





## 2022 Tran-SET Conference

August 31 – September 02, 2022 | Hosted by the University of Texas at San Antonio (UTSA) AT&T Hotel and Conference Center | Austin, TX

## Welcome

Welcome to the 2022 Tran-SET Conference!

On behalf of the Transportation Consortium of South-Central States (Tran-SET), I am honored to welcome you to the 2022 Tran-SET Conference, hosted by the University of Texas at San Antonio (UTSA).



Tran-SET is a regional University Transportation Center (UTC) comprising of 11 partnering institutions across five states (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas) in Federal Highway Administration (FHWA) Region 6, aiming to address the accelerated deterioration of our transportation infrastructure through the development, evaluation, and implementation of cutting-edge technologies, novel materials, and innovative construction management processes: from research to implementation. We believe that our focus on implementation makes us unique and our strong alliances with industry, academic, and government agencies will help us succeed and reach our goals.

The 2022 Tran-SET Conference will bring together academics, industry professionals, state DOTs, and other government agencies interested in solving transportation challenges facing Region 6. Participants in this conference will be introduced to Tran-SET's research, education,

workforce development, and technology transfer activities. Attendees will see a variety of technical contributions covering multiple transportation fields, including structures, geotechnical, safety, intelligent transportation systems, policy and planning, pavements, asphalt, and concrete materials. In parallel, the Student Poster sessions comprising of several student posters from different institutions in the region are being showcased at the conference.

Please enjoy the technical sessions, poster competition, and the conference! Your presence is an indication that you are committed to making a positive difference, not only to our transportation industry but also throughout your state jurisdiction.

We hope you have a productive meeting and enjoy all that the conference has to offer! If there is anything I can do, please do not hesitate to contact me via email at marwa@lsu.edu or the Tran-SET team at transet@lsu.edu.

Sincerely,

Marwa Hassan, Ph.D., PE Civil (VA) Director of Tran-SET UTC

#### Welcome Message from the Chair of the 2022 Tran-SET Conference

On behalf of the organizing committee, I warmly welcome you to the 2022 Transportation Consortium of South-Central States (Tran-SET) Conference, virtually hosted by University of Texas at San Antonio.

This is the 5<sup>th</sup> annual conference of the Tran-SET. The theme of this conference is integrating cutting-edge technologies, big data and AI-based techniques to achieve transportation equity and maintain durable, sustainable and resilient transportation infrastructure. The purpose of this Conference is to educate, engage, and work with varied stakeholders (academics, industry professionals, state DOTs, and other government agencies) to solve transportation challenges facing the South-Central United States. The Conference is an opportunity to inform stakeholders on Tran-SET's research, education, workforce development, and technology transfer activities. This includes showcasing our technical contributions in a wide range of transportation fields including pavements, asphalt and cement concrete materials, structures, geotechnical, safety, intelligent transportation systems, and policy and planning.



There were 60 submissions (36 full papers for presentation and publication, 18 abstracts for student presentation/poster presentations, and 6 poster only submissions) for this conference. Topics covered in these submissions include but are not limited to novel materials to enhance durability of cement concrete materials, advanced and renewable materials to improve performance of asphalt mixtures, implementation of innovative construction management processes, environmentally-friendly soil stabilization techniques, effective and simplified approaches to evaluate pavements performance, cost-effective monitoring and preservation of structures, development of safety assessment approaches for infrastructure, and impact of Intelligent Transportation Systems (ITS) on economic development. The submitted papers went through a peer-review process before they were accepted for publication in the conference proceedings. We expect a few hundred participants to attend this conference. Please enjoy the technical sessions, poster presentations, and other conference events!

To put a conference of this magnitude together is not a small task. To this end, I sincerely appreciate all members of the conference steering and scientific committees, speakers and presenters, authors and reviewers, participants, UTSA staff and administrators, student volunteers, the Tran-SET family, USDOT, and sponsors for their efforts and contributions in making this event successful. Please do not hesitate to contact me via email at samer.dessouky@utsa.edu.

Sincerely,

Samer Dessouky, Ph.D., P.E. Chair, 2022 Tran-SET Conference Associate Director of Tran-SET University of Texas at San Antonio

# Keynote Speaker

#### Chandra Bhat, Ph.D., P.E.

University Distinguished Teaching Professor Joe J. King Endowed Chair Professor in Engineering Department of Civil, Architectural and Environmental Engineering Department of Economics (Courtesy Appointment) The University of Texas at Austin

Dr. Chandra R. Bhat has been a pioneer in the formulation and use of statistical and econometric methods to analyze human choice behavior for transportation and urban policy design. His current research includes the social and environmental aspects of transportation, planning implications of emerging technology and mobility options, equity considerations in transportation safety, and data science and predictive analytics. He is a recipient of many awards, including the 2022 Institute of Transportation Engineers (ITE) Theodore M. Matson Memorial Award, the 2017 Council of University Transportation Center (CUTC) Lifetime Achievement Award, the 2015 American Society of Civil Engineers (ASCE) Frank M. Masters Award, and the



2013 German Humboldt Award. He was listed in 2017 as one of the top ten transportation thought leaders in academia by the Eno Foundation. His former students are now leaders in the travel modeling field, and many have received national-level dissertation/thesis awards for their research under Dr. Bhat's guidance. Dr. Bhat currently serves as the Editor-in-Chief of *Transportation Research – Part B*.

# Keynote Speaker

Laura Rogers Deputy Director, The Ray



Laura Rogers is the Deputy Director at The Ray, responsible for the development and execution of operational policies for the organization, and transferring and scaling the sustainable technologies demonstrated on The Ray Highway to transportation agencies nationally and internationally. Prior to joining The Ray, Laura worked for 14 years in the federal, state and private sectors in the areas of environmental program management, sustainability, energy, and regulatory compliance. Most recently, Laura led the energy, sustainability and environmental stewardship policies and programs at Maryland Department of Transportation Headquarters. Laura conceptualized, designed and executed the MDOT statewide solar program.

#### Jason JonMichael

Assistant Director Austin Transportation

Jason JonMichael serves as an Assistant Director in Austin Transportation where he oversees Smart Mobility, Public-Private Partnerships, Placemaking, Mobility Services, Parking Enterprise, and Travel Demand Management. He leads a crossfunctional team of community, mobility, technology, policy, data, and user experience specialists to deliver outcomes that improve mobility, safety and access to Austin residents.

A national leader and subject matter expert in smart cities, Jason is also an Executive Board Member, and Past Chairman of OmniAir®, the global certification organization for vehicle communications; Executive Board Member of the Global Autonomous Vehicle Partnership, advancing emerging and nextgen vehicle technologies; and President of the Austin Smart Cities Alliance, a local non-profit member based organization of public, private, academic, and individual contributors.



#### George Liang, Ph.D.

Director of Product and System Application Engineering Infineon Technology American Corporation



George Liang is the director of product and system application engineering for switching power and battery powered applications at Infineon Technology American Corporation. He leads an engineering team with focus on system power solutions for smartphone, PC, datacenter, telecom network, PCs, battery energy storage system, EV charging, renewable energy, and motor drives. George was the director of application and system engineering for PMIC products in automotive, industrial, computing and communication applications at Integrated Device Technology (acquired by Renesas) until July 2018. Prior joining IDT in May 2015, George had worked at Intersil Corporation (acquired by Renesas) since November 2000 and had hold various engineering and business leadership positions for broad range of power management IC products. Prior joining Intersil in November 2000, George was the R&D manager and power architect at Heart Interface

(Acquired by Xantrex) for AC/DC and DC/AC power supplies for RV, Marine and Renewable energy applications.

George Liang has extensive R&D and marketing experiences on various semiconductor products including analog and digital controllers for isolated and non-isolated DC/DC power converters, PFC controllers, Switching Regulators, integrated power Modules, PMICs, LDOs, Mosfet Drivers, Hot-Plug and Oring Control products etc. He is the inventor of 12 US/International patents and the author of over 40 technical papers. He received his Ph. D. degree in electrical engineering from Chongqing University, China in July 1995.

#### **Harley Hubbard**

Sustainable Transportation Manager City of San Antonio, Office of Sustainability

Harley Hubbard (she/her/hers) is the Sustainable Transportation Manager at the City of San Antonio Office of Sustainability. Harley's work focuses on implementing transportation initiatives from the City's Climate Action & Adaptation Plan. Her projects aim to increase the adoption of electric transportation, improve air quality, and promote multi-modal commuting. In addition to her responsibilities with the City, Harley is an adjunct faculty member at San Antonio College where she teaches natural sciences courses. Harley also serves on the board of Women in Transportation's San Antonio Region chapter.

Harley has earned three degrees from Texas Tech University, a Bachelor of Science in Zoology, a Professional Science Master's in Environmental



Sustainability & Natural Resource Management, and a Master of Business Administration. She also maintains credentials as a LEED Green Associate and American Association of Airport Executives Certified Member.

#### **Beverly West**

Strategy and Planning Section Director Texas Department of Transportation



Beverly West currently serves as the Strategy & Planning Section Director in the Strategic Planning Division of The Texas Department of Transportation. Her role includes oversight of four programs: Emerging Technologies Initiatives, Business Intelligence & Performance Management, Enterprise Policy Governance, and Continuity of Operations.

Beverly's 20+ year public service career at TxDOT is composed of right of way, compliance programs and innovative strategies. In previous roles, she was responsible for oversight of the statewide real estate leasing program, saltwater pipeline leasing program, establishment of the small cell telecommunication leasing program, creating innovative revenue streams for the agency as well as an integral part of the establishment of the TxDOT Compliance Program. Prior to joining TxDOT, she gained valuable experience in

the private sector specializing in land development after graduation from Baylor University.

Her teams lead the CAV Task Force, UAM Committee, Texas Technology Taskforce, and the Emerging Technology Transportation Plan. Beverly currently serves on Performance Management committees for AASHTO and TRB and represented TxDOT at the FHWA Western States Summit in 2017-2019 and the Mid-Atlantic States Summit in 2019 speaking on telecommunication and asset monetization. She is a two-time recipient of TxDOT's Journey Toward Excellence Award for TxDOT's Internal Compliance Program and Continuity of Operations Program.

#### Laura Morrison

Executive Director Texas Electric Transportation Resources Alliance (TxETRA) Education Fund

Working to achieve equitable and universal adoption of electric transportation in Texas by 2035, Laura leads the TxETRA Education Fund (a 501(c)(3) organization) in developing policies and programs that bring communities and resources together to reduce transportation emissions, to address concerns about climate change, health, health costs, the economy and environmental justice. Efforts have led to fleet electrification of major metro counties, university collaborations on workplace and student EV charging infrastructure, and grassroots policy recommendations on implementing the Federal Justice40 directive in the U.S. National Electric Vehicle Infrastructure funds in Texas. The organization is currently developing an Electric Transportation Roadmap for the state of Texas, in collaboration with a wide variety of stakeholders.



Prior to this work and with deep involvement in the Austin

community, Laura served as an Austin City Council member for 2 terms, focusing on community development and public health, emerging technology and digital inclusion, and sustainable water and energy policies. During her service she was often recognized for her efforts, including as a Champion for Working Families, the Grand Marshall of the Pride Parade, an Honorary Ambassador to the Sister City of Oita, Japan and for her advocacy for Families and Youth. She was also an engineer with Lockheed Martin, developing decision support and business compliance systems. She has master's and bachelor's degrees in mathematics from the University of California, Berkeley, and San Diego respectively, and a graduate certificate in disaster management from the University of North Carolina School of Public Health.

Joe Jankosky

Director, Utility Vertical – Americas Intel



Joe Jankosky is the Director, Utility Vertical - Americas at Intel. His primary role is to integrate Intel's product development teams with the broader ecosystem to solve utilities' greatest challenge – to create a digital infrastructure to optimize the physical. Doing so enables greater insight into grid operations; increases the onboarding of renewables; improves safety, reliability and security; and lowers O&M cost. He also drives Intel's utility initiatives in EV charging infrastructure.

Before Intel, Joe led the development of energy management solutions and new business models for Time Warner Cable's IntelligentHome division. He began his energy career negotiating long-term power contracts at Southern California Edison and then created the utility's strategic alliances with IoT manufacturers, including the first Demand Response pilot for Nest thermostats. Joe received his BA, MBA and MPA degrees

from Stanford, USC and Harvard respectively.

Keynote Speaker

#### **Brian Dietrich**

Sales Manager Intel

Brian is currently assigned to Intel's Government & Education industry vertical, where he has commercial business responsibilities for state government agencies, local governments and institutions of higher education in the Texas marketplace. In this assignment, Mr. Dietrich manages strategic demand generation programs, tracks technology consumption and assists with technology transformation projects in education, healthcare, state/local government, energy and broadband.



#### **ABOUT TRAN-SET**

The theme of the Center is "Solving Emerging Transportation Resiliency, Sustainability and Economic Challenges through the Use of Innovative Materials and **Construction Methods:** From Research to Implementation." The Center's Mission is to support all phases of research, technology transfer, workforce development, and outreach activities of emerging technologies that can solve transportation challenges in Region 6.

#### **ABOUT REGION 6**

The combined Region 6 UTC team represents a collaborative partnership between nine major institutions and two community colleges. This partnership will combine the distinct characteristics and strengths of each institution to deliver a Center with unique capabilities to tackle regional transportation challenges.

# Tran-SET Team

**CENTER DIRECTOR** Dr. Marwa Hassan

#### **KEY PERSONNEL**

Dr. Charles Berryman Dr. Heena Dhasmana Dr. Chao Wang

#### **ASSOCIATE DIRECTORS**

Dr. Zahid Hossain Mr. Timothy Dykes Dr. Gholam Ehteshami Dr. Craig Newtson Dr. Samir Ahmed Dr. Raghava Kommalapati Dr. Ibrahim Karaman Dr. Susan Bogus Dr. Stefan Romanoshi Dr. Samer Dessouky

#### **PROGRAM DIRECTORS**

Dr. Mostafa Elseifi Dr. Louay Mohammad Dr. Sam Cooper, Jr. Dr. Tyson Rupnow Dr. Paola Bandini Dr. Mahmoud Reda Taha Dr. Anand Puppala

#### CENTER ADVISORY BOARD

Eric Kalivoda, Chair Kathy Trahan Mark Headley James Setze Patrick Gallagher Connie Fabre Fadi Faraj Will Seaman Susan Schowen Ava Dejoie David Hadwiger Alan Stevenson Brett Haggerty Enad Mahmoud Bryan Sims

#### CONFERENCE STEERING

**COMMITTEE** Dr. Samer Dessouky, Chair Dr. Heena Dhasmana, Co-Chair Dr. Sara Ahmed Dr. Zahid Hossain

## Program at-a-Glance

All times mentioned are in United States Central Daylight Time (CDT), which is the Coordinated Universal Time (UTC) – 05:00 in September 2022.

#### Wednesday | August 31, 2022

1:00pm – 5:00pm	<b>Central Advisory Board (CAB) Meeting</b> By Invitation Only		
Thursday   Septem	ber 1, 2022		
7:30am – 8:00am	Breakfast		
8:00am – 9:00am	<b>Opening Session/Keynote Speaker (Dr. Chandra Bhat)</b>		
9:10am – 12:00pm	Student Poster Competition		
9:10am – 10:30am	Concurrent Technical Session 1A Intelligent Transportation Systems Concurrent Technical Session 1B Structural		
10:30am – 10:40 am	Break		
10:40am – 12:00pm	Concurrent Technical Session 2A Cement Concrete Concurrent Technical Session 2B Geotechnical Concurrent Technical Session 1B Safety		
12:00pm – 1:20pm	Lunch Break (with Keynote Speaker) (Mr. Brian Deitrich)		
1:30pm – 5:00pm	Tran-SET Summit on Electric Vehicle Usage and Integration in the Modern Economy		
6:00pm – 9:00pm	Dinner and Social Event		

# Program at-a-Glance

#### Friday | September 2, 2022

7:30am – 8:00am	Breakfast		
8:00am – 9:00am	<b>Opening Session/Keynote Speaker (Ms. Laura Rogers)</b>		
9:10am – 12:00pm	Student Poster Competition		
9:10am – 10:30am	Concurrent Technical Session 3A Structural Concurrent Technical Session 3B Asphalt Materials		
10:30am – 10:40 am	Break		
10:40am – 12:00pm	Concurrent Technical Session 4A Pavements Concurrent Technical Session 4B Cement Concrete Concurrent Technical Session 4C Construction		

#### **STUDENT POSTER COMPETITION**

Please join us as students present their research and participate in a poster competition on **Thursday, September 1<sup>st</sup> from 9:10-12:00 pm (CDT)**. There are 14 posters in the contest. These posters will be judged by a panel and prizes along with certificates will be awarded for the first, second, and third place. The fourth and fifth places will receive certificates.

THURSDAY | 9:10am - 10:30am | Session 1

### Session 1A: Intelligent Transportation Systems (ITS)

Moderators: TBD Location: Salon D

As transportation agencies are asked to maximize the benefits of their investments in infrastructure, they are continually exploring more intelligent, cost-effective solutions. This session will investigate such solutions for a wide range of transportation issues.

#### Assessment of drivers' behavior and traffic safety in presence of connected and automatic vehicle platoon near on-ramp and off-ramp

*Taniya Sultana* – Louisiana State University *Hany Hassan* - Louisiana State University

#### Analysis of Large Truck Crashes in Texas

Hatim Sharif - U of Texas at San Antonio Khondokar Billah - U of Texas at San Antonio Samer Dessouky - U of Texas at San Antonio

### Traffic Signal recognition using end-to-end deep learning

Tonmoy Sarker - Louisiana State University Xiangyu Meng - Louisiana State University

#### Reinforcement learning algorithm for autonomous vehicles decentralized collision-free trajectory planning

Joseph Clemmons - U of Texas at San Antonio Umar Jamil - U of Texas at San Antonio Alan Chen - U of Texas at San Antonio Ashley Land - U of Texas at San Antonio Sara Ahmed - U of Texas at San Antonio Yufang Jin - U of Texas at San Antonio

#### Session 1B: Structural

Moderators: TBD Location: Salon E

This session further explores Tran-SET's research theme of "Preserving the Existing Transportation System" by showcasing research projects involving the use of innovative materials/techniques to improve the resiliency and durability of transportation structures.

#### Climate-induced bridge condition deterioration evaluation using mechanics-based deterioration models

*Ao Du* - U of Texas at San Antonio *Jiannan Cai* - U of Texas at San Antonio

#### Cone Penetration test (CPT) based liquefaction hazard investigation in Mississippi county of northeast Arkansas

Rupesh Mahat - Arkansas State University Ariful Md. Hasan - U of Tennessee Knoxville Zahid Hossain - Arkansas State University

#### Studying steel fiber reinforcement for 3D Printed elements and structures

Hassan Ahmed - Louisiana State University Ilerioluwa Giwa - Louisiana State University Daniel Game - Louisiana State University Marc Hebert - Louisiana State University Hassan Noorvand - Louisiana State University Gabriel Arce - Virginia DOT Marwa Hassan - Louisiana State University Ali Kazemian - Louisiana State University

### Development of metakaolin fly ash for transportation infrastructure

Oscar Huang - Texas A&M University Ruwa Abufarsakh - Louisiana State University Hassan Noorvand - Louisiana State University Gabriel Arce – Virginia DOT Marwa Hassan - Louisiana State University Miladin Radovic – Texas A&M University

Session 2A: Cement Concrete

Moderators: TBD Location: Salon D

This session presents the application of novel materials to increase the durability of concrete materials while using locally available by products to create high-performing and cost-effective solutions to engineering problems.

### Effect of Portland limestone cement (Type IL) combined with bagasse ash on the compressive strength of ECC

Samuel Guidroz - Louisiana State University Omar Omar - Louisiana State University Sujata Subedi - Louisiana State University Hassan Noorvand - Louisiana State University Marwa Hassan - Louisiana State University

#### Towards 3D printable Engineered Cementitious Composites: Mix design proportioning, flowability, and mechanical performance

Muhammad Zafar - University of New Mexico Amir Bakhshi - University of New Mexico Maryam Hojati - University of New Mexico

#### Effects of Supplementary cementitious materials on the long-term durability properties of concrete

Abu Akid - Arkansas State University Raiyan Chowdhury - Arkansas State University Zahid Hossain - Arkansas State University Marwa Hassan - Louisiana State University Alan Meadors - OK/AR Chapter, ACPA

#### Stress response model for engineered cementitious composites Ultra-thin white topping

Ricardo Hungria - Louisiana State University Hassan Noorvand - Louisiana State University Marwa Hassan - Louisiana State University Heena Dhasmana - Louisiana State University

#### Session 2B: Geotechnical Moderators: TBD Location: Salon E

In Region 6, many geotechnical issues are affecting transportation infrastructure including the presence of clay soils, marshlands, coastal zones and extreme weather conditions. This session presents research on topics relevant to the south central states including soil stabilization using sustainable materials and impact of extreme weather on the stability of transportation structures.

THURSDAY | 10:40am - 12:00pm | Session 2

Use of rice husk ash and hydrated lime as stabilizing agents for poor subgrade soils and embankments *Fares Tarhuni* - Arkansas State University *Zahid Hossain* - Arkansas State University

#### Evaluation of sustainable and environmentally friendly stabilization of cohesionless sandy soil for transportation infrastructure

Oscar Huang - Texas A&M University Jungyeon Jang - Texas A&M University Surya Sarat Congress - Texas A&M University Anand J. Puppala - Texas A&M University Miladin Radovic - Texas A&M University

### Calibrations of the innovative S3F sensor for shear stress measurements in soil

Hussein Alqrinawi - Louisiana State University Hai Lin - Louisiana State University Shengli Chen - Louisiana State University

#### Investigation of the impact of rainfall patterns on highway slope stability

David Burrows – PrairieView A&M University Md. Jobair BinAlam – PrairieView A&M University Raghava Kommalapati – PrairieView A&M University Hongbo Du – Prairie View A&M University Hatim Sharif – U of Texas at San Antonio

THURSDAY | 10:40am - 12:00pm | Session 2

#### Session 2C: Safety

Moderators: TBD Location: Salon AB

As transportation engineering practitioners and researchers, it is important to think about the transportation system holistically when addressing factors such as user perspective, equity, and their interaction with the system components. This session introduces a variety of user-related issues and potential solutions in Region 6.

### Life cycle environmental impacts of renewable diesel use for transportation in Texas

Hongbo Du - PrairieView A&M University Raghava Kommalapati - PrairieView A&M University Md. Jobair BinAlam - PrairieView A&M University

### Benefits of e-ticketing in Highway construction and its future integration

Karthik Subramanya - U of Texas at Arlington Sharareh Kermanshachi – U of Texas at Arlington Apurva Pamidimukkala - U of Texas at Arlington Karthikeya Loganathan - U of Texas at Arlington

#### Occupational fatigue and physical health of construction workers in extreme hot weather

Sanjgna Karthik - U of Texas at Arlington Sharareh Kermanshachi - U of Texas at Arlington Karthikeya Loganathan - U of Texas at Arlington

### Evaluation of operational challenges in highway construction material delivery

Karthik Subramanya - U of Texas at Arlington Sharareh Kermanshachi – U of Texas at Arlington Apurva Pamidimukkala - U of Texas at Arlington Karthikeya Loganathan - U of Texas at Arlington

## Student Poster Session

 $THURSDAY \mid 9{:}10am-12{:}00pm$ 

Moderator: TBD Location: Pre-function area

Poster ID	Poster Title	Student Name	Student Affiliation
1272	Liquefaction analysis of Mississippi county of Northeast Arkansas using CPT data	Rupesh Mahat	Arkansas State University
2076	Effect of Warm Mix Additives on Asphalt Binders Rheology, Chemistry, and Moisture Susceptibility	Md. Najmsuh Sakib Oyan	Arkansas State University
2313	Comparative Analysis of the Environmental Impacts of Concrete 3D-Printed Bridges	Sara Miryousefi Ata	Louisiana State University
3317	Drying Shrinkage and Alkali-Silica Reaction of Concrete Incorporating Supplementary Cementitious Materials	Abu Sayed Mohammad	Arkansas State University
4127	Moisture Susceptibility and Chemical Analysis of Recovered Asphalt Binders	Md. Najmsuh Sakib Oyan	Arkansas State University
6636	Permeable Curbs for Storm water Pollution Mitigation	Aldo Hernandez	University of Texas at San Antonio
9435	Soil Stabilization with Rice Husk and Hydrated Lime	Fares Tahruni	Arkansas State University
-	Energy Efficient and Battery SOC-aware Coordinated Control of Connected and Autonomous Electric Vehicles	Shaopan Guo	Louisiana State University

## Student Poster Session

 $THURSDAY \mid 9{:}10am-12{:}00pm$ 

Moderator: TBD Location: Pre-function area

Poster ID	Poster Title	Student Name	Student Affiliation
-	Effect of Portland Limestone Cement (Type IL) Combined with Bagasse Ash on the Compressive Strength of Engineered Cementitious Composites	Samuel Guidroz	Louisiana State University
-	Development of Ultra-High Performance Engineered Cementitious Composites for 3D Printing Applications	Daniel Game	Louisiana State University
-	Evaluation of Engineered Cementitious Composites (ECC) Reinforced with Cellulose Nanocrystals	Andrea Gavilanes	Louisiana State University
-	Stress Response Model for Engineered Cementitious Composites Ultrathin White-topping (ECC-UTW)	Ricardo Hungria	Louisiana State University
-	Fresh And Hardened Properties Of Potassium Hydroxide Activated Metakaolin And Fly Ash-Based Geopolymer Mortars	Ruwa Abufarsakh	Louisiana State University
-	Effect of Using Calcium Lactate with Bacillus Pseudofirmus Bacteria on Self-Healing Efficiency of Bacterial Concrete	Omar Omar	Louisiana State University
-	Traffic Crash Data Analysis Using CRIS Database in Texas	Tulan Sampath Bandara	University of Texas at San Antonio
-	Development of Virtual Driving Environment Using CARLA, SUMO and OpenCDA for Data Collection for Reinforcement Learning	Alan Chen	University of Texas at San Antonio
-	AI-powered Optimal Charging Strategy for Electric Vehicles	Umar Jamil	University of Texas at San Antonio

Session 3A: Structural Moderators: TBD Location: Salon D

This session focuses on discussing research efforts in improving the structural integrity of construction projects in Region 6.

### Case study of modulus of deformation of railway earthworks by static plate load test

*Md. Al-Amin* - China Civil Engineering Construction Corporation *Zahid Hossain* - Arkansas State University

#### Spatial variability effects of wall erosion on assessment of Reinforced concrete sanitary sewer pipes (RCSSPs)

*Moein Ebrahimi* - U of Texas at Arlington *Himan Hojat Jalali* - U of Texas at Arlington

#### Fresh and hardened properties of potassium hydroxide activated metakaolin and fly-ash based geopolymer mortars

Ruwa Abufarsakh - Louisiana State University Hassan Noorvand - Louisiana State University Gabriel Arce - Virginia DOT Marwa Hassan - Louisiana State University Sujata Subedi - Louisiana State University

### **Rebar geometric information inspection using RGBD-UAV system**

Mahsa Sanei – University of New Mexico Ali Khorasani – University of New Mexico Fernando Moreu – University of New Mexico

#### Session 3B: Asphalt Materials Moderators: TBD

Moderators: TBD Location: Salon E

One of the four major research themes of Tran-SET is "Enhancing the Durability and Service Life of Infrastructure". This session explores this theme by applying cutting-edge technologies and novel materials to asphalt concrete materials.

FRIDAY | 9:10am - 10:30am | Session 3

#### Identification of low-density polyethylene, HDPE, and polypropylene in asphalt binder with a hand-held FTIR spectrometer

*Md. Reazul Islam* - Louisiana Tech University *Nazimuddin Wasiuddin* - Louisiana Tech University

#### Rheological, chemical and water resistance properties of asphalt binders modified with selected warm mix additives

*Md. Najmsuh Sakib Oyan* - Arkansas State University *Zahid Hossain* - Arkansas State University

#### A laboratory evaluation on moisture susceptibility of dense-graded asphalt mixtures

Md. Tanvir Sarkar - Arkansas State University Md. Najmsuh Sakib Oyan - Arkansas State University Mostafa Elseifi - Lousiana State University Zahid Hossain - Arkansas State University

### Prediction of performance of asphalt overlays using Decision tree algorithm

Elise Mansour - Louisiana State University Momen Mousa – Sam Houston State University Marwa Hassan - Louisiana State University

FRIDAY | 10:40am - 12:00pm | Session 4

#### Session 4A: Pavements

Moderators: TBD Location: Salon D

This session further explores Tran-SET's research theme of "Preserving the Existing Transportation System" by showcasing research projects involving several novel materials/techniques and health monitoring systems to enhance the durability of transportation structures in Region 6.

#### Prediction of pavement smoothness and aggregate segregation using CNN and image processing *Ramchandra Paudel* - Louisiana State University *Mostafa Elseifi* - Louisiana State University

#### A rapid in-situ test method for the determination of oxidative field aging using a handheld FTIR spectrometer

*Md. Reazul Islam -* Louisiana Tech University *Delmar Salomon -* Pavement Preservation Systems, LLC

Nazimuddin Wasiuddin - Louisiana Tech University

#### Structural health assessment of pavement sections in the south-central states using FWD parameters

Nitish Bastola - U of Texas at Tyler Mena Souliman - U of Texas at Tyler Samer Dessouky - U of Texas at San Antonio

#### Mechanical properties of Ultra-high performance concrete containing natural pozzolan and metakaolin

Seyedsaleh Mousavinezhad - New Mexico State University

Gregory Gonzales - New Mexico State University William Toledo - New Mexico State University Judit Garcia - New Mexico State University Craig Newston - New Mexico State University

#### Session 4B: Cement Concrete Moderators: TBD Location: Salon E

In this session, innovative efforts in creating sustainable cement concrete applications will be discussed.

#### **Development of Ultra high performance Engineered Cementitious Composites for 3D printing applications**

Daniel Game - Louisiana State University Ilerioluwa Giwa - Louisiana State University Hassan Ahmed - Louisiana State University Hassan Noorvand - Louisiana State University Gabriel Arce - Virginia DOT Marwa Hassan - Louisiana State University Ali Kazemian - Louisiana State University

Direct shear bond assessment between Ultra highperformance concrete and normal strength concrete William Toledo - New Mexico State University Seyedsaleh Mousavinezhad - New Mexico State University Gregory Gonzales - New Mexico State University Craig Newston - New Mexico State University

#### **Evaluation of Engineered cementitious composites** reinforced with cellulose nanocrystals

Andrea Gavilanes - Louisiana State University Hassan Noorvand - Louisiana State University Sujata Subedi - Louisiana State University Marwa Hassan - Louisiana State University

### Effect of using calcium lactate with bacillus pseudofirmus bacteria on self-healing efficiency of bacterial concrete

*Omar Omar -* Louisiana State University *Hassan Noorvand -* Louisiana State University *Marwa Hassan -* Louisiana State University *Sujata Subedi -* Louisiana State University *Jose Milla –* Louisiana Transportation Research Center *Tyson Rupnow -* Louisiana Transportation Research Center

FRIDAY | 10:40am - 12:00pm | Session 4

#### Session 4C: Construction Moderators: TBD Location: Salon AB

This last session highlights the role of human involvement in the construction process and different methods being adopted to increase the overall construction efficiency.

### Adoption of e-ticketing technology in highway construction: roadblocks and recommendations

Karthik Subramanya - U of Texas at Arlington Sharareh Kermanshachi – U of Texas at Arlington Apurva Pamidimukkala - U of Texas at Arlington Karthikeya Loganathan - U of Texas at Arlington

#### Predicting the retro reflectivity degradation of thermoplastic pavement markings using genetic algorithm

Ipshit Idris - Louisiana State University Momen Mousa – Sam Houston State University Marwa Hassan - Louisiana State University Heena Dhasmana - Louisiana State University

#### Utilizing e-ticketing to increase productivity and minimize shortage of inspectors

Karthik Subramanya - U of Texas at Arlington Sharareh Kermanshachi - U of Texas at Arlington Apurva Pamidimukkala - U of Texas at Arlington Karthikeya Loganathan - U of Texas at Arlington

#### Impact of construction worker physical health and respiratory issues in hot weather: A pilot study

Sanjgna Karthik - U of Texas at Arlington Sharareh Kermanshachi - U of Texas at Arlington Karthikeya Loganathan - U of Texas at Arlington

### Thank you to our 2022 Conference Sponsors!

### You can access the full conference proceedings by visiting our website, <u>https://transet.lsu.edu/2022-tran-set-conference/</u>

