



**IREF**  
GLOBAL

# Practical Data Science for Roadway Professionals

Online Training  
June 15 – July 8, 2021



## Online Training

16 Professional Development Hours



# Practical Data Science for Roadway

## Professionals

June 15 – July 8, 2021

## Online Workshop

### Background

With the recent advances in data science and artificial intelligence in every industry, including transportation infrastructure and highway operations, it is important for roadway professionals to learn the fundamental components of data science to implement them in their day-to-day practice. Contrary to the general belief, in order to understand and implement these tool 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 the use of 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 various 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.

### Format

Lectures will be taught over a four-week period with live 2-hour online sessions held on Tuesdays and Thursdays of each week. Upon completion of the training program, the IRF will administer an online knowledge test. Participants with a score of 80% at the exam will be awarded a certificate verifying the successful completion of the course.

## 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

- Local and Rural Road Authorities
- Executive Highway and Transportation Engineers
- Road/Highway Design Engineers and Consultants
- Transportation Infrastructure Contractors
- Road/Highway Authorities & Operators
- Materials and QC/QA Engineers
- Transportation Infrastructure Practitioners

# Schedule

Tuesdays & Thursdays (10:00 AM– 12:00 PM US EDT / 2:00 – 4:00 PM GMT)

## Tuesday, June 15, 2021

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

## Thursday, June 17, 2021

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

## Tuesday, June 22, 2021

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

## Thursday, June 24 2021

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

## Tuesday, June 29, 2021

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

## Thursday, July 1, 2021

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

## Tuesday, July 06, 2021

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

## Thursday, July 8, 2021

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

## Speakers



**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.

# Registration

- 1,700 USD IRF Members
- 1,400 USD IRF Members (Groups of 3 or more)
- 2,000 USD Non-IRF Members
- 1,700 USD Non-IRF Members (Groups of 3 or more)
- 1,000 USD IFIs, US State DOTs & City Officials

Registration: <https://www.irf.global/event/ds21-online-training/>

For any support, please contact [melabyad@irf.global](mailto: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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