WatMoves UW-ITE STUDENT CHAPTER NEWSLETTER

Issue No. 9 Fall Term 2014

What's Inside

Message from the President

Happy New Year and welcome back to another winter in Waterloo!

Before we head off into the New Year, it is worthwhile to reflect and acknowledge the different events and activities that have been undertaken by the University of Waterloo Institute of Transportation Engineers (UW-ITE). There have been a number of academic seminars, social events and even a technical tour of the Toronto Transit Commission (TTC) Subway Control Centre. At the same time, a number of our students and faculty have been working hard to produce quality research in the realm of transportation. All of these stories have been highlighted within this latest edition of WATMoves. The hard work of these UW-ITE Members and Executives are greatly appreciated.

As we move into 2015, there continues to be opportunities to be involved with the UW-

ITE Chapter. We look forward to continuing our new Transportation Talks series in conjunction with the numerous academic and social events that occur throughout the term. Moreover, there are opportunities to participate and represent Waterloo in the Traffic Bowl later this spring. All the best in your work this year! Hope to see you out there at any of our events.

Kevin Yeung, M.A.Sc. Candidate
President, UW-ITE

Academic Events

This term's academic activities commenced with a seminar conducted by Dr. Amir Golroo of Amirkabir University of Technology entitled: "Traffic Assignment in Mega Cities with Incomplete Data". This session was interactive, allowing the audience and the speaker to constantly exchange ideas on the various ways of using partial datasets to make effective traffic assignments and reduce congestion. Dr. Golroo identified this as particularly important because the issue of congestion is a constant source of public dissatisfaction. Furthermore, transportation professionals are often faced with the interesting task of juggling public expectations, creating an optimal road network, and working with limited resources.

Toronto Transit Commission (TTC) hosted UW-ITE for a technical tour of its transit control center on November 12th 2014. This was an interesting experience held within the heart of one of the most frequently used transit systems in North America. From buses, to streetcars, to trains, UW-ITE got a glimpse into the operational and managerial complexities of dealing with a system that services 1.6 million passengers daily. The TTC tour was unique in that Jerry Wing was able to give insight from a manager's perspective, while Nicolle Gyorkos-Perrucio provided an operational perspective, being a former operator of TTC's paratransit division *Wheel-Trans*. TTC also discussed some of the challenges faced during events such as the 2010 G-20 Summit or a typical New Year's Eve, as well as a few plans for the upcoming 2015 Pan American Games.

November 7th 2014 marked the first of UW-ITE's *Transportation Today* series with the theme "The Increasing Role of Technology in the Transportation Industry: Can We Keep Up?". *Transportation Today* is a series of themed, informal discussions about current issues in the transportation industry. This initiative intends to promote information sharing, as well as bridge the gap between the

academic and real worlds. In this session, attendees discussed numerous topics, such as the Netherlands' solar-powered bike lane, the advances in vehicle-to-vehicle (V2V) communication and its impact on congestion management, and the role of advanced fuel technologies on automobile and transit choices for the future. Who knew you could learn so much over a cup of coffee?

This term began with an academic seminar so it seems fitting to have ended with an academic seminar. The term closed with another insightful seminar from Wuhan University of Technology's Dr. Ming Zhong. Dr. Zhong presented on several pieces of recent research at a session titled "High-Fidelity Transportation Planning & Modeling: Opportunities and Observed Trends at IT Age". Several issues were presented, with some of the major ones being: Travel behavior modeling, GIS-based high-fidelity travel demand modeling, and agent-based space development modeling. He also discussed the use of remote sensing for extracting land use information and best-fit duration models for individual weekday and weekend activities.

Social Events

Janki Bhavsar

The UW-ITE Student Chapter hosted two social events in the Fall 2014 term: The New Transportation Graduate students Welcome Luncheon and the Holiday Luncheon.

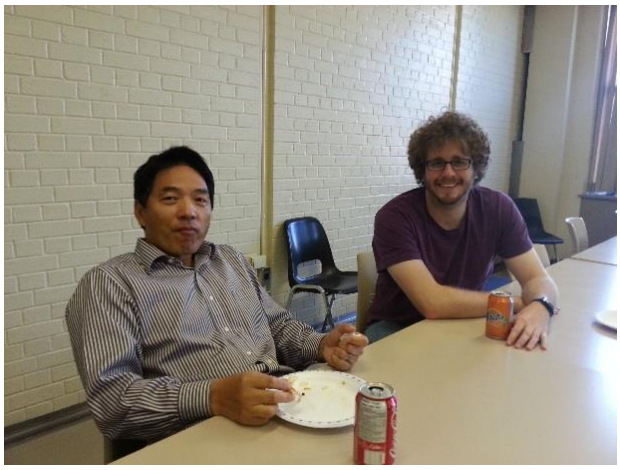
2014 HOLIDAY LUNCHEON

Right before everyone left for the winter holidays, UW-ITE hosted a holiday luncheon as a final event for everyone to meet before the end of the year. This year, the luncheon was held at King's Buffet in Kitchener. Most of the student members joined for the event and some with their families. Everyone was very content in the end with the holiday spirit and the tasty meals. It was fun event to get everyone into the holiday spirit.

UW-ITE would like to take this opportunity to wish all of the ITE community, students and professors with a successful, healthy and prosperous new year.

NEW TRANSPORTATION GRAD STUDENTS WELCOME LUNCHEON EVENT

The chapter welcomed new Graduate students to the program at the welcome luncheon. This was a good opportunity of new graduate students to interact with current and other new students within transportation engineering. Our gratitude to Prof. Liping Fu for attending the event. The pizzas and beverages lead to fun conversations and a joyful environment for the new grads. Several ideas were discussed to provide insight for the upcoming academic event.




Domino's Pizza
Domino's Pizza

Project Highlight

Dr. Susan Tighe and Sina Varamini

Highway 7 BRT-Lane, York Region ON

This research involves evaluating two innovative pavement technologies applicable in both urban and rural areas: (1) Coloured Hot Mix Asphalt (CHMA) and (2) Warm Mix Asphalt (WMA). These technologies are selected to provide improved safety under heavy loading and to reduce emissions. The research involves a collaboration between CPATT, and various public and private sector partners.

WMA is defined as a group of technologies that allow for a reduction in the production and construction temperatures of conventional paving mixtures. Despite the potential environmental, and safety benefits of WMA, changes in the production process have raised concerns in regards to the long-term performance of WMA. In an effort to address these concerns, a comprehensive laboratory study will be conducted to systematically evaluate different types of WMA additives on the strength of compacted asphalt mixtures for usage in pavements in Ontario.

Denoting dedicated bus lanes in the right-of-way has been implemented globally to allow buses to move out of congestion, enabling travellers to get around the busiest corridors faster by using transit. Being proactive in promoting this sustainable mode of transportation, York Region in Ontario has used CHMA for its dedicated BRT lanes, as shown below. The BRT lanes are located along the three most heavily travelled roads in the region; Yonge Street, Highway 7, and Davis Drive.

One the main objectives of this research is to characterize the structural, functional, and environmental characteristics of the coloured asphalt design for BRT lanes in York Region. The research is anticipated to provide innovative and sustainable solutions, which can be effectively used as means of ensuring durability and high performance throughout the material's life cycle.

Doctoral Student Highlight

Sina Varamini

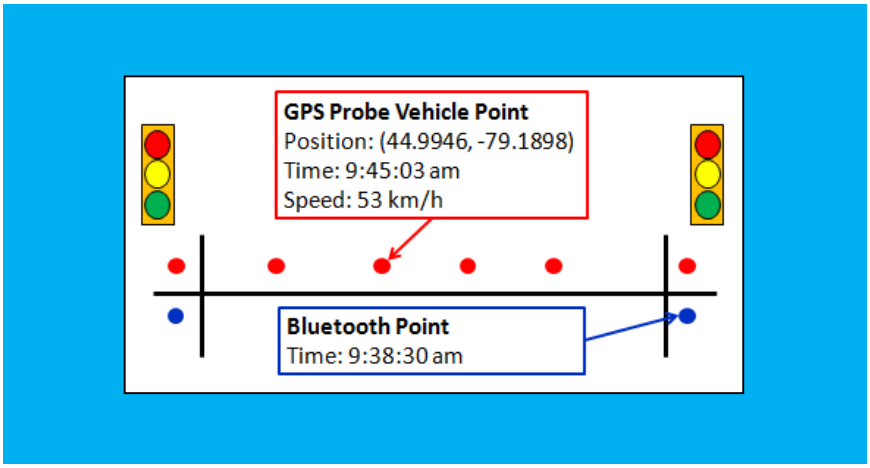
Sina Varamini is a PhD candidate at the Centre for Pavement and Transportation Technology (CPATT), located at the University of Waterloo, working under supervision of Professor Susan Tighe. He holds a B.Eng and MASc in Civil Engineering from Dalhousie University in Halifax, Nova Scotia. Prior to graduating from his B.Eng, he has completed a number of cooperative work terms in areas of research and development of sustainable and cost-effective asphalt products pertaining to different pavement applications.

Sina's research plan is directed at evaluating two innovative pavement technologies applicable in both urban and rural areas: (1) Coloured Hot Mix Asphalt (CHMA) and (2) Warm Mix Asphalt (WMA). These technologies are selected to provide improved safety under heavy loading and to reduce emissions. The research involves a collaboration between CPATT, and various public and private sector partners explained in the previous section.

Sina has received number of awards recognizing his academic progress at the University of Waterloo: (1) 2014 Transportation Association of Canada (TAC) Foundation's Waterloo Alumni Centennial Award, (2) 2014-15 Ontario's Graduate Scholarship, (3) 2014-15 President's Graduate Scholarship and Faculty of Engineering Graduate Scholarship at the University of Waterloo. In his spare time, Sina enjoys fishing, travelling, playing golf and squash, spending time with family and friends, and volunteering for student groups on campus.

Master Student Highlight

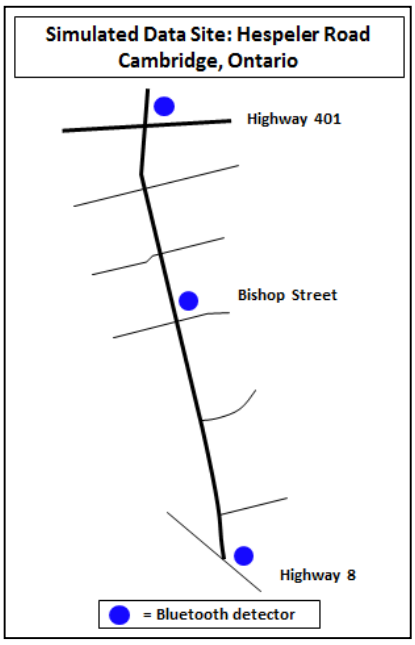
Cameron Berko



Cameron Berko is a Master's candidate under the supervision of Dr. Bruce Hellinga. Cameron was motivated to pursue a Master's degree at Waterloo because of the work being done by Dr. Hellinga's group to improve the performance of existing roadway facilities as opposed to continuing the physical expansion of the roadway network to accommodate peak traffic flows.

Cameron's research consists of the evaluation of signal retiming measures on arterial roadways using travel time data collected via Bluetooth detectors. This is typically done by collecting travel time data before and after signal retiming measures are implemented and then comparing these datasets to each other. While standard practice involves the use of GPS-equipped dedicated probe vehicles to collect travel time data, the use of roadside Bluetooth detectors allows for the collection of a larger (albeit less detailed) travel time dataset obtained at a much lower cost.

The end product of this research will be a set of guidelines for practitioners looking to use Bluetooth technology to determine the effectiveness of signal retiming measures on arterial facilities. Some of the key features of this research include the development of measures of effectiveness, the examination of the impact of outlying travel times on the recommended measures of effectiveness, and the selection of key study parameters including the duration of the data collection period, the location and spacing of detectors, and the number of travel times needed to make definitive conclusions. Data collected both in the field and in a simulated environment are examined in this research.



In his free time, Cameron enjoys playing and watching a variety of sports including hockey, soccer, and baseball.

Undergraduate Student Highlight

Edward Lau

"Planning and designing transportation infrastructure has always been my dream. Living it has been one of my greatest joy. The transportation industry is an exciting industry. I love the fact that we can make a difference in the world by being able to plan and design sustainable infrastructure. The industry is a small one and participating in networking events has been a great experience. It's thrilling to be with like minded people."

Edward Lau is a civil engineering undergraduate student entering his 4B term at the University of Waterloo in the Winter 2015 term. He recently completed his final co-op term at MMM Group's Vancouver office.

Edward has been involved with a variety of transportation projects in areas such as research, detailed design, and planning. In 3A, he became an undergraduate research assistant for Dr. Susan Tighe, where he worked in the CPATT lab to fabricate and test recycled asphalt samples. The following term, Edward landed his first transportation co-op job at MMM Group where he was involved in detailed and functional designs of municipal roads. As Edward developed his passion for transportation, he returned again to MMM Group for another co-op term. This time, he worked in the transportation planning department, where he was involved in many projects including traffic impact studies, site plan circulation reviews, railway crossing assessments, traffic management plans, and pavement marking and signage plans.

Edward was also recently awarded a TAC Foundation scholarship for his achievements and passion for the industry. Outside of school, Edward enjoys the outdoors and playing sports.

Alumni Highlight

Dr. Bagheri obtained his Ph.D. degree in Transportation Engineering from UW in 2009 under the supervision of Dr. Frank Saccomanno and Dr. Liping Fu, with a research focus on rail freight safety and minimizing the risks associated with the transport of dangerous goods. After completing his degree, he worked as a Lecturer and Postdoctoral Research Associate at McGill University's Faculty of Management and Department of Civil Engineering and Applied Mechanics. His journey continued as he worked as a Research Assistant in the Faculty of Business Administration at the Memorial University of Newfoundland until 2010. Fast-forward to 2015 and his progression in the academic and research world is clear, as Dr, Bagheri is currently an Assistant Professor at the School of Railway Engineering at Iran University of Science and Technology (IUST).

Dr. Bagheri's research interests include transportation safety, risk analysis and safety management, multimodal transportation and management of logistics and transportation. Over the course of his academic career, Dr. Bagheri has authored and co-authored over 20 publications including a book chapter and papers in journals such as Accident Analysis and Prevention. His contributions extend far beyond his publications, as he is also a journal reviewer for multiple international journals such as Transportation Research Record, Safety Science, and the Canadian Journal of Civil Engineering. Recently he was a co-Chairman of the third International Conference on Recent Advances in Railway Engineering (ICRARE2013), further showing examples of his leadership and continued contribution to the transportation industry.

In Spring 2014, Dr. Bagheri returned to UW as a Visiting Professor, during which he held a UW-ITE seminar titled: **Rail Safety: Challenges & Opportunities.** Attended by his former Ph.D. thesis supervisors and the UW-ITE members, he engaged the audience in his area of expertise and led a very interesting discussion about the future of rail safety. This, however, would not be Dr. Bagheri's first contribution to UW-ITE, since he held the position of Vice President in 2008 during his studies, and it likely will not be his last. Dr. Bagheri uses a multidisciplinary approach to develop transportation solutions and his passion drives him to continue educating the next generation of transportation engineers.

Recent Awards

Received by UW-ITE Student Chapter Members

Congratulations to the following students on their achievement!

Student	Program	Award
Cameron Berko	MASc	Queen Elizabeth II Graduate Scholarship in Science and Technology
Janki Bhavsar	MASc	Queen Elizabeth II Graduate Scholarship in Science and Technology
Jordan Hart-Bishop	MASc	Queen Elizabeth II Graduate Scholarship in Science and Technology
Michael A. Linton	MASc	Queen Elizabeth II Graduate Scholarship in Science and Technology
Shahram Heydari	PhD	NSERC Alexander Graham Bell Canada Graduate Scholarship NSERC Michael Smith Foreign Study Supplement University of Waterloo President's Graduate Scholarship
Tae J. Kwon	PhD	University of Waterloo Doctoral Thesis Writing Award
Amir Zarinbal Masouleh	PhD	University of Waterloo Doctoral Thesis Writing Award
Akram Nour	PhD	University of Waterloo PhD Completion Award
Lalita Thakali	PhD	University of Waterloo Doctoral Thesis Writing Award

Closing Remarks from the Editor

The goal of the University of Waterloo Student Chapter in the year 2015 is to continue its hard work in organizing interesting social and academic events. We hope that these activities can contribute to the knowledge and experience of our members in the transportation field. In the Fall term the ITE Student chapter organized a variety of different events and activities which I would like to thank our executive committee and everyone involved in making this happen.

Hope everyone enjoy this WatMoves issue!

Sajad Shiravi
WatMoves Issue 9 Editor

Sponsors

UW-ITE Sponsors

Visit our website for more information on sponsorship opportunities.

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 Kevin Yeung at uw.ite.sc@gmail.com. There is 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?
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Silver Level:

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