

NASTT-UMass Lowell Student Chapter 2018 Annual Activity Report

Officers and Student Members of the NASTT Club at UMass Lowell (2018-2019):

1	Dylan Shaffer	President
2	Liam Henderson	Vice President
3	Steven Fallon	Secretary
4	Michael Gallucci	Treasurer
5	Brian Herwing	Professional Development Chair
6	Gumisayi Vengesayi	Professional Development Co-Chair
7	David Salinas	Field Representative
8	Nur Shafiqah Shahirah	Co-op coordinator
9	Susom Dutta	PhD Student Coordinator
10	Shiv Bhardwaj	MS Student Coordinator
11	Alek Chongris	Graduate Student
12	Husham Osman	Graduate Student
13	Alexandar Horn	Undergraduate Student
14	Pedro Lopez	Undergraduate Student
15	Joshua Gittings	Undergraduate Student
16	Adir Genis	Undergraduate Student
17	Jorge Calmo	Undergraduate Student
18	Carlos Flores	Undergraduate Student
19	Dante Abate	Undergraduate Student

Faculty Advisor:

Raj K. Gondle, Ph.D.
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Background:

The NASTT student chapter at UMass Lowell has witnessed exceptional growth and achievements in the past year. The student chapter is continuing to recruit students who are interested in learning about the trenchless technologies and gain experiential learning. Geotechnical aspects of trenchless engineering is the primary focus of the club. Moving on to the new academic year, the student chapter has announced a new student board. Mr. Dylan Shaffer, a senior with interest in geotechnical engineering, won the student vote to lead the club based on his experience and involvement with the NASTT-UML club. The NASTT activities were restructured under Dylan's leadership for the growth of the student chapter. The student chapter continuously strives to (1) participate in conferences related to trenchless technologies, (2) invite and attend guest lectures by trenchless leaders to promote the learning and understanding of the techniques used in the trenchless industry, (3) identify trenchless projects and schedule field visits to practice and experience trenchless methods used in everyday practices, (4) encourage students who have not yet had an experience with trenchless technologies into learning about the exciting world of trenchless technologies, and (5) conduct trenchless research. Prof. Raj Gondle from the Department of Civil & Environmental Engineering continues to serve as the faculty advisor and Dennis Doherty, a National Practice Leader, serves as an Industry Advisory Board member for the club.

Experiential Learning and Field Site Visits:

On Saturday March 10, 2018, members of the UMass Lowell North American Society of Trenchless Technology (NASTT) student chapter visited a microtunneling field site at Randall's Island, New York with support from McMillen Jacobs. The microtunneling project in particular aims to install subaqueous water main extension and high-pressure gas main from Bronx to Randall's island, with virtually no disruption to the land or people above the project site. This project showcased situations where trenchless technologies can outperform normal trench construction due to the difficult geology and numerous utility lines underneath the city. The efforts coincided with its ongoing resiliency program in response to Hurricane Sandy, which highlighted the weaknesses of the city's infrastructure and pointed engineers toward critical projects.



Figure 1: NASTT Student Chapter members and UMass Lowell faculty with engineers at Randall's Island project site.

The field site visit enriched the students with tremendous knowledge about the various aspects of trenchless technology. Students were able to witness, first hand, the engineering behind a microtunneling project from start to end. This project sparked many of the students' curiosity. Any questions they had, no matter how complex or theoretical, were diligently answered by the experienced engineers who have worked on countless projects throughout their career, each different from its preceding. The one crucial piece of learning that Babs Marquis, a project associate from McMillen Jacobs, wanted all students to gain from this site visit was: "experience and motivation to work will get you places and teach you more than what is taught in class." He also stated that every trenchless project is different; engineers are expected to learn and adapt at a faster pace and in order to be successfully complete the project in a time effective manner, it is imperative to have a solution for possible obstacles that the project might encounter. Experiential learning is therefore critical to our engineering and such skills cannot be gained within the classroom. After visiting the site, students ended the trip by going to Times Square and ate at The Halal Guys, considered to be the best street food in New York City. In addition, students also had an opportunity to experience a pipe-bursting demo in Cooperstown, NY.



Figure 2: Details of the Randall's Island project site.

Professional Conferences and Networking:

With generous support from the NASTT and the Northeast Regional Chapter again this year, several students had the opportunity to attend notable trenchless-related events, networking with industry leaders and professionals from around the country. The NASTT student chapter at UMass Lowell attended and volunteered at the annual Northeast Regional Conference in Cooperstown, New York, as well as the '2018 No Dig Show' held in Palm Springs, California. Eleven students with their faculty advisor, Prof. Gondle attended the Northeast Regional Conference, sponsored by the Northeast Board members. Students attended the pre-conference social the night before to network with professionals in the region, stayed overnight, and actively participated in the conference the next day. Figure 3 shows Dylan Shaffer and David Salinas presenting the club's progress during the opening remarks at the luxurious Otesaga Inn. Students received guests at the front desk and presented a poster to connect and network with professionals in the region. Students also had a chance to experience a pipe-bursting demo. Prof. Gondle moderated some sessions and students attended presentations by different guest speakers. After a busy day and just before leaving Cooperstown, students also visited the Baseball Hall of Fame with tickets once again sponsored by the Northeast board members.



Figure 3: David Salinas (left) and Dylan Shaffer (left) presenting the club's recent progress at the 2017 Northeast Regional Conference.



Figure 4: Steven Fallon, Pedro Lopez and Alek Chongris (from left to right) receiving guests at the 2017 Northeast Regional Conference.



Figure 5: David Salinas (left) and Pedro Lopez (right) presenting a poster at the 2017 Northeast Regional Conference.



Figure 6: Students attending the pipe-bursting demo at the 2017 Northeast Regional Conference.



Figure 7: UMass Lowell Student Chapter with Matt Timberlake from Ted Berry Company at the 2017 Northeast Regional Conference.



Figure 8: UMass Lowell Student Chapter at the Baseball Hall of Fame in Cooperstown, NY.

With gracious support from the NASTT again, six students with their faculty advisor, Prof. Gondle, attended the '2018 No Dig Show' held in Palm Springs, California. The NASTT travel award made it possible for the NASTT club to travel from east to west. As always, the students presented their progress at the student orientation and actively participated in the voluntary activities at the conference. Students went to every single exhibitor to learn about different products, advancements, and engineering aspects of trenchless work. In addition, our students had a chance to communicate with students from other student chapters about their involvements and opportunities. Susom Dutta, who is a PhD student, presented a technical paper and a research poster about his new developments in fiberoptic sensing for subsurface infrastructure like pipelines and tunnels. The new student body is very excited and intends on participating in the 2018 Northeast Trenchless Conference in Groton, Connecticut and the 2019 No Dig Show Conference in Chicago, Illinois.



Figure 9: UMass Lowell Student Chapter with their faculty advisor, Prof. Raj Gondle (left) and industry advisor, Dennis Doherty at the 2018 No Dig conference.

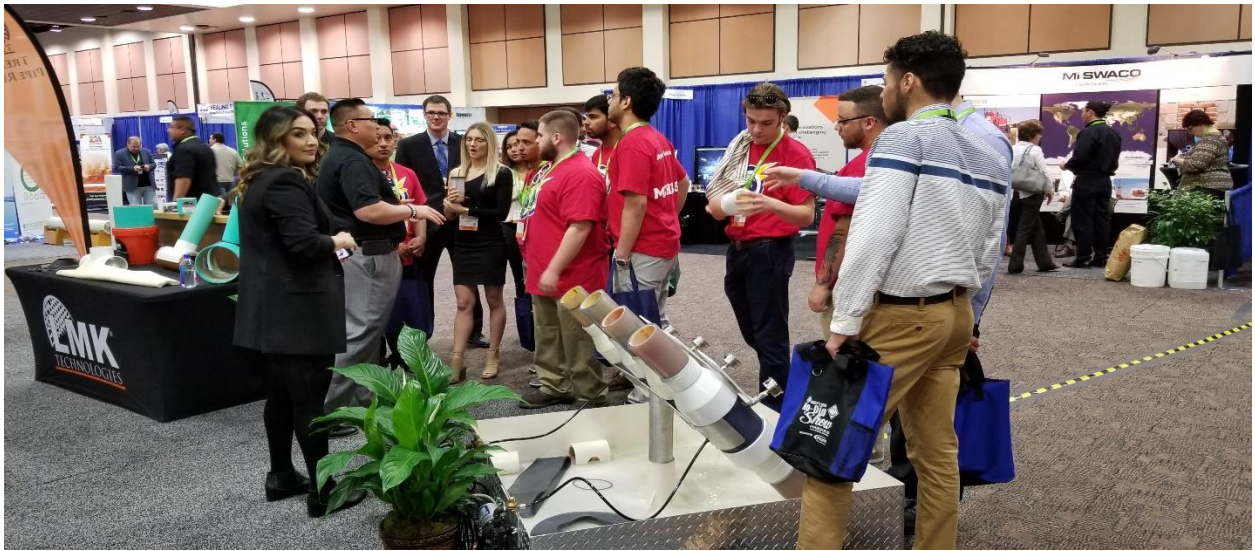


Figure 10: UMass Lowell students with exhibitors at the 2018 No Dig conference.

Publications:

The NASTT student chapter has continued to contribute to professional journals. The most recent article published by the NASTT student chapter; titled “My first footsteps into the world of trenchless technologies” which was authored by Liam Henderson and Dr. Raj Kumar Gondle, was published in the Spring 2018 volume of Northeast Journal of Trenchless Practices. A second article titled “The Art of Microtunneling, Risk Analysis, Management, and Mitigation: Lessons Learned from Randall’s Island” authored by Steven Fallon, Pedro Lopez, Gumisayi Vengesai, and Prof. Raj Kumar Gondle will be published in the Fall 2018 volume.



By: Liam Henderson (Engineering Student)
Dr. Raj Kumar Gondle (Faculty Advisor)

A mere brush of luck brought me to my first Engineering Conference. I was turning in a misprinted homework assignment to my professor late one evening, when he mentioned my earlier remarks of having a curiosity for the geotechnical branch of civil engineering (my current major). I explained that it had been an interest of mine, and no sooner had I expressed this, he promptly invited me to attend the NASTT-NE Trenchless Technology Conference in Cooperstown, NY. Not knowing full well what I was in for, or even what “NASTT” stood for, I agreed to

tag along with the student chapter to get an idea of some of the applications possible for my major. After all the sign-ups, approvals, and travel arrangements had been finalized, we were prepared to head off. About half of the student chapter was able to leave around noon to attend a social with several participants and members of the NASTT-NE Chapter. The second half of our group left later in the evening and arrived around 11 pm at our hotel. This was the first time I had ever seen a room reservation with my name on it!

Bright and early the next morning we headed off to The Otesaga, a marvelous



Dylan Shaffer presenting about the UMass Lowell Student Chapter activities

grand hotel, with an amazing view of the Otsego Lake. Here we set up the welcome table, and organized nametags for guests and presenters. By around 8:30 in the morning, most of the presenters had set up tables, and we headed into the dining hall for a brief social breakfast. I took my seat at a vacant table and was soon joined by a man who introduced himself as Dennis. We began talking, and through

IT WAS COMPLETELY NEW FOR ME! ANY QUESTIONS I HAD WERE ANSWERED. MY INTEREST WAS SPARKED IMMENSELY!

Figure 11: Spring 2018 volume of Northeast Journal of Trenchless Practices

Guest Speakers:

The Student Chapter also co-hosted a guest lecture alongside the ASCE Student Chapter and Civil and Environmental Engineering Department, inviting Mr. John Roma, the New England area manager in underpinning and foundations for Skanska. Mr. Roma gave an in-depth lecture about the evolution of drilled shaft construction in the northeast. Several students from the chapter also attended the Second Charles C. Ladd Memorial Lecture at Northeastern University learning about Ground Characterization and Performance.

Research Activities:

The NASTT Northeast Regional Chapter is supporting R&D efforts at UMass Lowell to encourage the development of innovative technologies to advance current practice and complement the industry efforts. One of these technologies is the development of “smart fabric” that is able to sense stress and strain in underground pipes, in order to detect defects before they can manifest into a big problem. Susom Dutta, who is a PhD student, presented a technical paper and a research poster about his new developments in fiberoptic sensing for subsurface infrastructure at the 2018 No Dig Conference.

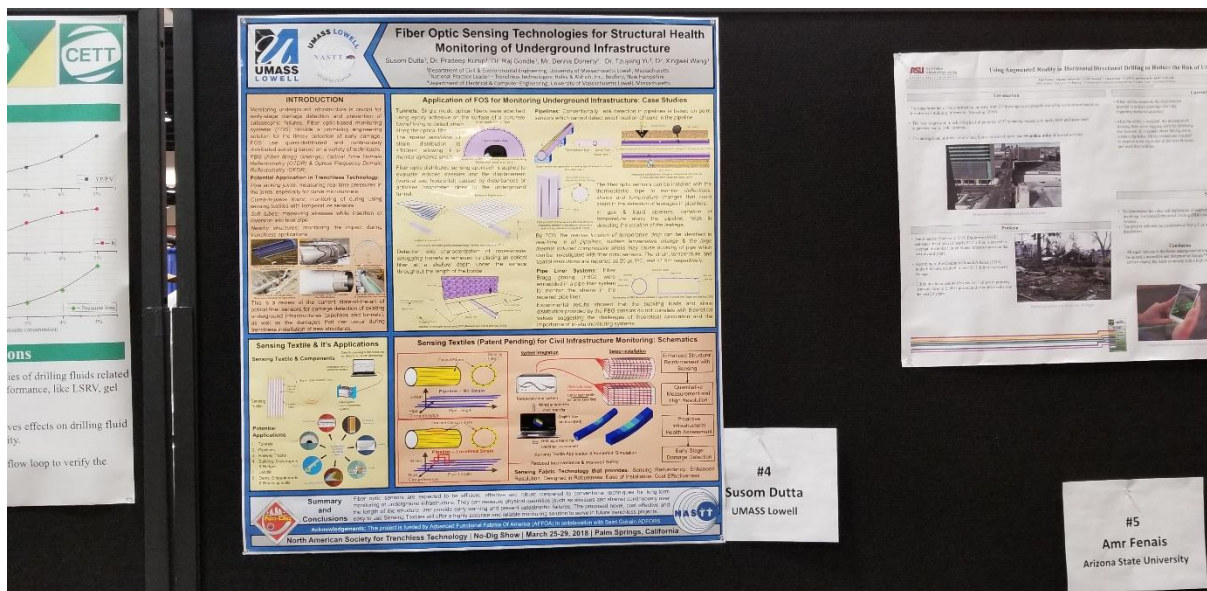


Figure 12: UMass Lowell Research poster at the 2018 No Dig Conference.

Growth:

As mentioned prior, NASTT Student chapter is continuing to expand in size, bringing on more new members each year. This year, since the chapter has been recognized as an official school organization, current members of the club were able to attend the annual engagement fair, presenting what the chapter does to new students. This, along with short presentations in freshmen classes, is proving to be moderately successful in attracting new members. The student chapter is making progress towards the goal to start a Northeast Trenchless Center for Education, Experience and Research at UMass Lowell with support from trenchless industry.



Figure 13: The presentation board used at the 2018 Fall engagement fair to recruit students.

Summary:

The new club members are excited about the year ahead and are reaching out to industry professionals for more guest lectures and educational opportunities. Now that the existing members have seen a glimpse of the possibilities and applications of all types of trenchless technology, they can share their excitement and willingness to learn more.