



**AIWAYSION**

## WHO WE ARE

AIWaysion, Inc. is a technology company providing Smart Mobility Solutions using Artificial Intelligence (AI) and edge computing for safer and more efficient transportation. AIWaysion utilizes Edge AI technologies for real-time traffic sensing and control, roadway and environmental conditions monitoring, dangerous events detection and warning, smart parking, and connected vehicles applications.

Our next generation connected vehicle (CV) technology integrates sensing, analysis and communications functions all in one device. Combining our unique hardware design and patented software innovations AIWaysion aims to provide transportation practitioners customized solutions for their Intelligent Transportation Systems (ITS) challenges.

## What we provide

Next-generation connected vehicle technologies for safer and more efficient transportation.

## Contacts

**Phone:** (800) 326-1868  
**E-mail:** [sales@aiwaysion.com](mailto:sales@aiwaysion.com)  
**Web:** <https://aiwaysion.com>  
**Address:** 1100 NE Campus Pkwy Ste 200,  
Seattle, WA 98195 US





# PRODUCTS

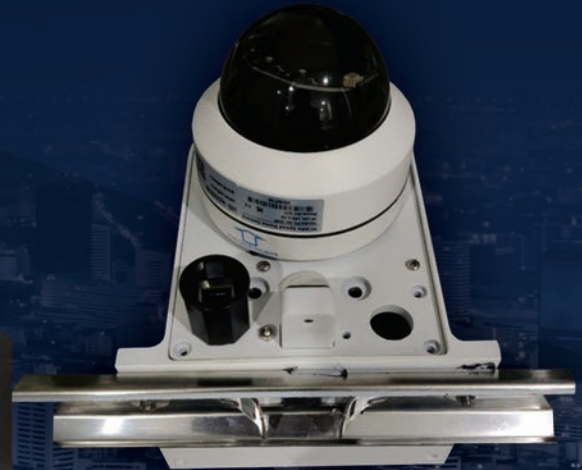
## HARDWARE: MOBILE UNIT FOR SENSING TRAFFIC (MUST)

AIWaysion's MUST is a roadside AI Edge device that integrates comprehensive sensing, data fusion, in-device edge analysis, and communications functions all in one unit. Multiple sensors, including PTZ camera, Bluetooth and Wi-Fi antennae, and temperature and humidity sensors, are integrated to address the diverse needs of applications in smart transportation. MUST can detect, analyze, and produce data about vehicle, pedestrian, and cyclist volume, speed and classification; road surface conditions (e.g., dry, wet, ice, snow); visibility; dangerous events including stopped vehicles, collision/near miss, and travel time estimates. MUST can be configured as a communication node on the infrastructure side for connected vehicle and similar smart transportation applications. MUST's robust engineering design enable it to work under very challenging weather and environmental conditions.



## SPECIFICATIONS

|                             |   |
|-----------------------------|---|
| Operation Temperature       | -40 °C ~ 70 °C                                    |
| Operation Relative Humidity | 10% ~ 90%   |
| Ingress Protection          | IP 65   |
| Power Supply                | 12V(DC)   |
| Energy Consumption          | < 35Watts   |
| CPU                         | ARM1176JZF-S 700 MHz                              |
| GPU                         | 128-Core Maxwell 1600MHz                          |
| Communication               | 3G/4G/5G, Ethernet                                |
| Operation System            | Linux   |
| Local Data Storage          | Micro Secure Digital (SD) Card                    |
| Weight                      | 10 pounds   |
| Dimensions                  | 170 mm (length), 170 mm, (width), 300 mm (height) |



# SOFTWARE: WaysionNet



AIWaysion's WaysionNet is a web and mobile-app based platform for device management, data analytics, visualization, communication and control. This software suite has the following key functions:

## WaysionNet **TRAFFIC**

- vehicle volume
- vehicle classification
- vehicle speed
- travel time measurement

## WaysionNet **VRU**

- pedestrian/cyclist detection & volume
- customized VRU detection (scooters, wheelchairs)

## WaysionNet **SAFETY**

- queue/congestion warning
- stopped vehicle warning
- collision and near-miss events warning
- low visibility and dangerous road surface condition warning
- abnormal objects/event warning

## WaysionNet **ENV**

- environmental condition detection (i.e., temperature, humidity)
- road surface condition detection (i.e., normal, wet, icy, snow)
- visibility detection

## WaysionNet **CV**

- vehicle-to-Infrastructure (V2I) applications
- pedestrian-to-Infrastructure (P2I) applications

## WaysionNet **PARKING**

- parking event (i.e., vehicle type, location, ingress, egress)
- parking availability
- parking duration



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## OUR SOLUTIONS



Road-side Device for  
Connected Vehicles



Travel Time  
Data Collection



Vehicle Counting &  
Classification



Roadway and Environmental  
Conditions Monitoring



Pedestrian Detection &  
Trajectory



Parking Detection and  
Security Monitoring

## OUR COLLABORATORS





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# APPLICATIONS

**Toppenish**

**ONLINE**

LOCATION: **US-97 & Larue Rd, Toppenish, WA 98948**

INSTALLED AT: **2022-11-15 15:26:30**

LAST UPDATED AT: **2022-12-04 20:30:00**



**1**

## RURAL TRAFFIC SAFETY DATA COLLECTION AND TRAVELER INFORMATION SYSTEM PILOT

LOCATION:  
**TOPPENISH,  
YAKAMA  
NATION**

Yakama Nation Department of Natural Resources (DNR) Engineering is working with AIWaysion on a pilot project deploying MUST (Mobile Unit for Sensing Traffic) devices on the roadways and intersections for safety data collection (traffic, roadway surface conditions, visibility, environmental conditions, etc.) and real-time warning of dangerous events (speeding, collision/near-miss, stopped vehicle, snow and icy road surface, low visibility/heavy fog).

**2**

## 2022 USDOT SMALL BUSINESS INNOVATION RESEARCH (SBIR) PHASE I: EDGE SERVER-BASED DILEMMA ZONE AND TRAFFIC CONFLICT EVENTS DETECTION

LOCATION:  
**CITY OF BELLEVUE,  
WASHINGTON**

Funded by FHWA, and partnering with City of Bellevue and Verizon, AIWaysion has been providing real-time detection of dilemma zone and traffic conflict events (collision/near-miss) implementing AI-based video analytics on the Edge Server (Verizon's 5G MEC). The system is able to receive and analyze live video from city's existing cameras and signal timing information, detect dilemma zone and conflict events in real-time (latency < 50ms), and communicate with the traffic signal controller.

### OVERVIEW



**-3 °C**  
Temperature

**Snow**  
Road Condition

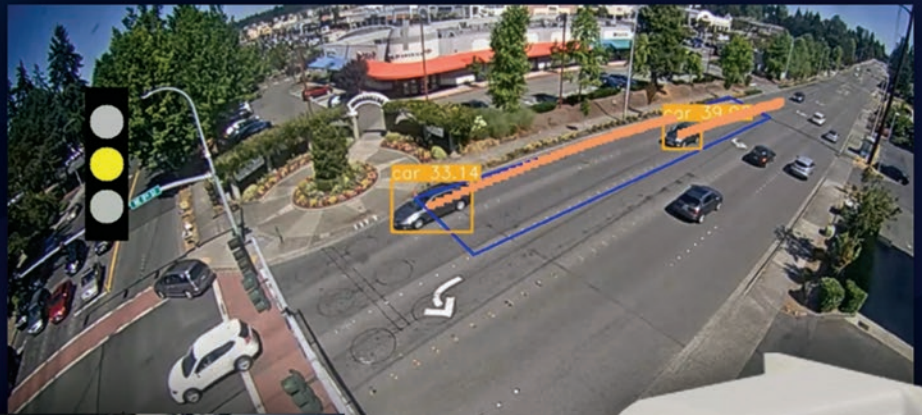
**66.4 %**  
Humidity

**35.0 mph**  
Traffic Speed





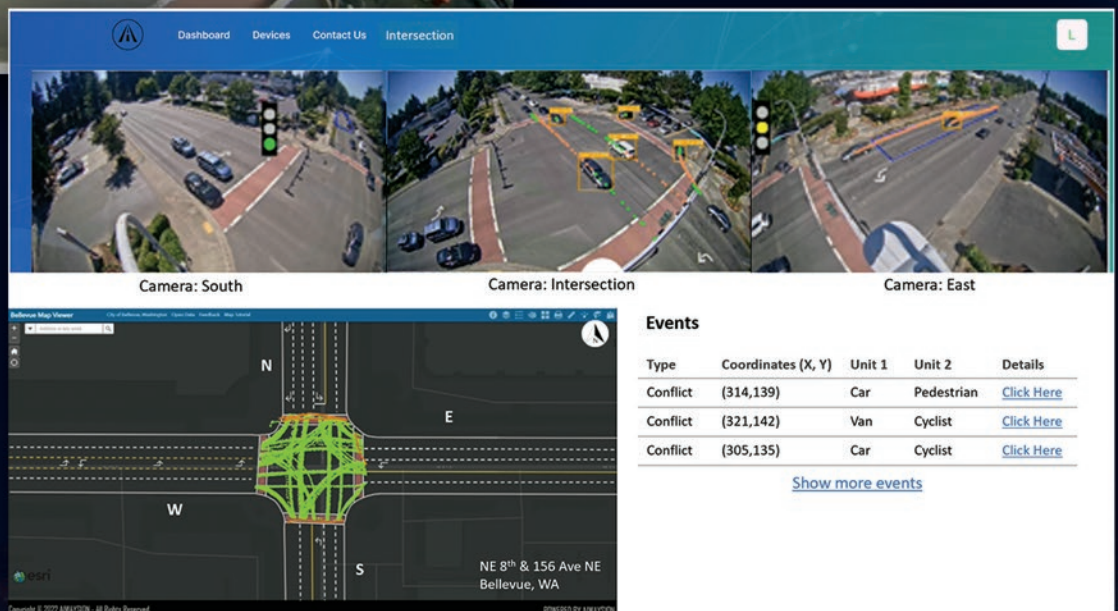
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Video-based  
real-time dilemma  
zone detection



Video-based real-time  
trajectory conflict  
events (collision/  
near-miss) detection



User Interface to visualize the live detection results from different camera views of one intersection





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## 2020 WASHINGTON STATE TRANSPORTATION INNOVATION COUNCIL (STIC) PROJECT: AN INNOVATIVE INTERNET OF THINGS TECHNOLOGY FOR COMPREHENSIVE TRAFFIC SENSING AND V2X APPLICATIONS

LOCATION:  
CITY OF BELLEVUE,  
CITY OF LYNNWOOD,  
WASHINGTON

MUST devices were installed along roadways with high crash risks, including segments with horizontal and/or vertical curves, frequent snow or ice coverage, speeding, etc., to monitor traffic and roadway surface and environmental conditions and communicate with TMC as well as broadcast useful information to road users when needed.

**Lynnwood1**

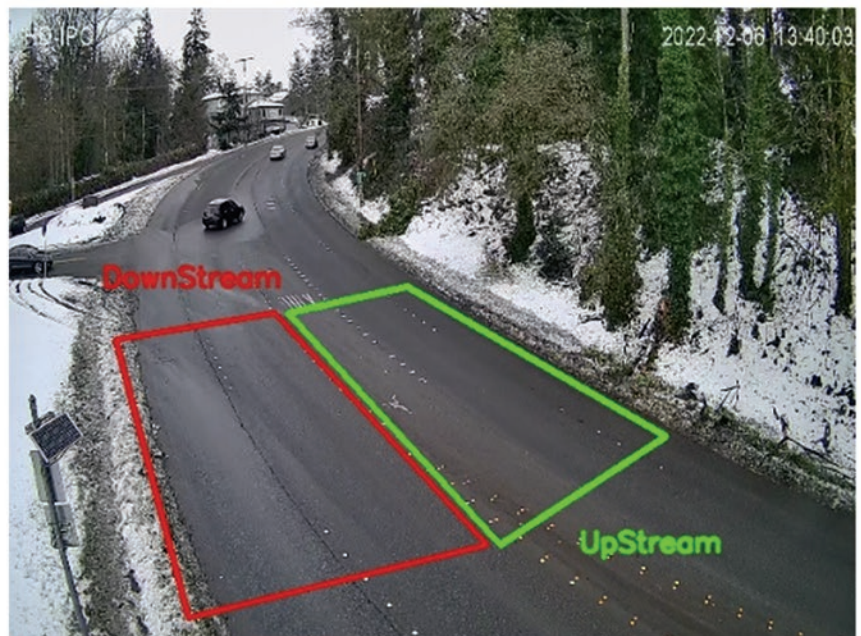
ONLINE

LOCATION: 44th Ave W, Lynnwood, WA 98037

INSTALLED AT: 2022-11-23 16:18:30

LAST UPDATED AT: 2022-12-06 13:40:47

### OVERVIEW



7.2 °C  
Temperature

Wet  
Road Condition

12  
Downstream Traffic Count

99.9 %  
Humidity

20  
Upstream Traffic Count

38.1 mph  
Traffic Speed



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**2022 WASHINGTON  
STATE  
TRANSPORTATION  
INNOVATION  
COUNCIL (STIC)  
PROJECT:  
COST-EFFECTIVE  
REAL-TIME VISIBILITY  
DETECTION SYSTEM  
BASED ON INTERNET  
OF THINGS (IOT) AND  
COMPUTER VISION  
TECHNOLOGIES**

**LOCATION:  
CITY OF BELLEVUE,  
CITY OF LYNNWOOD,  
WASHINGTON**

MUST devices were installed in two corridors in the City of Bellevue and City of Lynnwood, Washington. MUST implements the cutting-edge Computer Vision technologies to estimate visibility only based on single image captured by camera.

**ORIGINAL IMAGE**



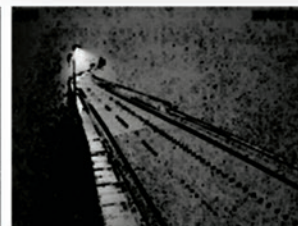
**DEHAZED IMAGE**



**SCATTERING MAP**



**DARK CHANNEL**



**MAXIMUM CONTRAST**



**COLOR ATTENUATION**



**HUE DISPARITY**

