



AIWAYSION



AI Video Analytics for Active Transportation & Micromobility

Edge Computing and Sensor Fusion System for Real-Time Detection, Classification, Tracking and Traffic Signal Safety Interventions

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MLE | AIWaysion, Inc. | Seattle

06/29/2026

Award-Winning Technology



SMART



INTERSECTION
SAFETY CHALLENGE



NVIDIA®



T-Mobile™

Hardware

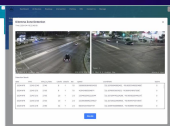
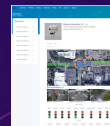
Edge AI Device (MUST)

- Camera (PTZ, IR Night Vision)
- Environmental sensors (temperature, humidity, air quality, etc.)
- MAC Address detector Bluetooth/Wi-Fi
- V2X communication (Cellular 4G & 5G)
- Edge computing unit (CPU & GPU)



Software

WaysonNet



- Device & data management
- Traffic & road conditions monitoring
- AI/ML algorithms for real-time safety & mobility decision making
- Traffic management copilot based on LLMs & VLMs
- Traffic control & warning
- Network analysis and reporting



Roadside Edge AI Platform for Real-Time Decision Making

Plug-and-Play Solution for Both Urban & Rural Areas

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)



Toppenish, Yakama Nation



Bellevue, WA



New York, NY



Tucson, AZ



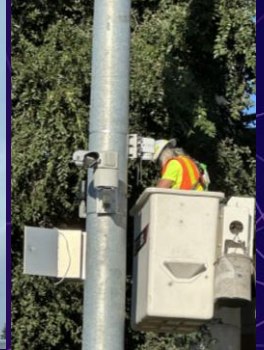
Lynnwood, WA



Tacoma, WA



Olympia, WA

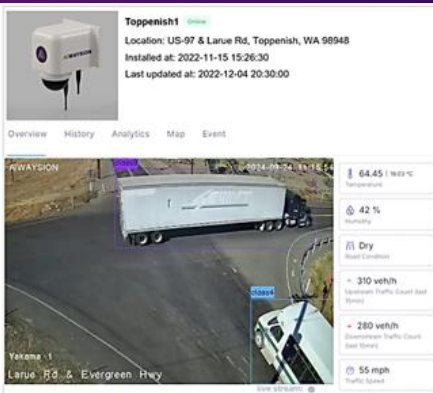


Spokane, WA

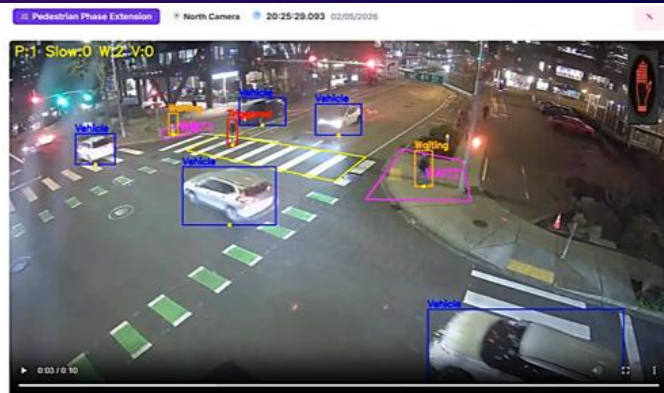
Edge AI Smart Infrastructure Solutions



Roadside Sensor Fusion and Edge AI Platform



Traffic and Road Conditions Monitoring



Traffic Signal Interventions/Alerts with Video Clips



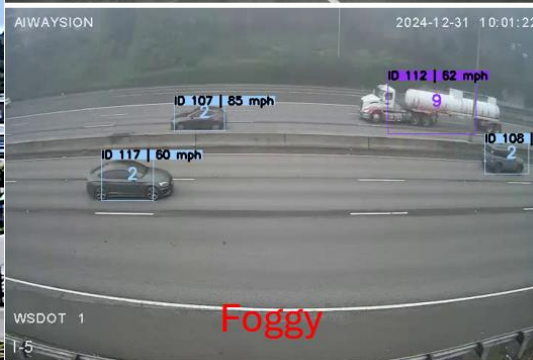
Trajectory Conflicts (Collision/Near-Miss Events), Stopped Vehicles, Speeding, Anomalies



Pedestrian and Micromobility Data Collection & Real-Time Safety Interventions



Integration with NTCIP-Compliant Traffic Control Devices (Signal Controllers, VMS, etc.)



Sensing + Computing + Communication

PTZ IR Camera	AI/ML Edge Computing Module with CPU & GPU	Industrial Router (4G LTE & 5G)
		

All-in-One Edge AI Roadside System



Current Multi-Device Deployment



-  Separate Cameras
-  External IR Illuminators
-  Edge Computer Cabinet
-  Ethernet / Fiber Networking
-  Multiple Power & Communication Cables
-  Complex Installation & Maintenance



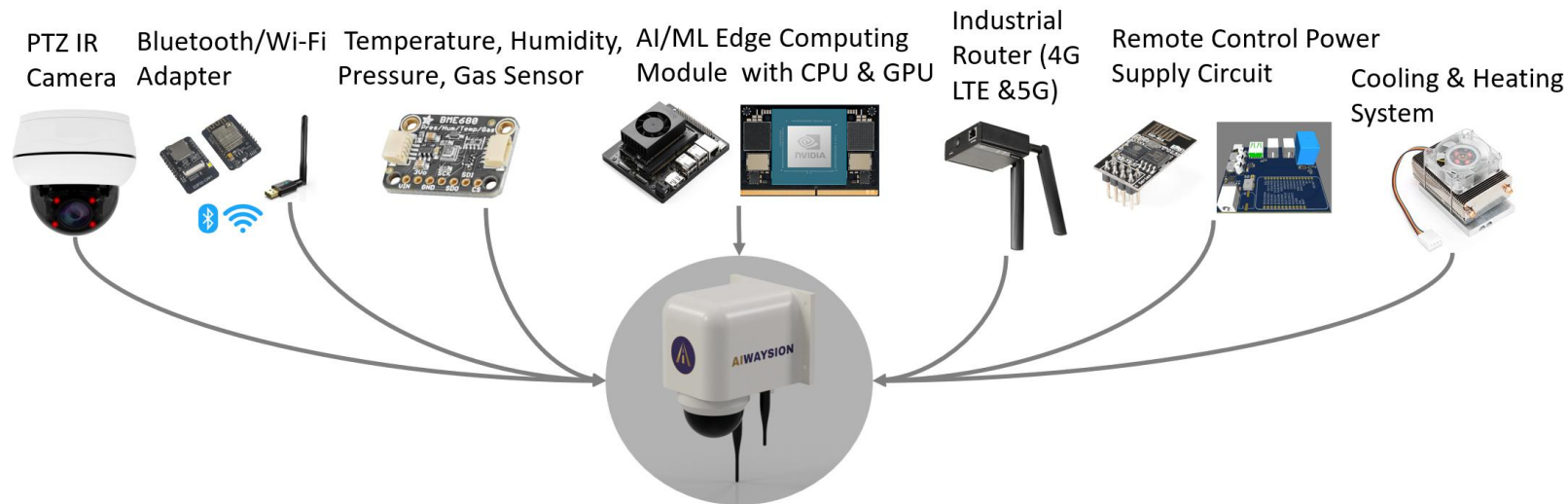
COMPLEX
TO
SIMPLE

AIWayision All-In-One Edge AI Unit



-  No Fiber / Ethernet Required
-  Single 12VDC Power Cable
-  Fully Remote Operation
-  Compact Pole-Mounted Design
-  Rapid Deployment
-  50-80% Lower Installation & Operational Cost

Mobile Unit for Sensing Traffic (MUST)



Edge AI Vision Technology: sensing, analysis, and communication all in one unit

All-in-One Edge AI Roadside System



Current deployment in DC



Grid-powered pole-mounted deployment

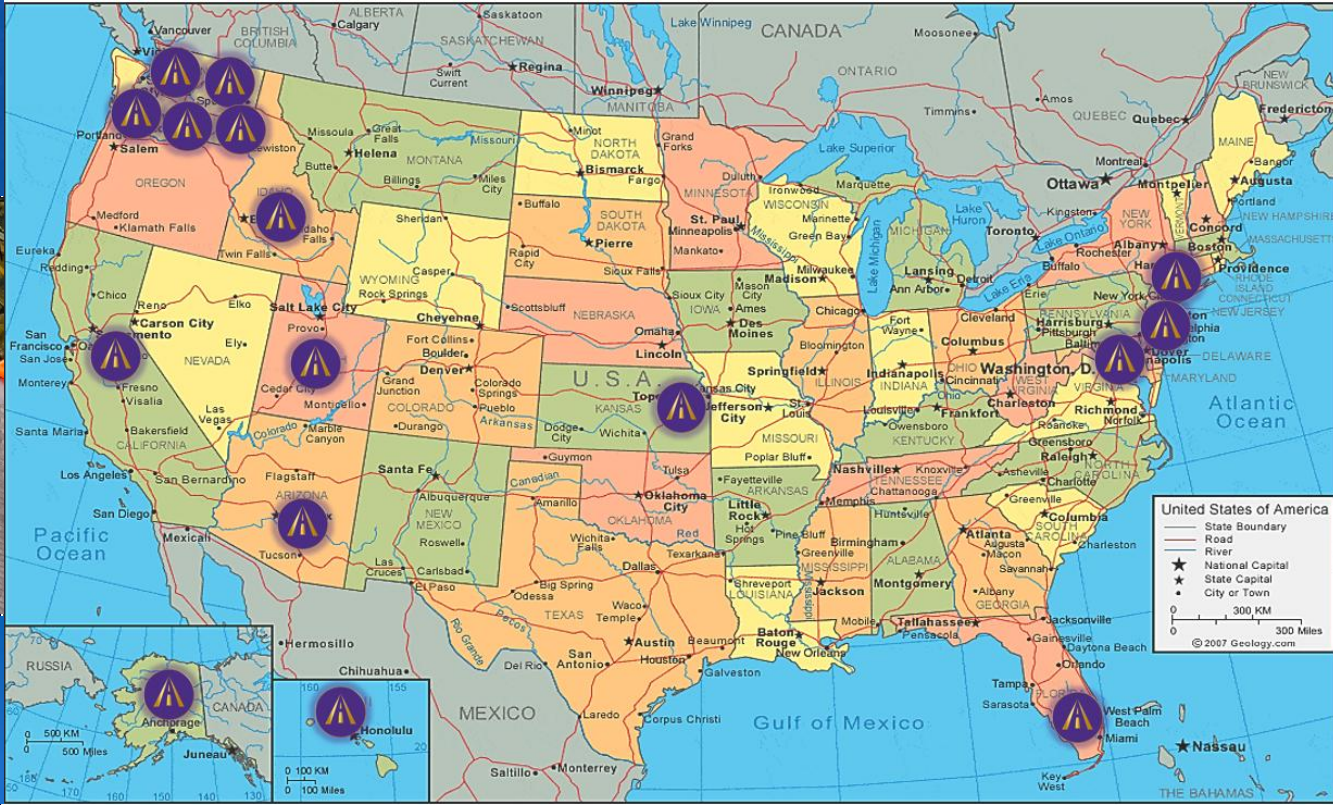
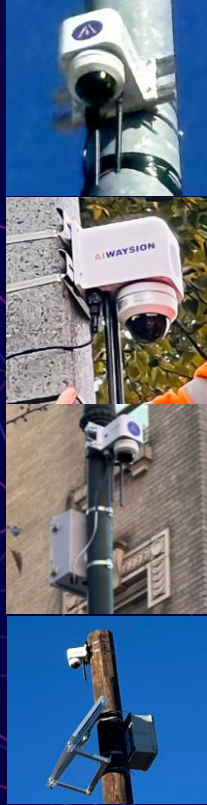


Solar-powered pole-mounted deployment



Solar-powered trailer-mounted deployment

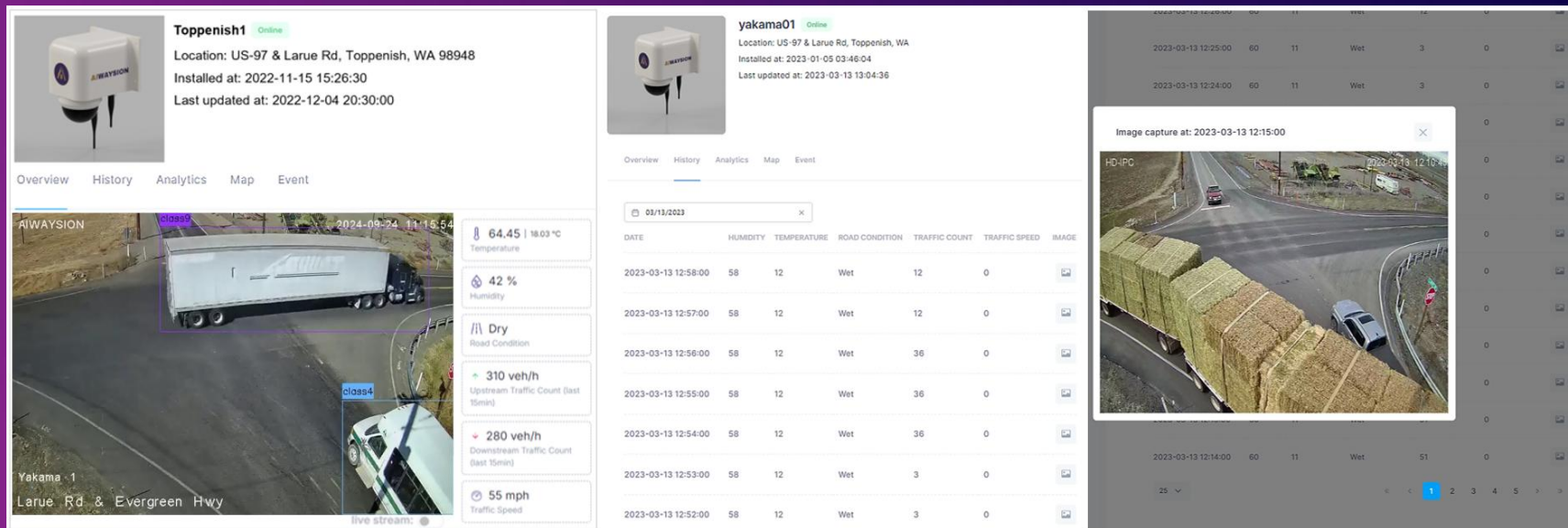
15+ State and Local DOTs, 100+ Locations Nationwide



WaysionNet Traffic



Device & data management, analysis, visualization & control



Real-time and historical traffic data with snapshots/video clips: multimodal traffic data (FHWA 13-category classification and micromobility classes) collection at intersections and along road segments.

WaysionNet Safety



Device & data management, analysis, visualization & control

The screenshot displays the WaysionNet Safety dashboard, which is divided into several sections. On the left, there is a 'Devices List' sidebar. The main area is titled 'Intersection' and shows a map of 'Bellevue Intersection 7 N' with a camera icon and a map view. Below the map, there are traffic light status indicators for various channels. A central pop-up window titled 'Dilemma Zone Detection' shows two video feeds of a road intersection and a table of detection results. On the right, there is a 'Show By Event Type' dropdown menu with options like 'Pedestrian Crossing Violation' and 'Near Miss Event', each accompanied by a video feed.

Dilemma Zone Detection Table:

date	time	time_in_video	cardid	classid	eta	speed	coordinate	dzone
2024/4/19	22:45:27.45	27.45	8	-1	7.0	3.8089393643634333	[32.20765845892452, -110.9091334820488]	0
2024/4/19	22:45:27.5	27.50	8	-1	7.0	4.391318653548171	[32.20766153507623, -110.9091316157556]	0
2024/4/19	22:45:27.5	27.50	20	-1	2.0	23.94632942222044	[32.207294745224296, -110.90915292445217]	0
2024/4/19	22:45:27.55	27.55	20	-1	2.0	25.395388962379027	[32.207295224839905, -110.90914713511364]	0
2024/4/19	22:45:27.8	27.80	32	-1	2.0	68.90725414001747	[32.206874058998604, -110.90899474102862]	0

Real-time and historical safety data with snapshots/video clips: collision and near-miss detection (V2V, P2V, C2V), speeding violations, digital twin, dilemma zone event, stopped vehicle alerts, etc.

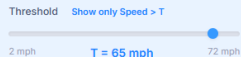
Web Dashboard



Traffic Statistics

Vehicle speed analysis, counting, and threshold monitoring

Updated 10:20:36 PM



Total Points Above T
37,818

Total Data Points
284,790

Above Threshold %
13.3%

Summary Table

Speed Chart

Counting Chart

Start Date: 04/18/2026
End Date: 05/19/2026
Time Window: 60 min

Clear Dates

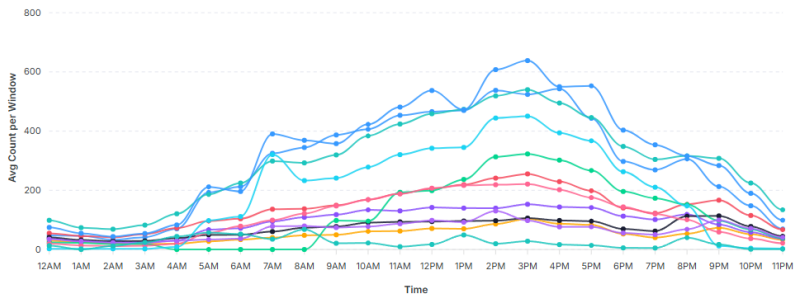
Sites: US97 & 2ND AVE, US97 & KAYS RD, US97 & LATERAL 1, US97 & PROGRESSIVE RD, US97 & BRANCH RD

US97 & S. OLDEN WAY, US97 & SR22, LARUE ROAD & US97, WARD & US97, US97 & S. BUSTER RD

US97 & FORT ROAD, US97 & W Wapato Rd

Hide All

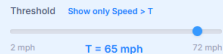
Avg Vehicles per 60-min Window · 2026-04-18 to 2026-05-19



Traffic Statistics

Vehicle speed analysis, counting, and threshold monitoring

Updated 10:21:36 PM



Total Points Above T
48,832

Total Data Points
378,838

Above Threshold %
12.9%

Summary Table

Speed Chart

Counting Chart

Start Date: 03/18/2026
End Date: 05/19/2026
Clear Dates

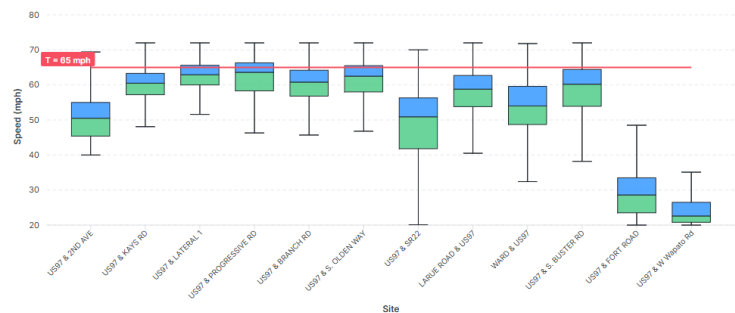
Sites: US97 & 2ND AVE, US97 & KAYS RD

US97 & LATERAL 1, US97 & PROGRESSIVE RD, US97 & BRANCH RD, US97 & S. OLDEN WAY, US97 & SR22

LARUE ROAD & US97, WARD & US97, US97 & S. BUSTER RD, US97 & FORT ROAD, US97 & W Wapato Rd

Hide All

Speed Distribution by Site

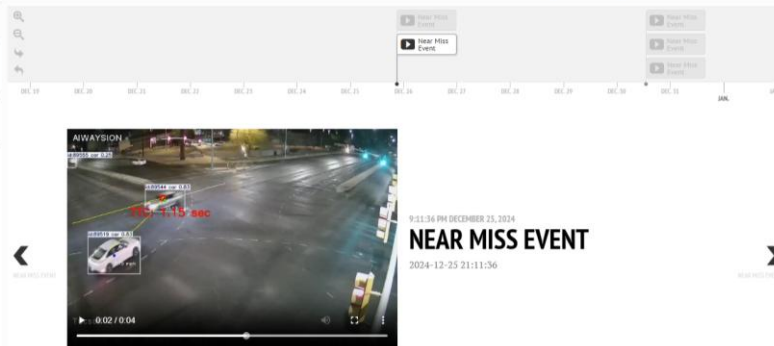


Monitoring and Data Management



Vehicle Detection Result

Detection Time	Tracking ID	Class	Speed	Length	Detector #	Phase	Occupancy Time
4/16/2025, 10:31:26 PM	73	class2	17	13.15	14		143.44
4/16/2025, 10:31:23 PM	74	class2	41	12.83	5	4	0.9
4/16/2025, 10:31:23 PM	15	class3	34	15.94	6	4	7.02
4/16/2025, 10:31:23 PM	77	class2	42	13.11	4	7	2.61
4/16/2025, 10:31:21 PM	583	class2	44	12.95	20		1.46
4/16/2025, 10:31:21 PM	71	class2	42	12.76	17		201.34



Multi-View Monitor

Home - Yakama SMART Project - Multi-View Monitor

Refresh All

Auto-refresh (30s)

Working only

43 total devices

Grid Powered Devices 37 devices

Solar Powered Devices 11 devices

YAKAMA SMART

- User Manual
- Dashboard
- Sites List
- Devices List
- Traffic Statistics
- Multi-View Monitor
- Historical Events
- Release Notes

Site Detail

Home - Yakama SMART Project - Sites - Detail

US97 & 2nd Ave

Site ID: 2ed8dd41...

Healthy

of Devices
3 devices

Location

Lat: 46.503904, Lon: -120.467254



% Site Health

3,929
Events Today

43 mph
Avg Speed

07:00
Peak Hour

Live Camera View

Current camera snapshot:

Refresh

Camera Online

Last updated: 12:26:20 PM



Yakama-3

NW



Vehicle Detection Aggregation

Camera 3

Filter and view vehicle classification data

Start Date

End Date

Start Time

End Time

Lane

04/21/2026

04/21/2026

08:00 AM

05:00 PM

All Lanes

Filter

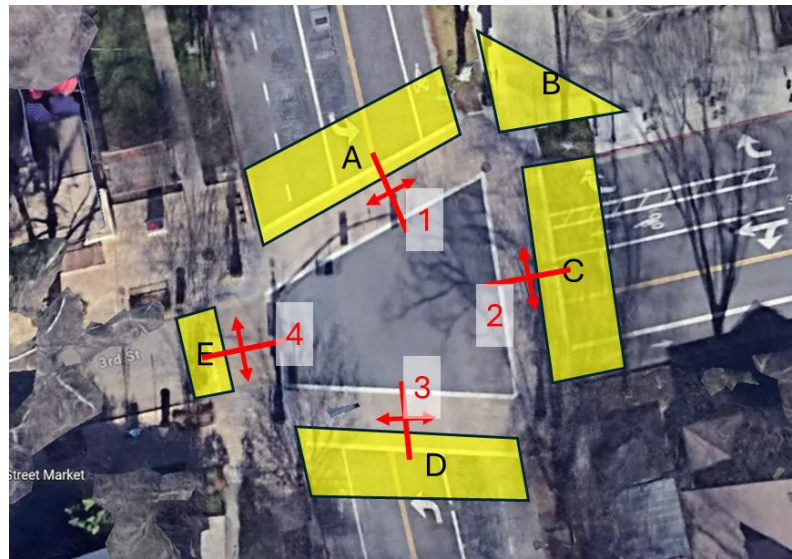
Download CSV

DATE/TIME	LANE	DIRECTION	TOTAL VOLUME	AVG SPEED	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13
Apr 21, 2026, 12:00 PM	1	NW	32	38 mph	0	10	5	0	0	2	0	1	14	0	0	0	0
Apr 21, 2026, 12:00 PM	3	SE	37	23 mph	0	30	7	0	0	0	0	0	0	0	0	0	0
Apr 21, 2026, 12:00 PM	4	SE	18	45 mph	0	14	4	0	0	0	0	0	0	0	0	0	0
Apr 21, 2026, 12:00 PM	2	NW	62	51 mph	0	41	16	0	0	0	0	0	3	0	0	0	2

Micromobility Data (Caltrans)



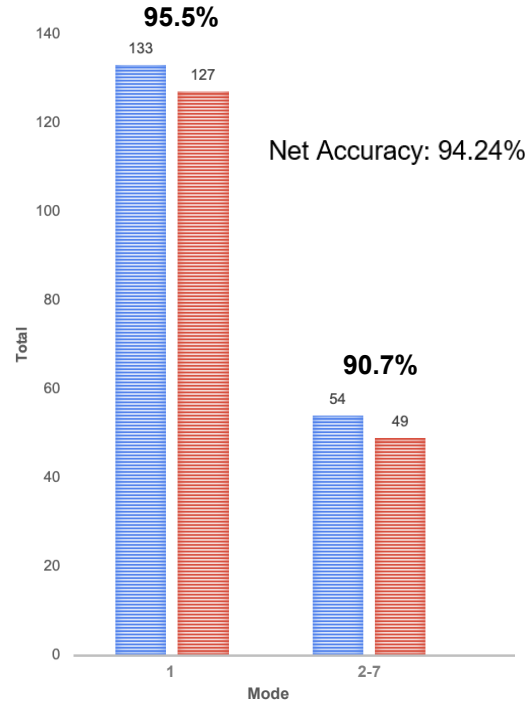
- **Count line and turning movement data collection requirements:**



1 = Pedestrian,
2 = Wheelchair (includes powered),
3 = Bicycle (including tricycle),
4 = E-bicycle,
5 = E-Scooter,
6 = Skateboard, skates, other micromobility (includes electric powered versions), and
7 = other animals



Counting Data Performance

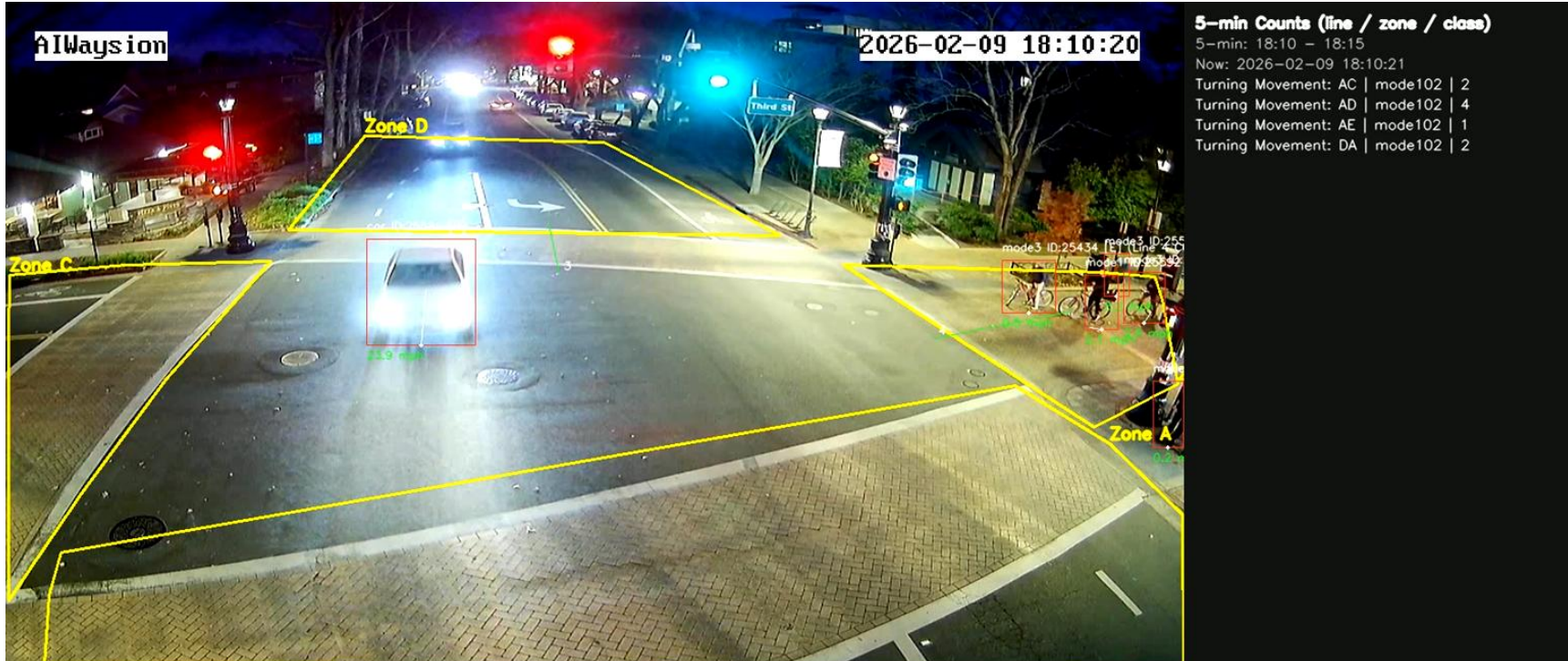


1: Pedestrian, 2: Wheelchair, 3: Bicycle, 4: E-bicycle, 5: E-Scooter, 6: Skateboard, 7: Others

Active Transportation Data



Active Transportation Data (Night)



Turning Movements

Turning movement sensor data from B St & 3rd St, Davis, CA.

Caltrans Davis

Select Date

05/01/2026

Quick Filters

Today

Yesterday

Turn ID

All Turns

Travel Mode

All Modes

17,642

Total Movements

All Bikes/Micro: 4,041

Bicycle: 2,773

E-Scooter: 1,063

Skateboard/Micro: 89

E-Bicycle: 79

Show 25 entries

3001-3025 of 4,514 records

Time Interval	Turn	Mode	Count
17:15 - 17:20	A → D	Mode 102	37
17:15 - 17:20	A → E	Mode 102	1
17:15 - 17:20	C → A	Mode 102	3
17:15 - 17:20	C → D	Mode 102	1
17:15 - 17:20	C → E	Bicycle	3
17:15 - 17:20	C → E	E-Scooter	5
17:15 - 17:20	C → E	All Bikes/Micro	8
17:15 - 17:20	C → E	Mode 102	2
17:15 - 17:20	D → A	Bicycle	2
17:15 - 17:20	D → A	All Bikes/Micro	2
17:15 - 17:20	D → A	Mode 102	20
17:15 - 17:20	D → C	Bicycle	1
17:15 - 17:20	D → C	All Bikes/Micro	1
17:15 - 17:20	D → C	Mode 102	5
17:15 - 17:20	D → E	Mode 102	1

Countline Data

Countline sensor crossings from B St & 3rd St, Davis, CA.

Caltrans Davis

Select Date

05/01/2026

Quick Filters

Today

Yesterday

Countline

All

Direction

All

Travel Mode

All Modes

9,759

Total Crossings

Ped + Wheelchair: 3,246

Pedestrian: 3,245

All Bikes/Micro: 1,628

Bicycle: 1,102

E-Scooter: 505

Skateboard/Micro: 16

Other: 11

E-Bicycle: 5

Wheelchair: 1

Show 25 entries

1926-1950 of 3,335 records

Time Interval	Countline	Direction	Mode	Count
16:25 - 16:30	Countline 3	Clockwise	Pedestrian	1
16:25 - 16:30	Countline 3	Counter-Clockwise	E-Scooter	1
16:25 - 16:30	Countline 3	Clockwise	Ped + Wheelchair	1
16:25 - 16:30	Countline 3	Counter-Clockwise	All Bikes/Micro	1
16:25 - 16:30	Countline 4	Counter-Clockwise	Pedestrian	2
16:25 - 16:30	Countline 4	Clockwise	Pedestrian	2
16:25 - 16:30	Countline 4	Clockwise	Bicycle	2
16:25 - 16:30	Countline 4	Counter-Clockwise	Bicycle	3
16:25 - 16:30	Countline 4	Counter-Clockwise	E-Scooter	1
16:25 - 16:30	Countline 4	Clockwise	Ped + Wheelchair	2
16:25 - 16:30	Countline 4	Counter-Clockwise	Ped + Wheelchair	2
16:25 - 16:30	Countline 4	Clockwise	All Bikes/Micro	2
16:25 - 16:30	Countline 4	Counter-Clockwise	All Bikes/Micro	4
16:30 - 16:35	Countline 1	Clockwise	Pedestrian	10
16:30 - 16:35	Countline 1	Counter-Clockwise	Pedestrian	4
16:30 - 16:35	Countline 1	Counter-Clockwise	E-Bicycle	1

Video Analytics for Micromobility Classification



AI-powered video analytics pipeline to produce robust fine-grained micromobility classification & counting



Detection/Tracking Results

Human Pose
Estimation



Human Pose Results

Speed
Estimation



Acceleration Results & Final Classification



Synthetic Data for E-Bike & E-Scooter Detection Fine-Tuning



Scooter



Wheelchair



E-bike



Rain



Nighttime



Fog

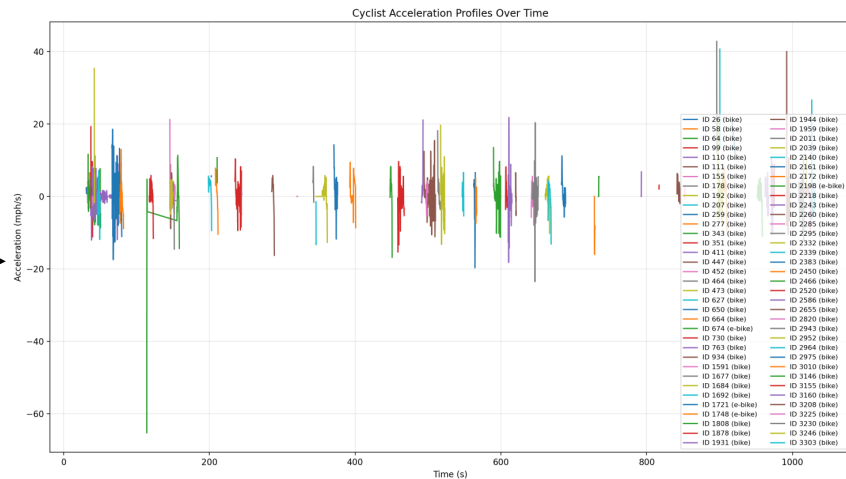


Google
NANO BANANA

Statistical Analysis for Fine-Grained Cyclist Classification

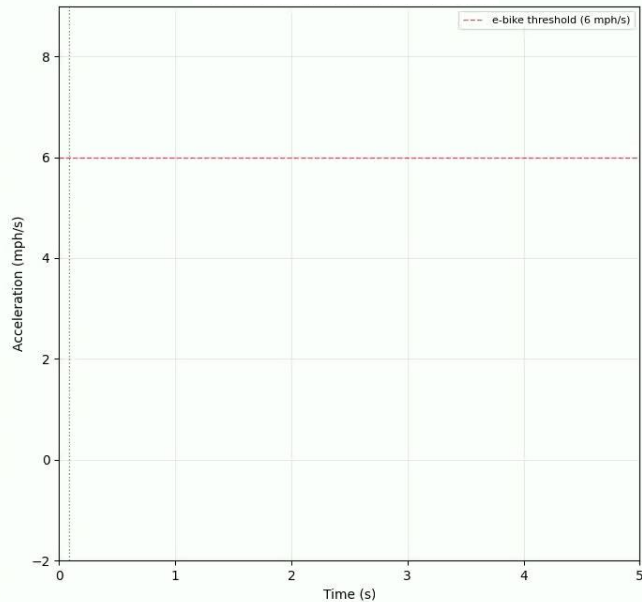
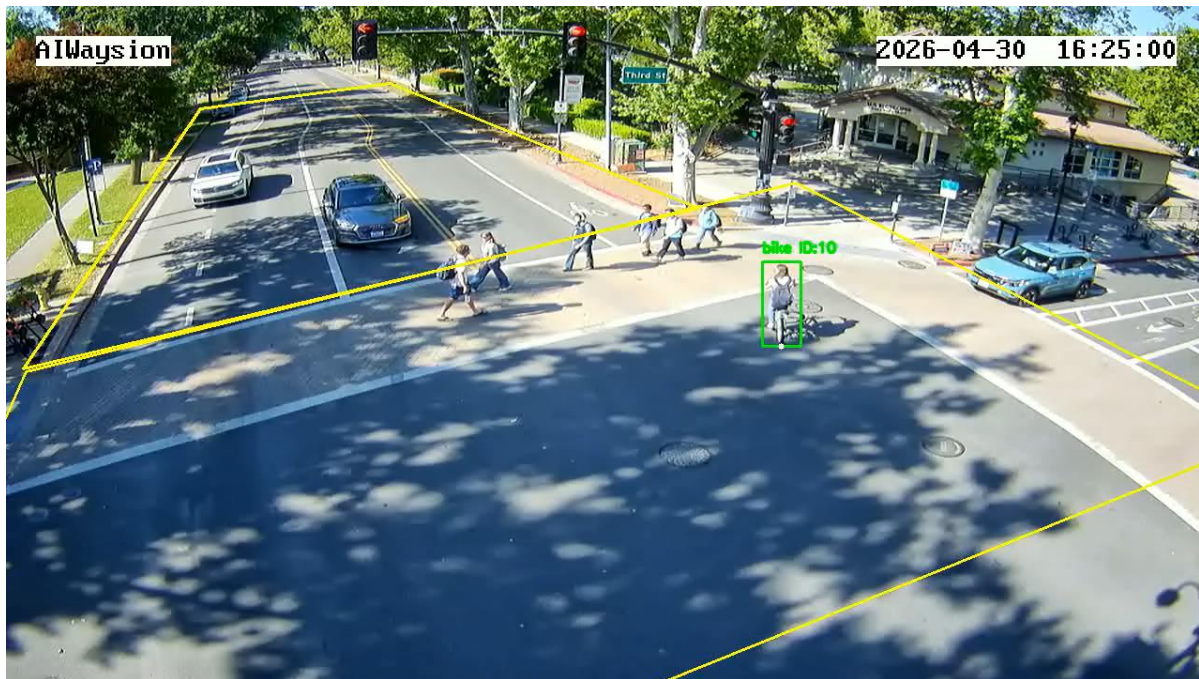


Speed Estimation Results

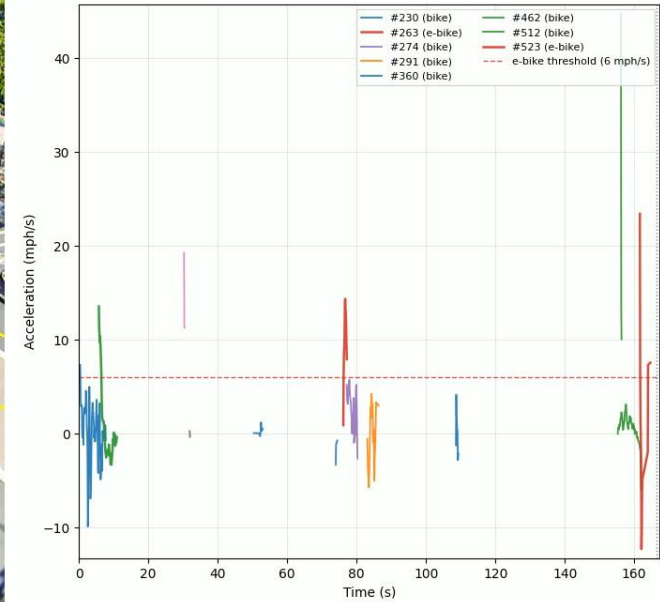
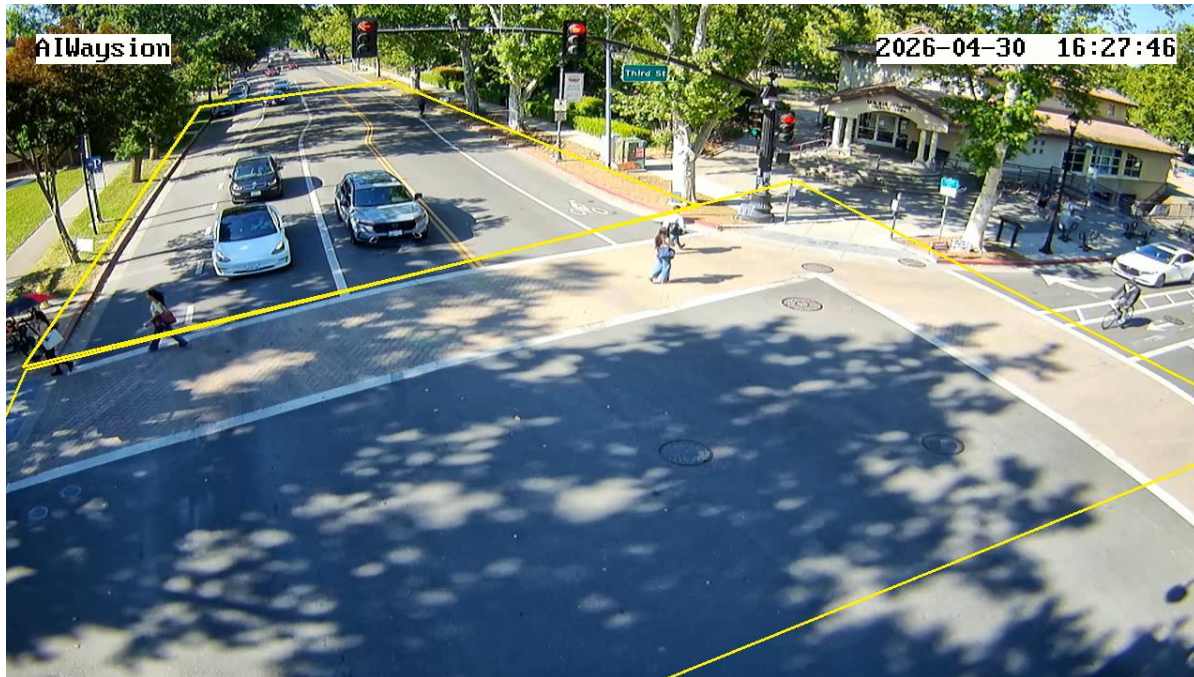


AI-powered speed mechanics analysis to distinguish between conventional and e-powered bicycles

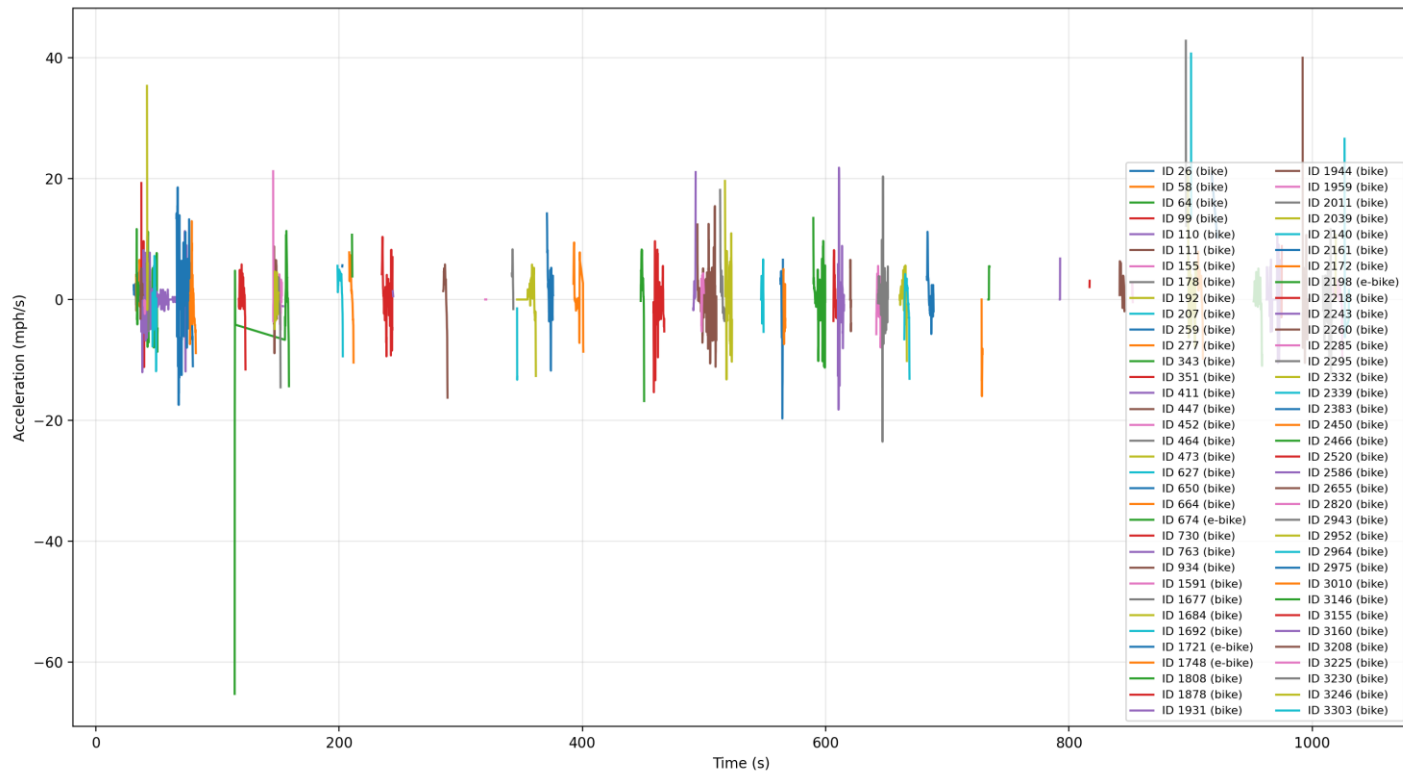
Statistical Analysis for Fine-Grained Cyclist Classification



Statistical Analysis for Fine-Grained Cyclist Classification

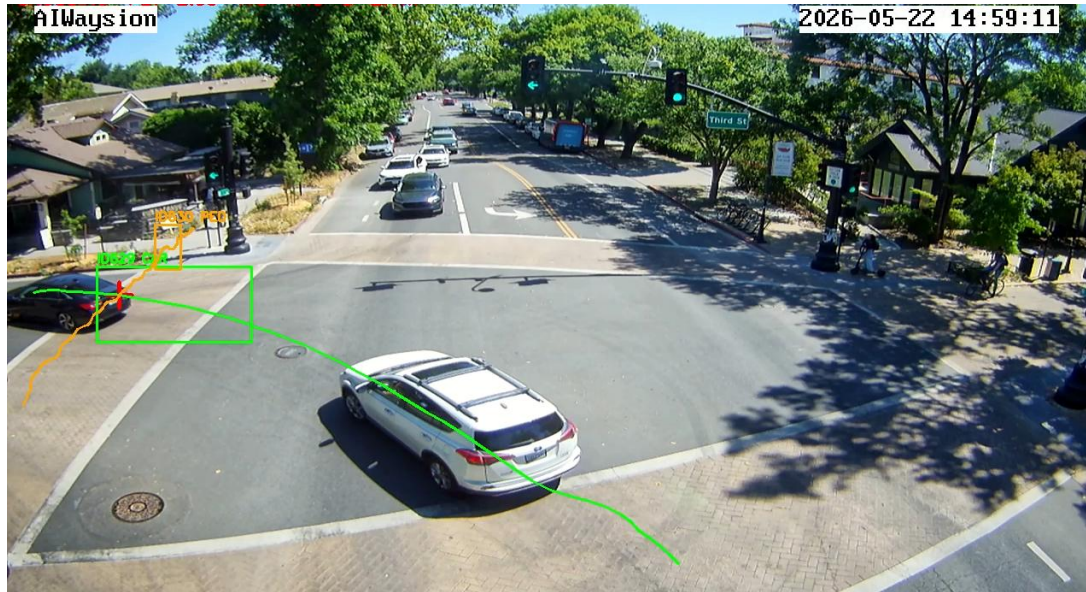


Statistical Analysis for Fine-Grained Cyclist Classification



Intersection Monitoring

Ped & Micromobility Near Miss Events



Intersection Monitoring Dashboard

Select Date: 05/15/2026

Quick Filters: Today Yesterday

Camera: All Cameras

Severity: All Severities

25 Total Events

11:00 - 12:00 4 events 4 low

- Near Miss Low Severity**
11:55:00
May 16, 2026
north_cam ID: 1241-1343 F2962
- Near Miss Low Severity**
11:50:00
May 16, 2026
north_cam ID: 1209-1308 F2390
- Near Miss Low Severity**
11:50:00
May 16, 2026
north_cam ID: 1209-1308 F2405
- Near Miss Low Severity**
11:40:00
May 16, 2026
north_cam ID: 160-162 F878

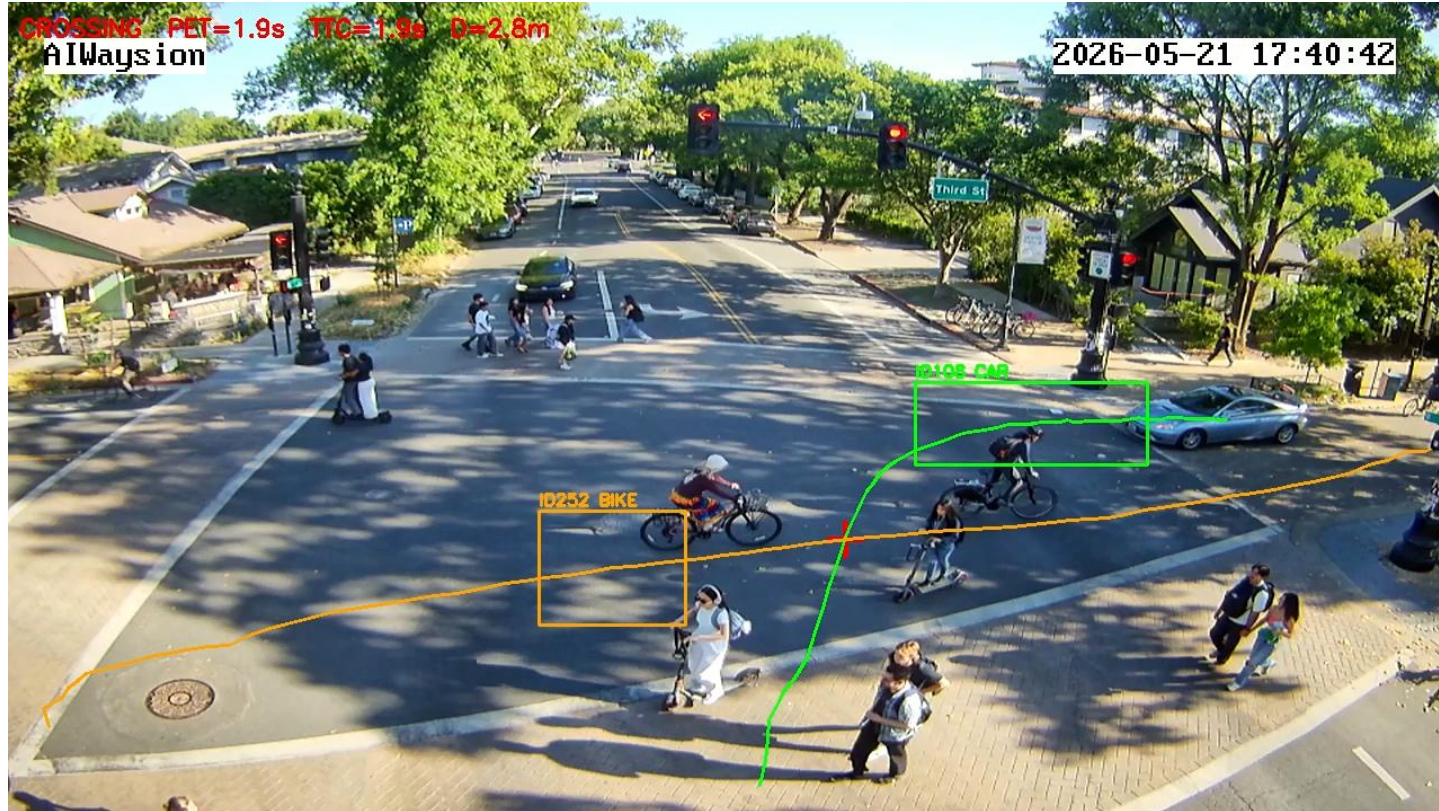
12:00 - 13:00 5 events 5 low

- Near Miss Low Severity**
12:35:00
May 16, 2026
north_cam ID: 1083-1084 F1217
- Near Miss Low Severity**
12:25:00
May 16, 2026
north_cam ID: 264-312 F541

P2V Near Miss Events



C2V Near Miss Events





Heat Map Analysis



Events for TTC < 1 sec



time	track_id	point_x	point_y
8/5/2024 7:00:12 AM	14	183.575	181.580
8/5/2024 7:00:16 AM	25	193.149	172.787
8/5/2024 7:00:16 AM	25	168.397	181.745
8/5/2024 7:02:16 AM	142	365.956	99.290
8/5/2024 7:02:16 AM	142	351.999	102.083



Events for TTC < 2 sec



TTC	lat	lon
1.20000	32.206983003	-110.909692746
1.11000	32.206992715	-110.909701090
0.86000	32.206978003	-110.909697444
1.93000	32.207190770	-110.909771851
1.90000	32.207173214	-110.909771162



THANKS!

Do you have any questions?

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