



IREF
GLOBAL

Practical Data Science for Roadway Professionals

Online Training
May 27 – June 6, 2024



Online Training

16 Professional Development Hours



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Background

With the recent advances in data science and artificial intelligence in every industry, including transportation infrastructure and highway operations, roadway professionals need to learn the fundamental components of data science to implement them in their day-to-day practice. Contrary to the general belief, to understand and implement these tools and techniques in roadway construction, operations, and management, no prior coding or computer programming experience is needed.

The main goal of this online training is to introduce the fundamentals of practical data science relevant to transportation and roadway experts. Various aspects, such as using different data processing tools, data visualization, data mining, and artificial intelligence, will be discussed through online hands-on tutorials. Participants will be guided through various interactive course modules and hands-on tutorials to develop skills and knowledge to employ multiple data science tools on real-world example datasets. Roadway professionals, highway practitioners, and local highway agency engineers will learn and benefit from the various aspects of practical data science that can be employed and implemented in their operations.

Why Online?

- 16 IRF Professional Development Hours
- Expert training by professionals for Professionals: access IRF's unique curriculum and lectures developed by world-class specialists
- Accelerated learning processes: get up to speed and gain new insights in less time and with no travel constraints
- Full access to learning materials and session recordings
- Small classrooms & scheduled One-on-One sessions with instructors
- Self-paced options available
- Interactive group projects and case studies
- Receive IRF Certification

Format

The Lectures will be taught over a two-week period with live 2-hour online sessions held on Monday – Thursday of each week. Upon completion of the training program, the IRF will administer an online knowledge test. IRF will work with each individual participant to ensure they pass the examination.

Learning Objectives

- ✓ Understand the fundamental concepts of data science and artificial intelligence
- ✓ Learn about the practical applications of data science for roadway and highway agencies
- ✓ Become familiar with various data visualization, data mining and data processing tools
- ✓ Learn about the emerging topics in practical data science for transportation and roadway applications
- ✓ Become familiar with the tools to implement and execute data management and processing methods

Target Audience

- National Road & Transport Agency Managers
- Highway Engineers and Managers
- Federal and State Road Safety Agencies
- Road Safety Professionals
- Traffic Management Professionals
- Private Consultants & Contractors

Instructor



Mehran Mazari, Ph.D.

Assistant Professor, California State University Los Angeles

Dr. Mehran Mazari is an Assistant Professor in the Department of Civil Engineering at Cal State LA, specializing in Transportation Infrastructure, Materials and Applied Data Science, Artificial Intelligence (AI) and Machine Learning (ML). He is the faculty director of Sikand Center for Sustainable and Intelligent Infrastructures (SITI-Center) and founder of Sustainable

Infrastructure Materials Research Lab (SIM-Lab) at Cal State LA. His research interests include sustainable and resilient transportation infrastructure, transportation infrastructure materials, and non-destructive evaluation of transportation infrastructure. He is member of technical committees at the Transportation Research Board of National Academies of Science and Engineering and co-chair of the LTPP subcommittee of the Highway Pavement Committee of the American Society of Civil Engineers (ASCE). Dr. Mazari has published more than 60 peer-reviewed journal and conference papers. He has been actively involved in several national and state research projects, including the National Highway Cooperative Research Program (NCHRP) and Federal Highway Administration (FHWA), among others.

Schedule

Monday - Thursday
(11:00 AM EST – 13:00 PM EST)

Monday, May 27, 2024

- Introduction and Background Fundamental Concepts of Data Science Big Data and Artificial Intelligence (AI)

Tuesday, May 28, 2024

- Sources of Data for Transportation Infrastructure Transportation Data Management and Storage Exploring Knowledge from Roadway Data

Wednesday, May 29, 2024

- Introduction to Data Science Tools Types of Data and Variations
- Tools to Process and Visualize Data

Thursday, May 30, 2024

- Introduction to Data Visualization
- Visualization Tools and Methods
- Best Practices in Data Visualization for Transportation Applications

Monday, June 3, 2024

- Story Telling with Data
- How to Present Various Data Sources Extract Patterns from Data

Tuesday, June 4, 2024

- Introduction to Artificial Intelligence (AI) Applications AI Methods and Tools for Roadway
- Agencies Innovations and Advances in AI

Wednesday, June 5, 2024

- Introduction to Machine Learning (ML)
- Applications of ML in Transportation
- Innovations and Showcases of Practical ML for Roadway Data

Thursday, June 6, 2024

- Hands-On Data Visualization Tutorial
- Step-By-Step Implementation of a Practical AI Tool
- Roadway Data Sample and Implementation of Data Science Tools

Registration

- 1400 USD IRF Members
- 1700 USD NON IRF Members

Registration: <https://www.irf.global/event/ds24-june-online-training>

For any support, please contact melabyad@irf.global

System Requirements

Computer Requirements

Operating System

Windows 7 - Windows 10, Mac OS X 10.9 (Mavericks), macOS Catalina (10.15), Linux, Google Chrome OS, Android OS 5 (Lollipop) - Android 9 (Pie), iOS 10 - iOS 12, Windows Phone 8+, Windows 8RT+

Web browser

Google Chrome (most recent 2 versions)

Mozilla Firefox (most recent 2 versions)

Internet Explorer v11 (with Adobe Flash if running Windows 7)

Apple Safari (most recent 2 versions)

Microsoft Edge (most recent 2 versions)

Internet connection

1 Mbps or better (broadband recommended)

Hardware

2GB of RAM (minimum), 4GB or more of RAM (recommended)

Microphone and speakers (USB headset recommended)

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