
IRF
GLOBAL
Using Artificial Intelligence to Accelerate Road Safety
Online Workshop
October 10-13, 2022
Workshop

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Background

Artificial intelligence is starting to transform the field of traffic safety. At the core of traffic safety engineering, we are trying to spot patterns, make predictions, and develop optimized strategies. These activities have been traditionally done with conventional mathematics: inflexible formulas with only a few input variables applied on an ad hoc basis.

At its core, AI offers a new approach to spot patterns, make predictions, and develop optimized strategies: neural networks. Neural networks are flexible, consume vast amounts of input data, and they can operate on a continuous basis, constantly learning and getting better.

This course will introduce fundamentals of AI to non-AI specialists, examine eight case studies involving the application of AI to road safety, and examine eight case studies involving the application of AI to broader traffic engineering problems. Participants will emerge with a better understanding of what is possible, and be better equipped to initiate and work on AI applications in traffic safety.

Why Online?

- Earn 10 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
- Receive IRF Certification

Format

The lectures will be taught over a one-week period with live 2,5-hour on-line sessions held Monday through Thursday. Upon completion of the training program, the IRF will administer an on-line knowledge test. Participants with a score of 80% of the exam will be awarded with a certificate verifying their successful completion of the course.

Learning Objectives

- ✓ Understand the key principles & benefits of Machine Learning for safe traffic operations
- ✓ Learn how to diagnose road safety problems proactively within a data-rich environment
- ✓ Calibrate your safety engineering interventions to precisely match your diagnoses
- ✓ Transform your Traffic Engineering processes through Machine Learning
- ✓ Anticipate the traffic impacts of Connected & Autonomous Vehicles

Target Audience

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

Lead Instructor

Dr. Craig Milligan
Co-founder & CEO, MicroTraffic

Expert road safety engineer applying a proactive and safe systems approach to vision zero. Current chair of TAC Road Safety Standing Committee. Completed road safety audits for more than $6B of urban and rural road projects at all stages (conceptual design, preliminary design, detailed design, work zone, and pre-opening) covering complex intersections, freeways, bridges, interchanges, and cycling facilities. Road Safety Audit Instructor and Certification Experience Reviewer for the International Road Federation.

Co-Founder and CEO of MicroTraffic, applying the science of surrogate safety to proactively generate intersection risk profiles from overhead traffic video. Emphasis on safe systems diagnostics, injury biomechanics, risk benchmarking, and network-scale applications to augment existing HSM methods.

Schedule

Monday through Thursdays (08:00 AM-10:30 AM US EDT, 14:00-16:30 CET, 16:00-18:30 GST)

Monday, Oct. 10	**Module 1: Fundamentals of Artificial Intelligence and Machine Learning** This module will be a non-math overview of key principles designed for engineers who might plan to use the outputs of AI and deep learning but who do not intend to develop the models themselves.
Tuesday, Oct. 11	**Module 2: Accelerating Road Safety with AI and Machine Learning** These modules will present eight use cases where AI and Machine Learning are used for diagnosing road safety problems and triggering interventions ranging from live warning systems to adaptive traffic control, to large construction projects. The modules will also present the key linkages between traffic operations and self-driving cars enabled by AI and deep learning.
Wednesday, Oct. 12	**Module 3: Accelerating Road Safety with AI and Machine Learning (ctd)**
Thursday, Oct. 13	**Module 4: Transforming Traffic Engineering with AI and Machine Learning** This module will move beyond traffic safety applications to present eight use cases where AI and Machine Learning are enabling transformational approaches in traffic engineering, ranging from planning, demand modelling, monitoring, ITS applications, ad hoc and adaptive signal timing, and geometric design.

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International Road Federation

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