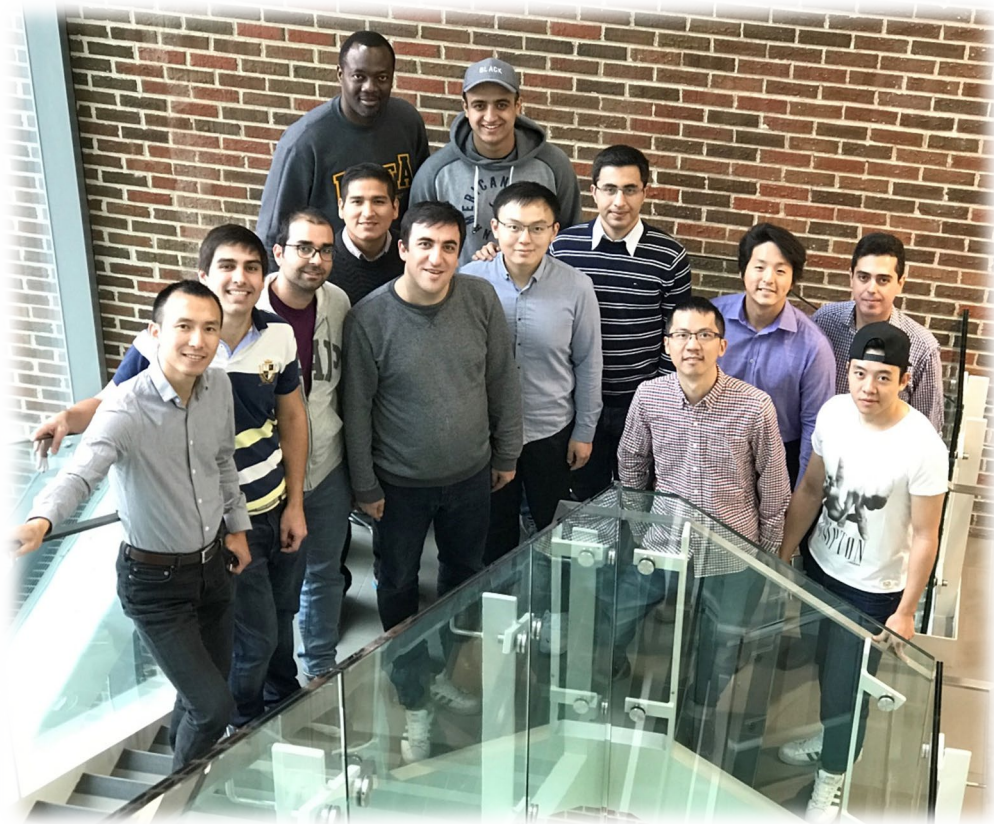




NASTT Student Chapter



2018 Activity Summary



University of Alberta
Edmonton, Canada
October 2018



NASTT University of Alberta Student Chapter – 2018 Activity Summary

Background:

The NASTT U of A Student Chapter was established in 2011 with the goal of enhancing general knowledge about trenchless technology among Albertan students and connecting the underground construction industry with academia. Since establishment, the NASTT U of A Student Chapter has organized monthly seminars for both graduate and undergraduate students to bring attention to the ideas and benefits of different areas of trenchless technology. Connecting with the industry has offered many opportunities for students to contribute to, and collaborate with, various organizations such as the City of Edmonton, The Crossing Company, and TELUS Communications, all of whom engage academic researchers in their trenchless technology projects. In addition to the NASTT U of A Student Chapter, the Consortium for Engineered Trenchless Technologies (CETT) is based in the University of Alberta. CETT was established to fill the knowledge gap created by the rapid development of trenchless technology; it is a unique research initiative that connects students with leading industry experts. Presently, CETT is home to nine graduate students and three postdoctoral fellows working on a variety of trenchless research projects. The team focuses on construction and operational challenges associated with horizontal directional drilling (HDD), pilot-tube micro tunneling (PTMT), pipe bursting, cured-in-place pipe (CIPP), and underground infrastructure condition assessment. As CETT's areas of expertise continue to expand, so does the industry's involvement in its research initiatives and activities.



Activities in 2018:

The main activities of the NASTT U of A Student Chapter in 2008 included workshops, presentations, and site visits.

In 2018, the Student Chapter was involved in the organization of four workshops, with one more coming up before the end of the year. The dates and titles of the workshops are as follows:

- 15 February 2018 - Geotechnical Consideration for Trenchless Construction
- 22 March 2018 - Pipe Materials for Trenchless Construction
- 29-31 May 2018 - Planning and Design of Horizontal Directional Drilling Projects
- 25 October 2018 - Advanced HDD Design

Non Faculty of Extension workshops/activities:

- 06 September 2018 - IRC Research Update Session: we hosted a two-hour session to present ongoing research into trenchless technology to our industry partners. All NASTT student members involved in the IRC program presented their achievements.

In 2019, we have organised three upcoming workshops:

- 21 February 2019 - Water and Waste Water Condition Assessment and Rehabilitation
- 11 April 2019 - Planning and Design of Direct Pipe Projects
- 28-30 May 2019 - Planning and Design of Horizontal Directional Drilling Projects

In 2018, the students in the NASTT U of A Student Chapter had frequent opportunities to communicate with industry partners. Regular meetings were held on a bi-weekly or monthly basis. The main events are listed below.

- Student members participated in the No-Dig Conference in Washington D.C., with one paper and one poster submitted.
- Students presented the student activities held in 2017, winning third place for the best student chapter in North America at the No-Dig Conference.



NASTT University of Alberta Student Chapter – 2017 Activity Summary

- Bi-weekly meetings take place with The Crossing Company to discuss ongoing research into specific energy for use in optimizing HDD.
- Meetings with Insituform are held, on average, once every two months to discuss progress on the research related to CIPP. Conference calls or online discussions are also held as necessary.
- A meeting was held with a professor from China University of Petroleum in Beijing to discuss the potential for future collaboration.

We also visited several sites to collect data and information on CIPP, as well as micro-trenching research.

- In August 2018, student members visited the site we are monitoring to assess the long-term performance of a fibre optic installation done using micro-trenching.
- In September 2018, we sent two students to a site to make observations and collect information regarding a CIPP rehabilitation project.

Research Activities:

FTTH Decision Support System

The purpose of this study is to establish a decision support platform that identifies current practices, processes the problems and information involved, and provides a recommendation on the best construction method for a given fiber network project.

Rheological property study of drilling fluid in the evaluation of hole cleaning capacity

Drilling fluids with varying bentonite concentration and additives were prepared and tested in a laboratory environment to obtain information regarding the rheological properties of fluids with different compositions.

Pressure management of drilling fluid in HDD

A general literature review was done to collect information and compare existing prediction models for the pressure management of drilling fluid in HDD.

Review and comparison of CIPP rehabilitation methods

Current water main rehabilitation products related to design, installation, and monitoring are being summarized, along with the risks associated. Quality control and quality



NASTT University of Alberta Student Chapter – 2017 Activity Summary

assessment (QA/QC) methods are used for the evaluation of existing products and procedures.

Energy-Based Drilling

The concept of specific energy is used in research underway to evaluate and improve drilling performance in HDD.

Development of drilling fluid apparatus

A new fluid loop is under development to study the effects of drilling fluid on the efficiency of the drilling process.

Plan for 2019

- Perform annual recruitment of undergraduate students through Trenchless Construction Lunch & Learn events
- Monthly U of A Student Chapter reception
- Plan for students to visit CIPP installation site
- Involve undergraduate students in volunteer opportunities in order to engage younger students with trenchless construction methods and to generate deeper knowledge regarding the benefits of trenchless technology
- Host a trenchless technology seminar with guest lecturers from the industry
- Students will be traveling to the NASTT No-Dig Conference to present papers and posters, as well as highlighting U of A NASTT Student Chapter activities.

University of Alberta NASTT Student Chapter Members

The NASTT U of A Student Chapter currently has eight members, including three postdoctoral fellows, one PhD student, and four MSc/MEng students.

First Name	Last Name	Organization	City	Province	Country	Email	Graduation Date
In Shik	Park	U of A	Edmonton	Alberta	Canada	inshik@ualberta.ca	2021
Andy	Su	U of A	Edmonton	Alberta	Canada	yhs@ualberta.ca	2021
Amirhossein	Ghasemirad	U of A	Edmonton	Alberta	Canada	ghasemir@ualberta.ca	2021
Yichen	Wu	U of A	Edmonton	Alberta	Canada	ycwu@ualberta.ca	2019
Ashkan	Faghieh	U of A	Edmonton	Alberta	Canada	ashkan.faghieh@gmail.com	2021
Chao	Kang	U of A	Edmonton	Alberta	Canada	ckang3@ualberta.ca	N/A
Sheng	Huang	U of A	Edmonton	Alberta	Canada	sheng9@ualberta.ca	N/A



NASTT University of Alberta Student Chapter – 2017 Activity Summary

Mohamad	Molavi Nojumi	U of A	Edmonton	Alberta	Canada	molavino@ualberta.ca	N/A
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