



University of Waterloo Institute of Transportation Engineers Student Chapter 2023-2024 Annual Report

The University of Waterloo (UW) ITE Canada Student Chapter is pleased to submit this annual report to showcase another extremely successful year, with 2024 marking the 50th anniversary of the Waterloo Chapter.

Chapter Administration

New this year, the student chapter is very fortunate to welcome two industry sponsors: BA Group (Bronze Sponsor) and Paradigm Transportation Solutions (Gold Sponsor).

The student chapter has six elected executive positions and a faculty advisor listed below in Table 1.

Table 1: UW ITE Student Chapter Executive Team

Position	Executive Officer
President	Christopher Lehmann Skelton*
Vice-President	Mavjot Kaur*
Treasurer	Lucas Sobreira
Secretary	Jeffrey Dai
Event Director	Shrinidhi Elangovanneela*
Media Director	William Pham**
Faculty Advisor	Christian Bachmann
Special committees	Media, Events

*New executive member **New ITE member

Executive meetings were held weekly during school semesters until October 19 when they were switched to a bi-weekly schedule. No meetings were held during final exams in August and December. The first executive meeting open to the public was on January 18, another new step for the chapter intended to attract new members and be more transparent with our proceedings. The list of meetings is summarized below in Table 2.

Table 2: UW ITE Student Chapter Meetings

1	March 6, 2023	8	May 8, 2023	15	September 7, 2023	22	November 30, 2023
2	March 13, 2023	9	May 15, 2023	16	September 21, 2023	23	January 4, 2024
3	March 20, 2023	10	May 29, 2023	17	September 28, 2023	24	January 18, 2024
4	March 27, 2023	11	June 12, 2023	18	October 8, 2023	25	February 1, 2024
5	April 3, 2023	12	June 19, 2023	19	October 19, 2023	26	February 15, 2024
6	April 24, 2023	13	June 26, 2023	20	November 2, 2023	27	February 29, 2024
7	May 1, 2023	14	July 5, 2023	21	November 16, 2023		

All meetings were held in Waterloo with a hybrid format.

Another new development this year is an event planning form, which tracked a list of items to do before each event to standardize event planning, provide a better experience for speakers and attendees, and to improve record keeping. This form allows the event team to run more efficiently and allow executives to see the status of event preparations.



To help student chapters better organize themselves administratively, Chapter Advisor and ITE Southwestern Ontario Student Liaison Dr. Bachmann led a session on best practices for chapter administration and organization in January 2024. This collaborative session was attended by the Presidents from the student chapters of Waterloo, Windsor, and Western University.

Networking Events

The chapter's Networking events are listed below in Table 3 (except for two collaborative networking events discussed below).

Table 3: UW ITE Student Chapter Networking Events

Presenter (Company)	Date	Description
Batool Husnain (Deloitte)	March 10, 2023	Senior Associate for Infrastructure and Capital Projects
Ben Allen (Parsons)	March 17, 2023	Discussing various transportation and infrastructure projects in the NCR
Heather Aitken (Deutschebahn Engineering, consulting & Operations N.A.)	March 24, 2023	Highlights of a mechanical engineer's career in transportation. Heather discussed her long history of working on everything from airplane engines to zero emission strategy documents for National governments
Matthew Sweet (City of Toronto)	May 29, 2023	Meaningful connections, how to go beyond shallow networking and build connections
ITE Canada	June 4-7, 2023	Student networking night- all attendees from Waterloo ITE Student chapter attended this night for networking
Tamanna Kabir Ph.D. (University of Waterloo)	July 20, 2023	Ph.D. from Waterloo discussing Potential of Low-Impact Pavement Materials
Brian Hoeft (Mioivision)	September 1, 2023	Advance technology on our roadways using computer vision, AI, and advanced analytics
Fang Su (ARUP)	October 27, 2023	Airport modelling at a passenger level for better airport designs. Demos of models shown to large turnout of students
Josee Dumont (True North Safety Group)	November 28, 2023	Transportation Safety projects, safety reviews, and safer designs of transportation infrastructure
Jacob Terry (Dillon Consulting)	January 25, 2024	Projects and challenges faced on said projects. Special bit on on-demand transit service.
Jamie Black (GHD)	February 8, 2024	Inclusion and diversity in the transportation industry. They spoke of their journey to become an engineer. This was a joint event with the McMaster student chapter.

On April 1, 2023, the student chapter hosted Elevate ITE, a multi-university full day networking event with, events, tours, and multiple speakers, many of whom are current or past ITE Canada executives. This one-of-a-kind event was widely successful, with over 100 attendees from York and McMaster Universities having a great time at the University of Waterloo. Students had an opportunity to network with industry professionals, professors, and ITE Canada executives.

On February 27, 2024, the student chapter collaborated with the UW Concrete Toboggan Team and the Ontario Building Envelope Council student chapter to hold a joint Civil engineering networking event



complete with 12 industry employers in attendance ranging from transportation to mixed discipline consulting firms.

Leadership Development

In June 2023, Jason Skidmore led a major parking data collection project (more details in the technical knowledge section). Jason led the planning, and along with a small team executed the project and successfully sent their findings and data to ITE Canada.

The executive team encourages our members to lead events that they are passionate about. Members are free to bring up their own ideas for events that they can demonstrate to be feasible. An example of this would be the GIS tutorials led by members Jason Skidmore and Enrique Tores. This idea was originally thought of by Jason, who planned, prepared, and executed the entire event back in June 2023 with help from the rest of the team. Enrique led his own GIS tutorial this February. New in 2024 is a formal leadership program introduced by the executive team where members have a formal opportunity to lead events with the support of the executive team. Members will arrange their own logistics, advertising, and food etc. There is already one planned event under this program scheduled in March this year.

Former president Reza Aminghafouri attended the ITE Student Leadership Summit and was profiled in the Transportation Talk Magazine.

K-12 STEM Outreach

In January 2024, volunteers from the student chapter ran a pedestrian signal timing activity with the Engineering Science Quest Camp for students in grades 3-5. Students learned how pedestrian signals should be timed to accommodate different types of pedestrians, with students acting out different roles while pretending to cross a crosswalk (e.g. child late for school, elderly person, etc.). This activity was quite successful with the students using their imagination and creativity to put an unexpected but positive twist on the original activity. Some students ended up mimicking different types of zoo animals crossing a pedestrian crosswalk, leading to a very diverse set of road users, while also learning about the importance of pedestrian signal timing!

In February 2024, the student chapter was fortunate to partner with the Women in Engineering After school clubs to also run the pedestrian timing activity with students in grades 5-7. The activity was adjusted for the older students to focus on the mathematical relationship between walking speed and pedestrian signal timing. The student chapter is working with these partners to continue offering transportation outreach activities in the future.

Application of Technical Knowledge

Local Transportation Issue/Collaboration with Industry

In July 2023, volunteers from the student chapter took to the Innovation Business Park in Waterloo to collect parking data over a period of two days. The number of cars parked, building size, lot size, total number of parking stalls, parking fees, transit, and other details were sent to ITE Canada and will be used to help develop the next Parking generation Manual.



Student Paper Presentations

Reza attended the 2023 joint ITE Toronto, Southwestern Ontario, and Hamilton Sections presentation competition and scored second place. This year, current president Chris Skelton had his abstract accepted and scored second place in the presentation competition.

This year, member Adam Rosenblum won the ITE Canada Undergraduate Scholarship for his paper titled “Mobility-as-a-Service: A Technology and Data-Driven Solution to Reducing High Private Vehicle Dependency in Canadian Cities.”

Technical Publications

Technical publications authored by student chapter members are listed below in Table 4.

Table 4: Technical Publications

Author	Publication name	Publication	Date
Reza Aminghafouri	An Automated Threshold Selection Framework for Conflict-Based Road Safety Analyses	TRB Poster presentation	January 2024
Lucas Sobreira	Comparing Direct Demand Models for Estimating Pedestrian Volumes at Intersections and Their Spatial Transferability to Other Jurisdictions	TRR	May, 2023
Lucas Sobreira	Estimating Pedestrian Volumes at Each Crosswalk of Intersections: Comparison of Land-Use Models and Short-Term Count Methods	Journal of Transportation Engineering, Part A	November 2023
Lucas Sobreira	Enhancing the Spatial Transferability of Direct Demand Models for Estimating Pedestrian Volumes at Intersections	TRR	November 2023
Ce Zhang	Real-Time Intersection Turning Movement Flow Forecasting Using a Parallel Bidirectional Long Short-Term Memory Neural Network Model	TRR	June 2023

Conference Attendance

Our student chapter members were privileged to attend both the ITE Canada and ITE international conferences as well as the annual TRB conference. The student chapter sent six members to the Canadian conference including a traffic bowl team, which placed second in the competition. At this conference, former president Reza Aminghafouri presented his research titled “Road Safety Analysis using Data from LiDAR sensors.” The student chapter was also awarded the Momentum Award at both the ITE Canada and ITE International levels. Secretary Jeffrey Dai attended the ITE International conference in Portland and accepted the Momentum Award on behalf of the chapter. Members Reza Aminghafouri and Ce Zhang presented their papers at TRB 2024.

New Member Recruitment

To recruit new members, the student chapter participated in the Waterloo Fall Open House. This event is usually attended by student design teams and the chapter was very grateful to the Department of Civil and Environmental engineering for allowing the chapter to advertise and recruit potential members. This year also saw increased participation from our Engineering Society (EngSoc), with two new



members from EngSoc joining as our chapter gained more recognition from winning the Momentum Award last year. Additionally, by holding public meetings, the chapter hopes to attract more students to join ITE.

Additionally, the chapter has begun visiting core courses in Civil Engineering and Planning to promote UW ITE. This term, we visited five lecture halls in the early weeks of the term to promote our activities to new students. We gained two new volunteer media team members and several new event attendees as a direct result of these efforts.

Diversity and Inclusion

The Pavement group liaison position was created with the goal of attracting more members from the Centre for Pavement and Transportation Technology (CPATT), which was previously under-represented in UW ITE membership. Events this year attracted students from diverse fields including science, aviation, planning, and other engineering departments. Due to increased interest, ITE events are now regularly promoted to Systems Design Engineering and Management Sciences departments.

Training/Professional Development

Building on the success of previous GIS tutorials, the student chapter held two GIS tutorials this year. The first tutorial in June discussed GIS basics using LRT data from the Region of Waterloo, while the second in February of this year went over service area analysis based on Major Transit Station Areas, which featured the intersection between transportation planning and planning policy.

Our chapter president Chris Skelton also created a series of video tutorials for the software Vistro on YouTube, originally made for the ITE team, but now available publicly.

Field Trips/Technical Tours

The student chapter embarked on a Transit and Active Transportation Walking tour on May 2023 with the Southwestern Ontario section, a summer picnic in Waterloo in July 2023, multiple tours during the ITE conferences such as the New Flyer bus factory tour and the CN Rail Training Centre tour, and a tour of the Waterloo Heritage Railway in February 2024 held jointly with the McMaster ITE Student Chapter.

Service Projects

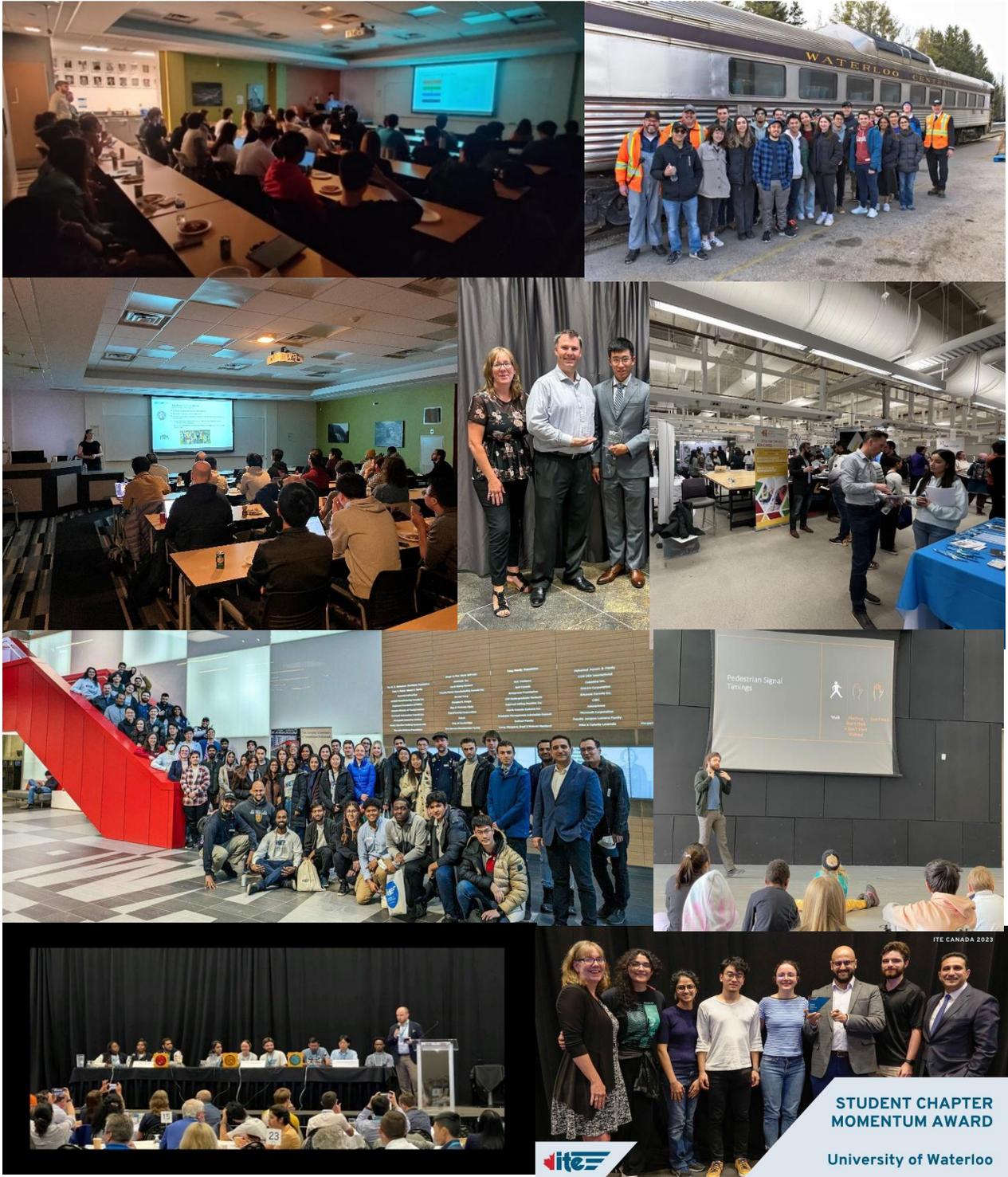
This year, the student chapter participated in the annual Waterloo Undergraduate Student Association's "Stock the Bank" event where groups on campus collect non-perishable food donations and compete for the highest donation score. The student chapter scored 128 points by the end of the event.

Chapter president Chris Skelton gave a presentation on how transportation engineers use different types of data during Love data week at the University of Waterloo. Love data week is an international celebration of data held annually by the University of Waterloo library services.

The UW ITE Canada Student chapter excelled this year, with highlights including industry sponsorships, hugely successful joint events, impactful K-12 outreach activities, technical contributions with conference attendances, published papers, ITE competitions, and technical tours.



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STUDENT CHAPTER



From left to right, top to bottom: ARUP Airport modelling Talk, Railway tour, TNS Group talk, ITE Momentum Award, Joint Civil networking event, Elevate ITE, K-12 Outreach, Traffic Bowl, ITE Canada Momentum Award