ADS Truck Inspections

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U.S. Department of Transportation
Federal Motor Carrier Safety Administration

Federal Motor Carrier Safety Administration

2023

ANALYSIS, RESEARCH, & TECHNOLOGY FORUM

VIRTUAL EVENT

Automated CMV Inspection Demonstrations and Evaluations

- **Background**
  - With the progression of ADS CMVs without a driver onboard, FMCSA identified a need to understand how an ADS-equipped CMV can be inspected electronically.
- **Objectives and Goals**
  - Explore and prototype processes, communication methods, and inspection technologies to facilitate electronic safety inspections of ADS-equipped CMV operations at the roadside, at borders, and in other fixed enforcement locations.

Project Overview

Operational Test Scenario	Operation Summary
#1 ADS Health & Status	Electronic confirmation and communication of ADS health and status on equipped CMVs
#2 Predictive algorithms, analytics, and preventive maintenance data	Evaluate and test predictive algorithms, analytics, and preventive maintenance data (e.g., fleet management systems, total asset visibility systems) that would provide value to a roadside inspector for inclusion into their inspection application and electronic screening decision tools
#3 Enhanced pre-trip inspection communication	Communication of an enhanced pre-trip inspection status, certification, & data elements
#4 Inspection/weigh station "Pull-in or Bypass"	React and comply with law enforcement electronic messaging or static signs to "Pull-in or Bypass" an inspection/weigh station
#5 Populate roadside inspection application	Populate available data elements into a roadside inspection application when prompted or automatically
#6 Emergency lights/siren pull over or move over	Reaction to emergency lights and siren (SAE J3216 NO COOPERATIVE AUTOMATION) to either pull over or move over in compliance with State "Move Over Law".

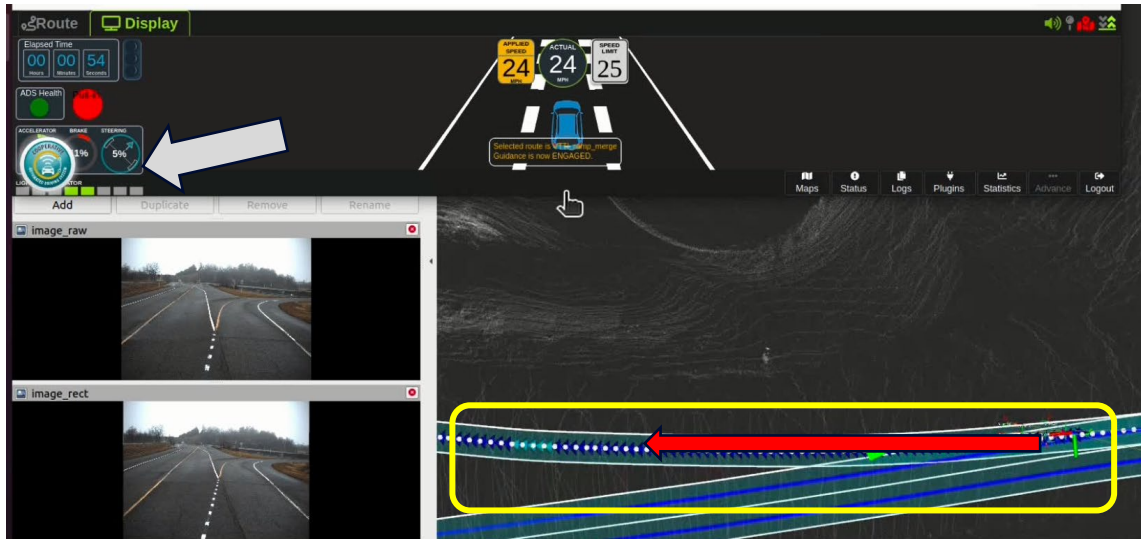
ADS Electronic Inspection Demo – Bypass/Pull-in Scenario

Websocket

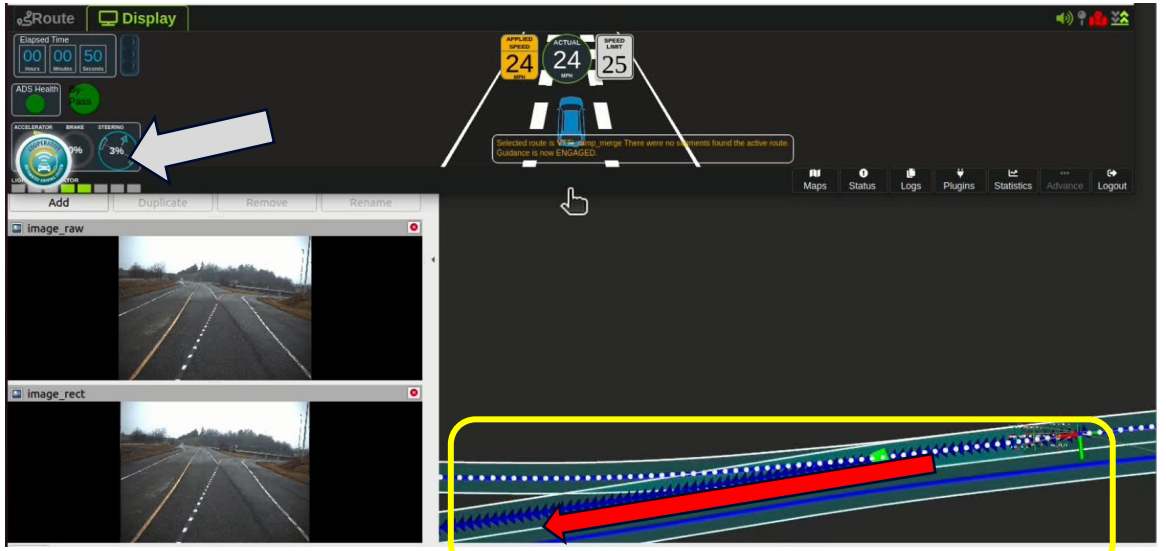
Command

CARMA Web UI

CARMA Pull-in and By-Pass Strategic Plugin



Pull-in command received and pull-in route selected automatically



By-pass command received and By-pass route selected automatically

ADS Electronic Inspection Demo – Safety Data Message Set

SafetyData.json > ...


```
{
    "type":"ADS_Safety",
    "data":{
        "Pre-trip Inspector":"John Doe",
        "Inspector ID":"ID00002",
        "Vehicle":"CARMA Blue Truck",
        "VIN":"1FUJGBDV8CLBP8898",
        "License Plate":"DOT-10002",
        "State":"VA",
        "Carrier Name":"FMCSA Tech Division",
        "Carrier ID":"DOT 1",
        "USDOT Number":"848271",
        "Gross Vehicle Weight":"80900",
        "Vehicle Axle Weight":"30410",
        "Overweight Permit Status":"Inactive",
        "Date of Last
        "Date of Last
        "Date of Last
        "ISS Score":'
        "IFTA Status'
        "IRP Status":
        "ADS Health":
        "ADS Status":
        "Truck Operat
        "Tractor Oper
        "Trailer Oper
        "Inspection I
        "Origin":"Lansing, MI",
        "Destination":"Los Angeles, CA",
        "Nearest Roadside Inspection Facility":"Cascadia",
        "Position":"37.186400,-80.393459",
            "Position":"37.186400,-80.393459",
            "Preclearance system":"PrePass",
            "ADS Time":"Mon, 06 Feb 2023 12:04:34",
            "TPMS":{
                "L STEER":{"PSI":"98","Condition":"0"},
                "R STEER":{"PSI":"94","Condition":"0"},
                "LFO":{"PSI":"90","Condition":"1"},
                "LFI":{"PSI":"91","Condition":"0"},
                "RFI":{"PSI":"91","Condition":"0"},
                "RFO":{"PSI":"72","Condition":"1"}}}
```

FMCSA - Inspection Platform | FMCSA Portal

https://safespect-stg.fmcsa.dot.gov/#/inspection/finish

SAFESPECT V3.1.0 | INSPECTOR

CVSA Decal Issued:

OOS Sticker #:

Cargo Seal Removed:

Cargo Seal Replaced:

Why a decal was not issued?

Vehicles

#1

VIN#	1FUJGBDV8CLBP8898	Lic Plate	10002
Make	Freightliner	GVWR	52000
Year	2012	Id#	VR14
State	DC	IEP Name	
Mileage	100000		

ADS Status

ABS Warning: No indication

Level of Inspection: X

Semi Trailer

#2

VIN#	1S12E95338E518713	Lic Plate	10002T
Make	Strick Trailers Corp.	GVWR	68000
Year	2008	Id#	
State	DC	IEP Name	
Mileage			

Shipper: Biltmore Estate

Origin	Asheville, NC, US
Destination	Washington, DC, US
Cargo	General Freight
Bill of Lading	Test 1234

Jeffrey Loftus

Bob Gore

US123456790

Date Of Birth: 02/01/1965

Transportation Research Plaza, Blacksburg, Va

Latitude	37.1896776
Longitude	-80.3986192
Mile Marker	

Destination: Charleston, SC

Pre-trip Inspection Summary (Tractor/Trailer)

Date	02/09/2023 / 02/09/2023	Time	07:30:48 / 07:34:21
Inspector	Bob Gore / Bob Gore	Inspector Cert	34910A
Status	No issues found / No issues found		

Submit

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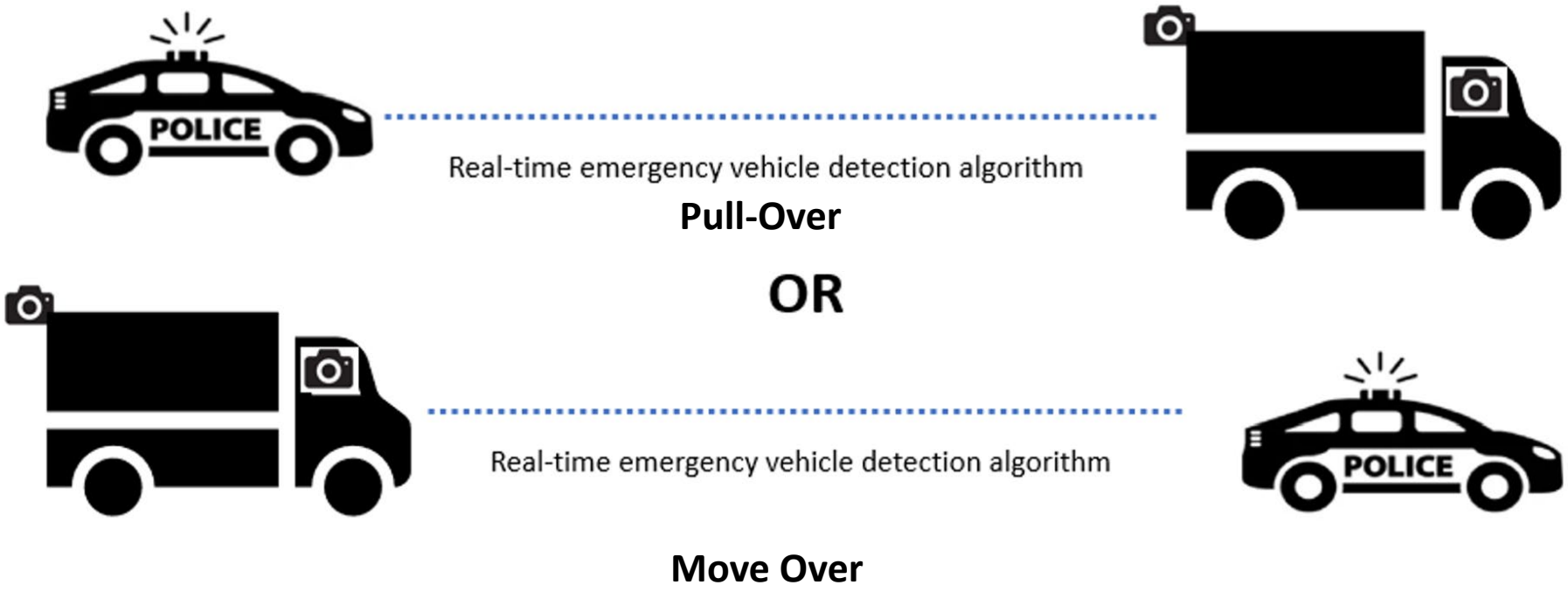
Vehicle Information View

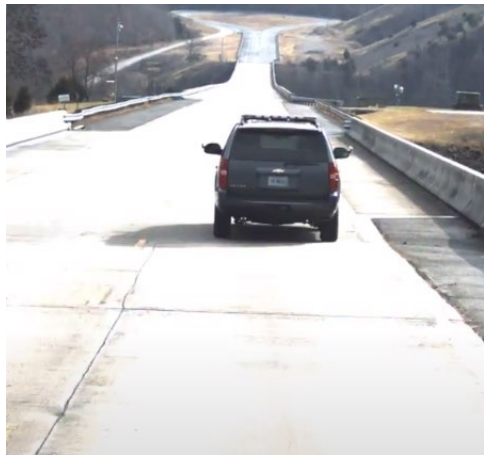
1200 NEW JERSEY AVENUE, SE
WASHINGTON, DC 20590
1-800-832-5660

Law Enforcement Interaction

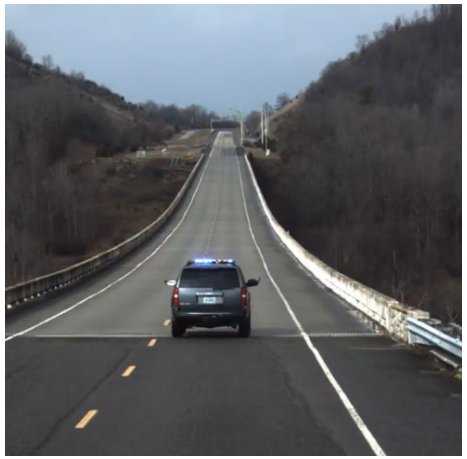


Law Enforcement Vehicle Work Mode Detection

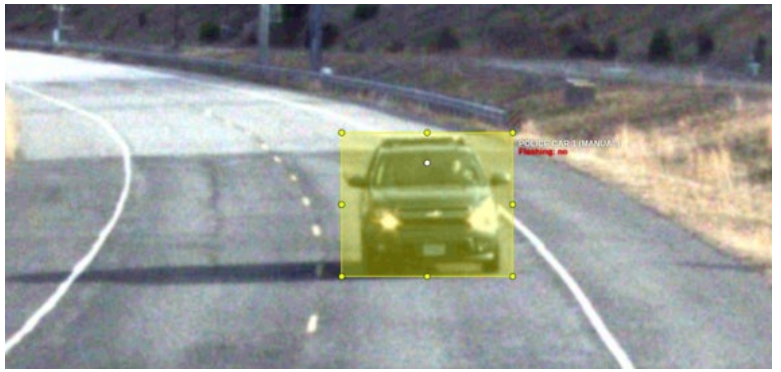
State-of-the-art computer vision and deep learning models trained to detect and decide law enforcement vehicle work mode under various operational conditions



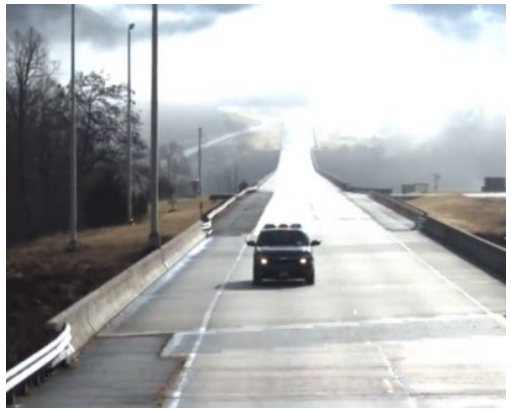
Sunny



Cloudy



Vehicle Bounding Box Labeling



Rainy

Sunset

Flashing

Unflashing

Emergency Light

Team Effort!


ACE
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Contact Information

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