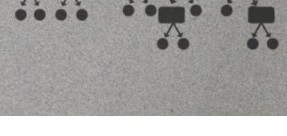


Data Science for Pavements  
Symposium 2024

March 11-14, 2024



**Monday, March 11**

8:00 Pre-Symposium Workshop

**Tuesday, March 12**

Time	Topic	Abstract	Authors
9:00	Welcome	Welcoming Remarks	Kelly Regal FHWA
9:20	Welcome	DSPS24: What's to Come?	David Mensching FHWA
9:50	Break		
10:00	Advancing Data Science into Asphalt Construction Practice	Hey NAPA: A Revolutionary Data-Driven Approach to Advancing Asphalt Pavement Technology	Brett Williams National Asphalt Pavement Association
10:30	Advancing Data Science into Asphalt Construction Practice	Bridging Data Gap of Emerging Technology with Proxy: A Probabilistic LCA of Innovative Pavement Materials	Jin Li Tongji Univ., China Univ. of Twente, Netherlands
11:00	Advancing Data Science into Asphalt Construction Practice	Advancing Visualization of Agency Asphalt Data	Bryan Smith Virginia DOT
11:30	Advancing Data Science into Asphalt Construction Practice	Leveraging Data Science for Improved Asphalt Pavement Construction: A Case Study from the Idaho Transportation Department	Mike Copeland Idaho Transportation Department
10:00	Concrete Materials	Estimating the engineering properties of Portland Cement Concrete (PCC) through Deep Neural Networks (DNNs): A case study to predict the Poisson's ratio, elastic modulus, compressive strength, and tensile strength	Rodrigo Polo Mendoza Charles Univ., Czechia
10:30	Concrete Materials	Decreasing Concrete's Carbon Footprint at Scale	Mathieu Bauchy and Gaurav Sant University of California at Los Angeles
11:00	Concrete Materials	Temperature Gradient Variation of Ultra-thin and Thin Concrete Pavements and Overlays in Wet-freeze Climate	Manik Barman Univ. of Minnesota
10:00	Asphalt Binders, Compaction, and Composition	Chemical-based Rheological Properties Prediction through Linear Regression and Gaussian Process Models	Fan Zhang Aalto Univ., Finland
10:30	Asphalt Binders, Compaction, and Composition	A Probabilistic Machine Learning Approach for Asphalt Binder Formulation – Focusing on Antioxidants	Tianhao Yan Turner-Fairbank Highway Research Center
11:00	Asphalt Binders, Compaction, and Composition	Incorporating Probabilistic Insights in Predicting Asphalt Mix Composition through Gaussian Processes	Carlos David Rodrigues Melo Federal Univ. of Ceara, Brazil
11:30	Asphalt Binders, Compaction, and Composition	Service Life Predicting Asphalt Model	Bernardo Mota Lontra TNO, Netherlands
12:00	Lunch		
13:00	Better Information Management Spotlight	Automated Pavement and Asset Detection: Convergence with BIM	Bill Buttlar Univ. of Missouri-Columbia
13:30	Better Information Management Spotlight	TBD	Fangyu Liu Univ. of Illinois at Urbana-Champaign
14:00	Better Information Management Spotlight	TBD	Eyad Masad Texas A&M Univ.
14:30	Better Information Management Spotlight	TBD	Matthew Miller Iowa DOT
15:00	TFHRC Laboratory Tours	Asphalt Binder and Mixtures Laboratory	David Mensching Michelle Cooper Terry Arnold Mike Adams FHWA

**Wednesday, March 13**

8:30	Pavement Condition Modeling	AI suite for Rapid, Crowd-sourced, Video-sensor-based Curb-and-gutter and Sidewalk Evaluation	Hamed Majidifard, Yaw Adu-Gyamfi and Bill Buttlar Univ. of Missouri-Columbia
9:00	Pavement Condition Modeling	Intelligent Compaction Data Analysis of PTF Asphalt Layers	Tianhao Yan Turner-Fairbank Highway Research Center
9:30	Pavement Condition Modeling	Clustering Analysis of Asphalt Pavement Distress Data	Bryan Smith Virginia DOT
8:30	Unique Sensor Modeling Approaches	Dimensionality Reduction Approaches for Pattern Recognition and Anomaly Detection in FBG Sensor Data For Pavement Monitoring	Seyed Ali Golmohammadi Tavalaei Univ. of Antwerp, Belgium
9:00	Unique Sensor Modeling Approaches	Data processing approaches using Koopman analysis methods for pavement applications	Nicolas Gagarin Starodub, Inc.
9:30	Unique Sensor Modeling Approaches	Data Analytics. Heavy Vehicle Simulator (HVS) Modelling Doppler Laser Deflection Velocity Signal	Ernesto Urbaz Virginia Polytechnic Institute and State Univ.
8:30	Climate and Energy Usage in Pavement Data Science	Development of data-driven models to predict rolling resistance and its consequent impact on vehicle fuel consumption	Ida Uva and Joao Santos Univ. of Twente, Netherlands
9:00	Climate and Energy Usage in Pavement Data Science	Predicting buckling potential of joint plain concrete pavement considering temperature and humidity under climate change	Miaomiao Li Michigan Technological Univ.
9:30	Climate and Energy Usage in Pavement Data Science	Predicting Asphalt Pavement Deterioration under Climate Change Uncertainty	Hao Wang Rutgers Univ.
10:00	Break		
10:15	Student Design Competition Award Session	Babak Asadi Univ. of Illinois - Urbana Champaign	First Prize
10:55	Student Design Competition Award Session	Kelvin Kwakye North Dakota State Univ.	Second Prize
11:25	Student Design Competition Award Session	Pablo Raigoza, Devin Cheng California State Univ. - Chico	Third Prize
12:00	Lunch		
13:00	Asphalt Mixture Performance Testing	Physics-guided neural network for predicting asphalt mixture rutting with balanced accuracy, stability and rationality	Yong Deng Washington State Univ.
13:30	Asphalt Mixture Performance Testing	Relationship of Asphalt Mix Gradation to Macrottexture and Safety	Berokh Bazmara Virginia Polytechnic Institute and State Univ.
14:00	Asphalt Mixture Performance Testing	Prediction of the Fundamental Viscoelasticity of Asphalt Mixtures Using ML Algorithms	Jiarui Wang and Runhua Zhang Univ. of Wisconsin-Madison
14:30	Break		
14:40	Asphalt Mixture Performance Testing	Analysis of Asphalt Mixture Cracking Tolerance under Different Aging Conditions and Implementation of a Predictive Modeling Framework	Sina Mousavi Rad Oklahoma State Univ.
15:10	Asphalt Mixture Performance Testing	Employing Machine Learning Models for Post-Peak Curve Representation in Disk-shaped Compact Tension Test	Meisam Khorshidi Univ. of New Hampshire
13:00	Data Science in Pavement Design	Transformative Approaches in Pavement Design: End-to-End Universal Models and Physics-Enhanced Residual Learning	Keke Long Univ. of Wisconsin-Madison
13:30	Data Science in Pavement Design	Prediction of International Roughness Index of Flexible Pavements using Artificial Neural Network Modeling	Pratik Lama, Mena Souliman, Mayzan Isied Univ. of Texas-Tyler
14:00	Data Science in Pavement Design	Development of a Prototype Tool to Evaluate the Impact of Superloads on Road Infrastructures	Yongsung Koh Iowa State Univ.
14:30	Break		
15:10	Data Science in Pavement Design	Enhancing Urban Road Pavement Resilience through AI-Driven Climate Adaptation	Mohammad Shafiee National Research Council of Canada
15:45	Accelerated Pavement Testing	Exploring Thermocouple Data as Surrogate of Pavement Performance at MnROAD	Emil Bautista and Joseph Podolsky Minnesota DOT
16:15	Accelerated Pavement Testing	Falling Weight Deflectometer Temperature Adjustment Factors Based on Feature Engineering of Time History Data	Nima Kargah-Ostadi Callentis Consulting Group
16:45	Accelerated Pavement Testing	Implementing Data Management for a State-Of-The-Art, Third Generation Pavement Testing Facility	Alex Vuotto iENGINEERING CORPORATION
15:45	Pavement Management Systems	Utilizing Machine Learning in a Pothole Management Program	Dingxin Cheng California State Univ., Chico
16:15	Pavement Management Systems	Use of Pavement Management System Data as Research-Support Tool	Jeremy Lea Univ. of California Davis
16:45	Pavement Management Systems	Applying Machine Learning (KNN) to Pavement Management System Cost Estimation for The National Park Service	Anthony Maloche Federal Highway Administration

**Thursday, March 14**

8:30	Agency Roundtable: Successes, Issues, and Strategies	N/A	N/A
10:00	Break		
10:15	Applications Brainstorm: What's the Future Hold?	N/A	N/A
11:15	Closeout	Closing Remarks	David Mensching FHWA