



Arizona State University
Institute of Transportation Engineers Student Chapter

2017-2018 Annual Report

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Institute of Transportation Engineers

ANNUAL REPORT OF STUDENT CHAPTER ACTIVITIES

From 4/1/17 to 3/1/18

STUDENT CHAPTER AT: Arizona State University

This report form contains the minimum information required to be submitted by each Student Chapter to ITE Headquarters each year. (See Section II.D of the Student Chapter Manual.) You may use a copy of this form -- filling in the blanks and adding attachments as appropriate -- or, if it is more convenient, submit the same information in a format similar to this form. If your Student Chapter desires to be evaluated for the annual ITE Student Chapter Award, you are invited to prepare a supplementary report that describes your Student Chapter activities in greater detail than is requested in this report.

1. STUDENT CHAPTER OFFICERS

President: Kristina Yuen

Vice President: Shivam Sharda

Secretary: Golnoosh Miri

Treasurer: Jun Xiao and Taehooie Kim

Other (please specify): Denise Capasso da Silva (Internal Liaison), Yudi Lei (External Liaison)

2. STUDENT CHAPTER MEMBERSHIP

Number of Student Chapter members: 18

Number of Student members of Institute: 82

Number of Students eligible to be a Student member of the Institute: 18

Number of faculty members who are current ITE members: _____

3. INFORMATION ON TRANSPORTATION ENGINEERING ENROLLMENT

Number of undergraduate students (Sophomore - Senior years) in your academic department. 1200

If not Civil Engineering, specify department: _____

Full time: _____ Part time: _____

Does your curriculum allow an undergraduate student to major or minor in Transportation?

Yes No

If "Yes," give number of transportation majors _____ and minors _____

Number of graduate students in Transportation. 50

Full time: _____ Part time: _____

4. SUMMARY OF STUDENT CHAPTER ACTIVITIES

Attach a three page summary identifying the type of each significant Student Chapter activity (business meeting, technical meeting, field trip, project, joint meeting with ITE Chapter or Section, social event, etc.) during the reporting period. Please **do not include** meeting announcements, newsletters, technical appendices to reports, etc.

5. ROSTER OF STUDENT CHAPTER MEMBERS

Please attach an alphabetized listing of the student chapter membership. For each person indicate the degree for which they are enrolled and expected graduation date. An asterisk should indicate those who are also Student Members of the Institute.

Report submitted by:

Name: Kristina Yuen

Phone: (623) 512-5887

Date: March 1, 2018

Contents approved by:

Yingyan Lou
Digitally signed by Yingyan Lou
DN: cn=Yingyan Lou, o=ASU-ITE,
ou=College of Engineering, Technology,
and Applied Sciences,
c=US
Date: 2018.02.26 11:01:39 -0700

(Faculty Advisor)

Please submit report to: Your District Student Chapter Award Coordinator

President's Message



When I first heard about the Institute of Transportation Engineers, I was sitting in my first undergraduate transportation class. I could not have imagined then that over two years later, I would have the great opportunity to serve as President of the Arizona State University ITE student chapter.

2017-2018 has proved to be formative year for our organization, following the election of new officers in September. I am more than grateful to all of them for their commitment.

We have continued to help host the transportation seminar series. With speakers from both industry and academia, the topics are varied, and the talks always provide interesting insight.

However, I am pleased that we began implement new ideas for events this year. In the fall, we hosted a panel of transportation engineering alumni. Students got the chance to ask questions on their college experiences and where they are in their careers now. More events like this will be essential to the growth of the organization.

Speaking of, there is significant room for growth in our membership. We can and should definitely do more to publicize the organization and expand our presence on campus.

We have continued our connections outside of the university, starting with our tour of the Tempe Traffic Management Center in the fall. Seven members attended one of the meetings of the Arizona section of ITE. Eight members attended the 2018 AZ ITE/IMSAs Annual Spring Conference, one of which hosted a technical session. We are also working on building relationships with Arizona ITS and companies like Kimley-Horn. Additionally, our organization is one of three ITE student chapters in the state, and it would be valuable to have more communication with the others.

None of our successes this year would have been possible without the people who have supported ASU ITE in the past. Notably, this includes former presidents Sravani Vadlamani and Peiheng Li. Their contributions have left a lasting impression on ASU ITE. I would also like to give thanks to our faculty advisor, Yingyan Lou, for her support.

I look forward to seeing the future of ASU ITE as much as I do the future of transportation.

Kristina L. Yuen

The Student Chapter

Student Chapter Faculty Advisor

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Officers:



President: Kristina Yuen

Kristina Yuen is a Master's student in Transportation Engineering. She earned her Bachelor of Science in Civil Engineering at Arizona State University in May 2017. She previously served as Secretary of ASU ITE from 2016-2017. When she has free time, she enjoys traveling and baking.

Vice President: Shivam Sharda

Shivam Sharda is a Ph.D. student and research associate in the School of Sustainable Engineering and The Built Environment at Arizona State University. He holds a B.E. degree from Visvesvaraya Technological University, India and received his Master's degree in the Department of Civil Engineering at Montana State University, Bozeman. His research interest include human factors, psychology, travel demand forecasting and management strategies, machine learning and statistical methods, energy and emission, and activity based modeling. In his free time, he likes to travel, cook or try different cuisines, and play table tennis.



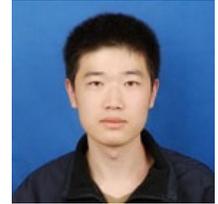
Secretary: Goolnosh Miri

Goolnosh Miri is a Master's student and research associate in Transportation Engineering at Arizona State University. She earned a Bachelor's Degree in Software Engineering from Azad University of Karaj. She is the webmaster of Railway Applications Section (RAS) of Informs. Her research interests include vehicle routing problem, dynamic traffic assignment and traffic estimation and prediction. She enjoys traveling, camping, cooking, and spending time with her friends.

The Student Chapter

Treasurer: Jun Xiao and Taehooie Kim

Jun Xiao is a PhD student in the Civil, Environmental and Sustainable Engineering program at Arizona State University. He holds a B.S. degree in Mathematics from University of Science and Technology of China. His research interests include parking management, probabilistic modeling and numerical simulation.



Taehooie Kim is a PhD student and research associate in civil engineering at Arizona State University (ASU). He earned his master's degree in mechanical engineering from Washington State University (WSU). His research areas are traffic network modeling and simulation, connected autonomous vehicle, and population synthesis. In his spare time, he enjoys travelling and exercising.



Internal Liaison: Denise Capasso da Silva

Denise is a PhD student and research associate in Transportation Planning at Arizona State University. She has a Civil Engineering Bachelor degree, with minor studies degree on Transportation Engineering from the University of Sao Paulo (USP), Brazil (2015). In addition, she has a Master's Degree on Transportation Planning (2017) from USP.

External Liaison: Yudi Lei

Yudi Lei is a Master's student of Transportation Engineering at Arizona State University (ASU). She likes transportation because it's dynamic, communicative and close to everyone's life. Her research interests includes intelligent traffic systems, and she'd like to buy a Tesla in the future. She enjoys traveling, and anyone is welcome to join her.



ITE Arizona Section Student Liaison

Ellie Volosin

Traffic Engineer, AECOM

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Student Chapter Activities

Business Meetings

January 25 th , 2018:	Arizona ITE AZ Luncheon, Special event planning & ride share opportunities
February 6 th , 2018:	General student meeting
Officers Meetings:	Every other Friday

Seminars

August 24 th , 2017:	Transit System Operations and Active Demand Management , Yi-Chang Chiu, Ph.D. Assoc. Prof., Univ. of Arizona, Co-founder, Metropia, Inc.
September 7 th , 2017:	Traffic Incident Management, ADOT & DPS Co-Loc. Prog. , Sarath Joshua, Ph.D., P.E. Program Manager, ITS & Safety, Maricopa Assoc. of Governments.
September 15 th , 2017:	Transportation Career Paths , Karen Aspelin, P.E., P.T.O.E. ITE International Director CEO, MaxGreen Transportation Engineers.
September 21 st , 2017:	Big-Data and Transportation Decision Making , Monique des los Rios-Urban Program Manager, Performance Maricopa Assoc. of Governments.
October 5 th , 2017:	Demand and Policy Intervention for EVs and AVs , Simon Washington, Ph.D. Prof. and Head of Civil Eng. Univ. of Queensland, Australia.
October 12 th , 2017:	Debonding of Bonded Concrete Overlays , Julie Vandebossche, Ph.D., P.E. Assoc. Professor University of Pittsburg.
October 19 th , 2017:	Innovations and Video Archive Pilot Project at Peoria , Steve McKenzie, P.E., P.T.O.E ITS Engineer City of Peoria, Arizona.
October 26 th , 2017:	Agent-based Modeling , Montasir Abbas, Ph.D., P.E. Assoc. Professor and Prog. Coordinator, Virginia Tech
November 2 nd , 2017:	Transportation Mobility Policy , Steven Polzin, Ph.D. Director, Mobility Policy Research, UTR, Univ. of South Florida.
November 9 th , 2017:	LEED ® ing and Smart Projects , Ali Fakhri, Ph.D., P.E., LEED AP Principal, Sustainability Engr. Group Scottsdale, Arizona.
November 30 th , 2017:	The End of Car Ownership , Mr. Peter Gigante, Head of Policy Research at Lyft, San Francisco, CA.
February 1 st , 2018:	Lessons learned in pavement design, evaluation and sustainability , Michael Mamlouk, PhD, PE, F. ASCE, Professor, Arizona State University.
February 8 th , 2018:	Discussion on the past, present and future of transportation infrastructure and opportunities , Matthew Clark, Policy Advisor on Transportation, Local Governments, and Public Pensions, Office of Arizona Governor Doug Ducey.

Other Events

September 8 th , 2017:	Tempe Traffic Management Center Tour
September 27 th -28 th , 2017:	ITS Arizona 24th Annual Conference
November 8 th , 2017:	Alumni Panel
February 21 st , 2018:	Kimley-Horn Presentation
Feb 28 th -March 1 st , 2018:	2018 AZ ITE/IMSAs Annual Spring Conference

Student Chapter Activities

Title: Linking Transportation Systems Management Operations and Active Demand Management – What Have We Learned and Where Does the Future Go?

Date: August 31st, 2017

Speaker: Dr. Yi-Chang Chiu

Description: Traditionally the transportation system management operation (TSMO) and demand management (ADM) have been conceived and implemented independently by transportation agencies.

In 2015, after 3 years of developments, Prof. Chiu synergized the university and venture resources to launch a platform called Metropia to pilot the concept of linking TSMO and ADM in several US cities. After two years of deployment, a vast amount of data has been collected, and comprehensive system and behavioral insights have been explored and revealed. In this presentation Prof Chiu and his doctoral student Ali Arian shared the findings, lessons learned, and insights from this journey and discussed where the future may unfold.

Title: A Benefit-Cost Evaluation of Improved Freeway Traffic Incident Management (TIM) Due to DPS & ADOT Co-location at the Traffic Operations Center

Date: September 7th, 2017

Speaker: Dr. Sarath Joshua

Description: In 2014, ADOT and MAG sponsored a 3-year pilot project that helped co-locate Department of Public Safety (DPS) troopers at the Arizona DOT Traffic Operations Center, with the goal of faster clearance of crashes through better coordination. The project has been active since January 2015. An analysis methodology was developed by MAG to perform a benefit-cost analysis that compared “before” conditions in 2014 to “after” conditions in 2015, first year of the pilot project. The analysis simulated an average day and accounted for congestion and additional traffic delay on the entire road system. It utilized data gathered by DPS on crash clearance, historical crash data and the simulation model Dynus-T. The estimated benefit-cost ratio attributable to the first-year of the co-location pilot program was estimated to be 250:1. Supported by the results of this evaluation, DPS troopers are now permanently co-located at the TOC. This seminar provided an overview of the analysis methodology.

Title: What to expect when choosing a career in Transportation Engineering

Date: September 15th, 2017

Speaker: Ms. Karen Aspelin

Description: Ms. Aspelin provided an overview of what a job as a transportation professional might entail both right out of school as well as later on in your career. Karen Aspelin, PE, PTOE, is an International Director of ITE representing the Western District. She recently started her own consulting engineering firm, MaxGreen Transportation Engineers, in Colorado Springs. Karen has a BS in civil engineering from the University of Virginia, and an MS in civil engineering from Texas A&M University. She is a licensed professional engineer in four states, and became a PTOE, a “Professional Traffic Operations Engineer,” when the first exam was offered in 1999.

Student Chapter Activities

Title: Big data – building an ecosystem for improved decision making

Date: September 21st, 2017

Speaker: Ms. Monique des los Rios-Urban

Description: The traditional approach of applying analytics and research results to transportation planning functions is generally linear and consecutive, seldom providing the opportunity for deeper understanding of user behavior and its broader implications. This presentation described an approach considering the interaction of variables that result in new insights and wider perspectives to enhance decision making. The current use of multiple data sources and applications by the Maricopa Association of Governments, the Regional Planning Organization will be presented, including the National Performance Management Research Data Set (NPMRDS), the Arizona DOT Freeway Management System, the HERE Analytic Traffic Patterns database as well as socioeconomic and other non-transportation databases. Visualization examples of analysis and results were presented including a live demo of MAGni↑ude, the Regional Transportation Dashboard.

Title: Demand and Policy Intervention for EVs and AVs

Date: October 5th, 2017

Speaker: Dr. Simon Washington

Description: Governments around the world are understandably and perhaps appropriately criticized for failing to adequately address congestion, environmental, and safety impacts of transport systems. Government policies, when coupled with new technological advances such as electric vehicles (EVs) and automated vehicles (AVs), are likely to play pivotal if not critical roles in delivering sustainable transport systems in the future. This presentation argued that government policies have been necessary to promote EVs, and are likely to be even more essential in managing the introduction of AVs. We first present research that supports the argument for needed policy intervention - using both carrots and sticks - to achieve penetration of EVs into mobility markets around the world. We then also show that economic tools - policy levers that can be used by governments - also have been effective in influencing behavior including vehicle purchase decisions. We then show results from a recent, comprehensive survey conducted in Australia to estimate demand for EVs and AVs - revealing willingness to pay for these technologies and how consumers will react to government policies. Finally, Dr. Simon Washington speculated about what government policies will be needed in the future when significant penetration of AVs has occurred, based on our current understanding of travel behavior.

Title: Debonding of bonded concrete overlays

Date: October 12th, 2017

Speaker: Dr. Julie Vandenbossche

Description: BCOA is becoming an increasingly popular alternative for the rehabilitation of asphalt pavements. This is due, in-part, to the development of design tools that have become readily available beginning in 2013 with the release of the BCOA-ME. A subset of the BCOA pavement structures can also now be designed using the AASHTO Pavement ME software. A primary mode of failure for these structures, fatigue cracking, is typically predicated by debonding between the asphalt and the concrete overlay. Partial debonding is assumed to occur in the BCOA-ME design procedure, while the Pavement ME procedure reduces the stiffness of the asphalt layer by 45% to artificially simulate an increase in stress resulting from debonding. Both procedures can benefit from a more rigorous debonding model. To address this limitation, a small scale laboratory studies were conducted to populate a database used in the development of a cohesive zone model in the finite element environment through an inverse analysis. Accelerated loading tests were then conducted on BCOA slabs to simulate the fatigue of the interface bond. This is used to measure the growth rate of the interface debonding so that the framework for a debonding model could be established. The design methodology for the BCOA-ME was introduced and a summary of the development of the framework for a debonding model was presented.

Student Chapter Activities

Title: Recent ITS developments in the city of Peoria**Date:** October 19th, 2017**Speaker:** Mr. Steve McKenzie

Description: Over the past 10 years, the City of Peoria has been adding ITS infrastructure through local funds as well as Federal funding. Currently we have a state of the art Traffic Management Center with communication established to 118 of our 120 signalized intersections. The majority of the communication is through fiber optic cable with a few isolated intersections using wireless radio technology. All of the signalized intersections are fully actuated (meaning they have detection for all phases) and are equipped with emergency vehicle preemption sensors on all approaches. Many of the other ITS components that Peoria is using to help reduce delays and progress traffic will be discussed during the presentation. In addition, Peoria recently received the Traffic Engineering Council Technical Achievement Award at the Joint ITE/CITE 2017 Annual Meeting and Exhibit, held July 30–August 2, in Toronto, ON, Canada. The award was for a pilot project that was launched to determine whether it is technically feasible to archive intersection video to investigate fatal and serious injury crashes and felonies using a two-pronged approach—technical and policy-based. Traffic engineers have deployed thousands of CCTV cameras at intersections for detection and real time surveillance during the last two decades. This project provides policy guidance and a technically feasible approach for improving the investigation of serious collisions and improving intersection safety. A couple example videos of crashes that were captured were shown.

Title: The Five Elements of Agent-based Modeling—a Transportation Perspective**Date:** October 26th, 2017**Speaker:** Dr. Montasir Abbas

Description: Motivated by the need to model a complex and evolving intelligent transportation system in a collaborative framework, we utilize and describe the five basic elements of agent-based modeling with several implementation examples from the VT-SCORES research lab. The research components discussed range from driver behavior, car-following models, adaptive control, connected vehicles, and variable speed limit applications. It was shown examples of extracting driver behavior from large datasets, modeling evolving system behavior with intelligent agents, integration of state machines and communication frameworks in a connected vehicles environment, and the ramifications of neglecting learning in modeling. The presented agent-based framework is intermodal, and can incorporate performance characteristics and needs of different users (cars, trucks, busses, pedestrians, and bikes). It was also addressed current and future applications for emergency vehicles and the impact of path-based priority tunnels provided for emergency vehicles in each application.

Title: Transportation's Transformation: The Confluence of Demographic, Economic and Technology Trends**Date:** November 2nd, 2017**Speaker:** Dr. Steven Polzin

Description: The presentation focused on how emerging travel trends may impact travel demand. Attention was focused on current trends and how future travel behavior might be impacted given economic, demographic, and technology trends. Observations on our current understanding of travel behavior, the adequacy of our data and theory of travel behavior, and the implications on transportation planning and investment was offered.

Title: ASU-ITE Alumni Panel: What is it like to be a transportation engineer?**Date:** November 8th, 2017**Speakers:** Ellie Volosin, Michelle Beckley and Hossein Jalali

Description: ASU students joined alumni currently working on the field of transportation engineering for an informal Q&A discussion about their experiences at ASU and their careers so far.

Student Chapter Activities

Title: LEED@ing and Developing Smart Projects**Date:** November 9th, 2017**Speaker:** Dr. Ali Fakih

Description: With the development market slowly recovering, feasibility studies are key for new projects as they enhance the success rate by evaluating multiple parameters. As professionals, we want to engineer all of the client's ideas into reality, but designing without assessing the existing infrastructure, constraints and limitations of a site can make or break a project in a blink of an eye. This talk discussed the importance of feasibility studies, in addition to exploring the benefits of soil stabilization in transportation.

Title: The end of car ownership**Date:** November 30th, 2017**Speaker:** Mr. Peter Gigante

Description: The paradigm of personal car ownership has dominated American mobility for nearly a century, with broad-reaching negative externalities for safety, equity, congestion, and environmental quality. Now, that stagnant dynamic is poised for a dramatic shift. New transportation technologies including shared mobility platforms and autonomous vehicles appear likely to precipitate changes across nearly all dimensions of the transportation landscape, including a fundamental transition away from the current car ownership model.

Title: Lessons learned in pavement design, evaluation and sustainability**Date:** February 1st, 2018**Speaker:** Michael Mamlouk

Description: Pavements have several unique characteristics that distinguish them from other civil engineering structures and make them hard to design, evaluate and maintain. Unlike other structures, a typical pavement has a relatively short service life, which requires the designer to incorporate "life" in the design process. Another unique property of a pavement is its unconventional definition and criteria of failure, such as 5% cracking, 1/2-inch rutting, certain level of roughness, etc. Compounding the problem is the fact that a pavement is a multilayered system that is subjected to dynamic loads with different load magnitudes, different vehicle axle configurations, and unpredictable traffic growth. Also, pavement materials are highly susceptible to environmental conditions such as temperature, rain, freeze and thaw, aging, etc. This seminar provided an overview of basic design principles of both flexible and rigid pavements, factors affecting pavement performance, pavement distresses, methods of pavement evaluation, and best practices of pavement preservation and sustainability.

Title: Discussion on the past, present and future of transportation infrastructure and opportunities**Date:** February 8th, 2018**Speaker:** Matthew Clark

Description: The presentation focused on how Arizona's transportation system and infrastructure developed and what challenges we face today. It also looked at the needs of current and future transportation infrastructure. Finally, we reviewed the opportunities that new technology advancements provide when it comes to the movement of people and goods and how that will impact future planning for infrastructure development.

Title: Kimley-Horn Presentation**Date:** February 21st, 2018**Speaker:** Michael Gorius and others

Description: Representatives from the consulting firm Kimley-Horn gave a presentation following the career fair about the opportunities available at their company.

Acknowledgements

The following organizations and individuals have our sincere gratitude for their valuable support and time given to ASU ITE activities:

- Arizona Section ITE
- Arizona ITS
- Ellie Volosin, AZ ITE Student Chapter Liaison
- Dr. Ram Pendyala, Professor, Arizona State University
- Dr. Xuesong Zhou, Associate Professor, Arizona State University
- Dr. Mikhail Chester, Assistant Professor, Arizona State University
- Dr. Yingyan Lou, Assistant Professor, Arizona State University
- Dr. Michael Mamlouk, Professor, Arizona State University
- Dr. Kamil E Kaloush, Associate Professor, Arizona State University
- Dr. Sara Khoeini, Arizona State University
- School of Sustainable Engineering and the Built Environment, Arizona State University
- Graduate Professional Students Association (GPSA) at ASU

Member Roster

LAST NAME	FIRST NAME	DEGREE	GRADUATION
Aggarwal	Himanshu	BSE Civil	2018
Berry	Erick	MS Transportation	
*Capasso da Silva	Denise	PhD Transportation	2021
D'Angelo Jr	Steven	BSE Civil	2019
*DeSimone	Miranda	BSE Civil	2018
Eckert	Nickolas	BSE Civil	2019
Gundla	Akshay	PhD Transportation	
*Kim	Taehooie	PhD Transportation	2021
Li	Peiheng	PhD Transportation	2017
MacDonald	Michael	BSE Civil	
Mahmoudi	Monireh	PhD Transportation	2018
*Miri	Golnoosh	MS Transportation	2018
Rai	Gurpreet	PhD Transportation	
*Sharda	Shivam	PhD Transportation	2021
*Vadlamani	Sravani	PhD Transportation	
Xiao	Jun	PhD Transportation	
*Yudi	Lei	MS Transportation	2018
*Yuen	Kristina	MS Transportation	2018

* ITE Student Member