://www.civil.uwaterloo.ca/transportation/#content/Research/publications.html\\$Publications](http://www.civil.uwaterloo.ca/transportation/#content/Research/publications.html$Publications)

Chapter Achievement

ITE Parking Demand Survey



The ITE International Board of Direction approved a fund of up to \$5,000 to be used by ITE student chapters to collect relevant parking generation data. Through the data collection fund, ITE is seeking two main goals:

- 1) collecting relevant parking data which leads to the publication of a future edition of Parking Generation, and

- 2) helping students to participate in transportation profession.

In response to the request for proposal, University of Waterloo ITE student chapter submitted a proposal in October 2012, and UW-ITE student chapter was selected as one of the 5 winners out of 21 participating schools.

The executive committee of UW-ITE student chapter believes that performing the data collection effort will:

- 1) bring the required fund (Grant Amount of \$1000) to hold more academic and social activates,
- 2) provide the opportunity to participate in a practical transportation study and

work with transportation professionals through the mentoring process

- 3) strengthen the friendship and enthusiasm among UW students through team work and voluntarily activities

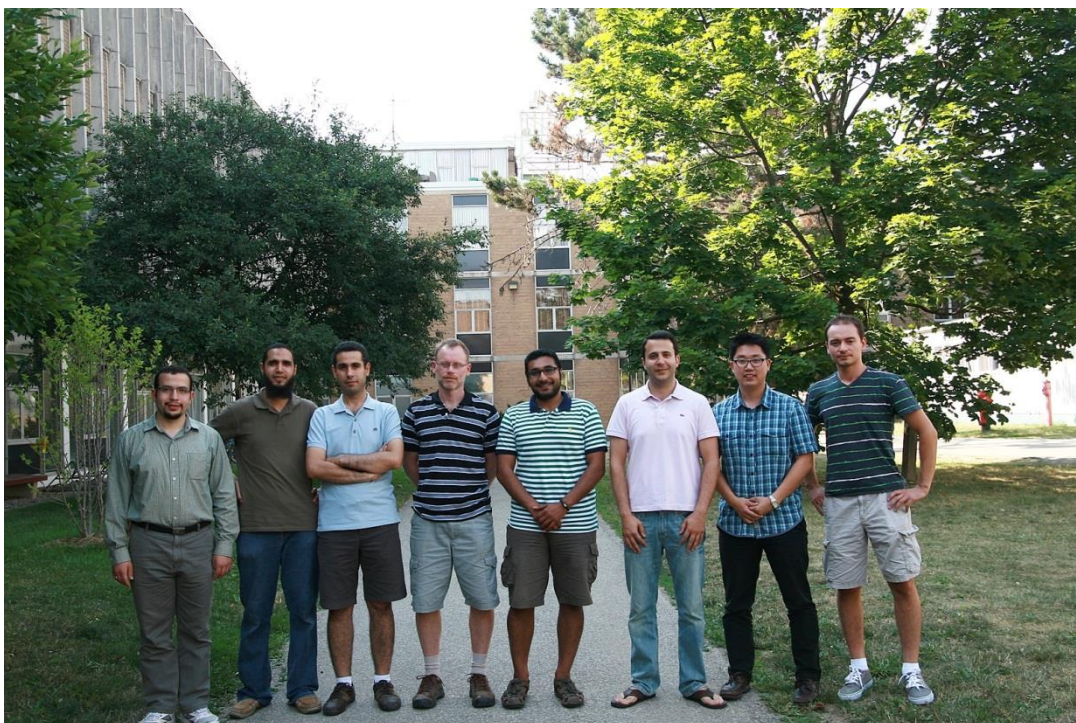
The data collection effort includes collecting parking data at two different land uses: an independent living complex and a coffee shop with a drive-through window. Parking generation data must be collected for two days at each location.

The first phase of the project which is recording the parking data has been completed by the help of 8 student volunteers, and the second phase of the project which is preparing the report for ITE is currently in process.

Closing Remarks

The term of the current UW ITE-SC is coming to an end and we are soliciting nominations for the next year's UW ITE-SC executives. The details of the available positions will be distributed by email to all transportation research group members by the end of April 2013. The term of the new UW ITE-SC executives will begin in May 2013.

I hope you enjoyed reading WatMoves issue#4; please follow up periodically with the upcoming issues!



Sponsors

UW-ITE Sponsors

We would like to thank our sponsors for supporting and helping us achieve our chapter goals. So we give a big THANK YOU to Hatch Mott MacDonald, CIMA+ and TSRG for their support during this year.

If you would like to get more information on sponsorship opportunities, please contact Soroush Salek at uw.ite.sc@gmail.com. There is

Visit our website for more information on sponsorship opportunities.

also more information about the student chapter and sponsorship levels in our website, www.civil.uwaterloo.ca/transportation/ite.

We also welcome companies who are interested in coming to Waterloo to present unique transportation projects that they are undertaking.

Gold Level:

**Want to be our sponsor?
Be our first Gold-Level Sponsor.**

Silver Level:



**Hatch Mott
MacDonald**

Bronze Level:





UW-ITE Student Chapter

Contact:

uw.ite.sc@gmail.com

www.civil.uwaterloo.ca/transportation/ite