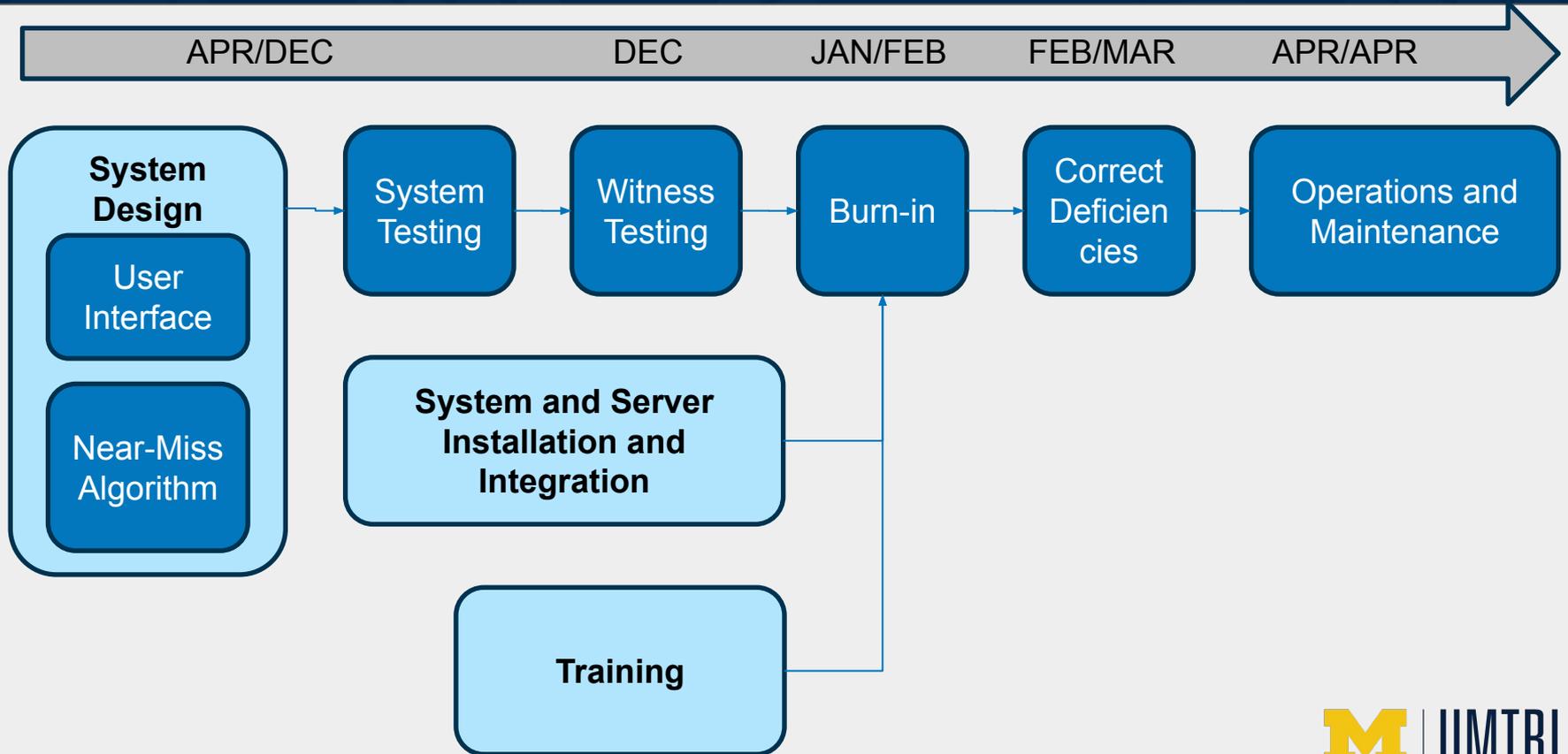


# Near-miss Video Analytics System

**Debby Bezzina, AACE Managing Director**  
**February 18. 2026**



# Near-Miss Project Timeline



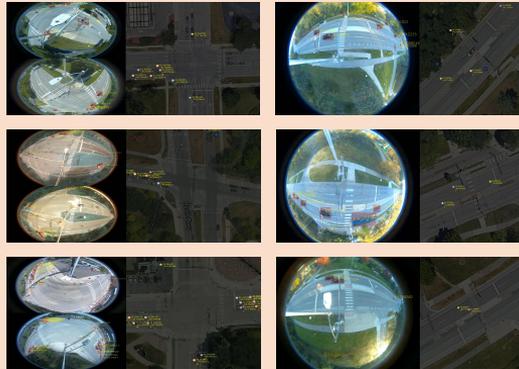
# Msight – Key Features

- **MSight is a full-stack roadside perception and conflict/crash detection system for vehicles and Venerable Road Users (VRUs)**

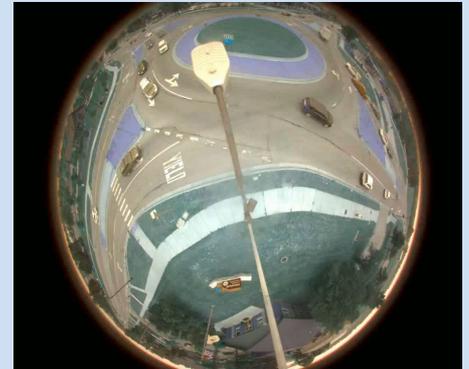
Accurate vehicle and VRU detection



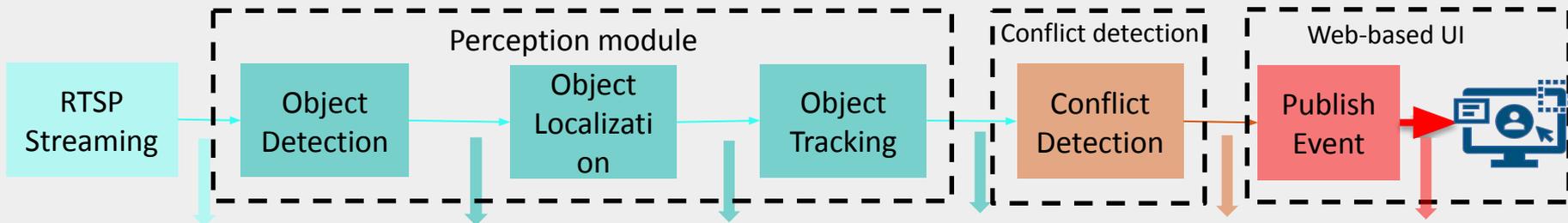
Leveraging existing cameras  
Easy to expand to new sites



Conflict and crash detection



# Msight Near-miss Detection System Pipeline



Raw image



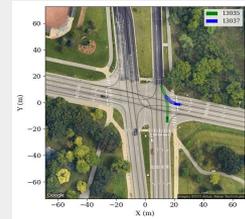
Pixel coordinate



World coordinate (lat, long)



Tracked trajectories



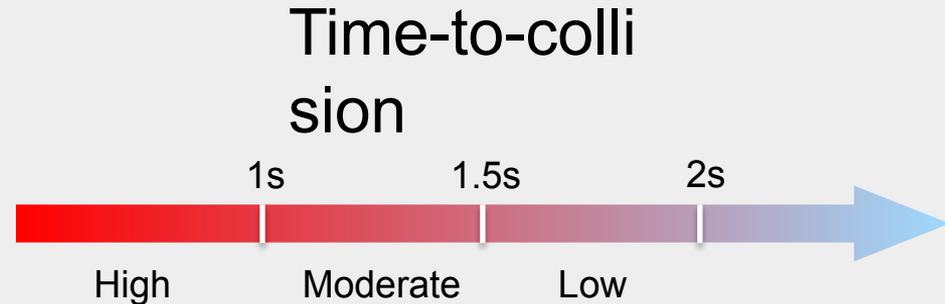
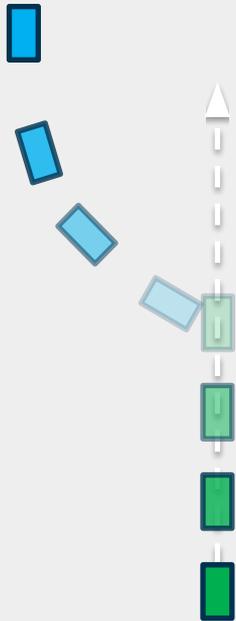
Conflict detection



Conflict events

# Msight Near-miss Detection Methodology

TTC – based detector



# Near-Miss System Status

- 2025
  - Issued Program Management Plan
  - Completed the near-miss analytics system design
  - Stood up servers
  - Streamed cameras
  - Finalized test plans and conducted and passed system testing
- 2026
  - Developed training materials and conducted training with City personnel
  - Started Burn-in

# Near-Miss System Next Steps

- Complete all camera streaming
- Finish training the model at each intersection
- Enter operations and maintenance phase
- Planned software updates for improved performance

# Near-Miss System Performance – Back Office

Server	CPU Utilization	GPU Utilization	Memory Utilization	Capacity	Upload/Download Bandwidth	Server Uptime
Near-miss server 1	40%	50%	60%	Used 35%	58.0Mbps/4.28Mbps	90%
Near-miss server 2	40%	40%	55%	Used 35%	123.0Mbps/3.58Mbps	90%
Cloud Servers	10%	N/A (GPU is not used)	10%	Used 5%	0.15Mbps/1.52Mbps	99%

# Near-Miss Algorithm Performance

Intersection	No. of near-misses	No. of crashes	Precision	Object classification accuracy	Notification system accuracy
Main & Stadium	42	0	76%	94%	100%
Pauline & Main*	1	0	50%	100%	100%
South university & Washtenaw*	1	0	25%	100%	100%

# User Interface

MONITOR REPORT USER MANUAL Logged in As: dsc202@umtri.edu LOGOUT

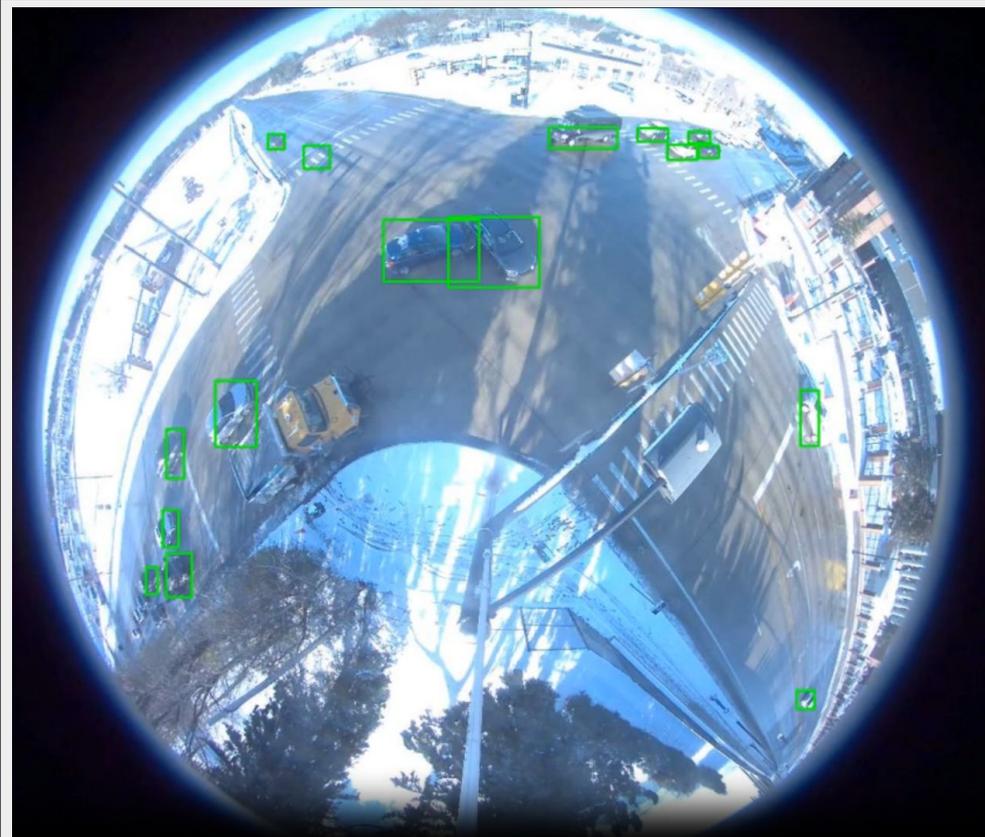
2025/11/16 - 2025/11/30 View of Time: Mon, Tue, Wed, Thu, Fri, Sat, Sun Time Period: 9:00 AM - 9:00 PM Interaction: Crash, Nearmiss Conflict Type: Vehicle to Vehicle, Vehicle to VRT, Single vehicle Movement: Through Left, Through, Through Right, Left... Severity: Low, Moderate, High Full Query Query By ID

Conflict Event List Interaction Safety Performance Map Visualization Conflict Event Details

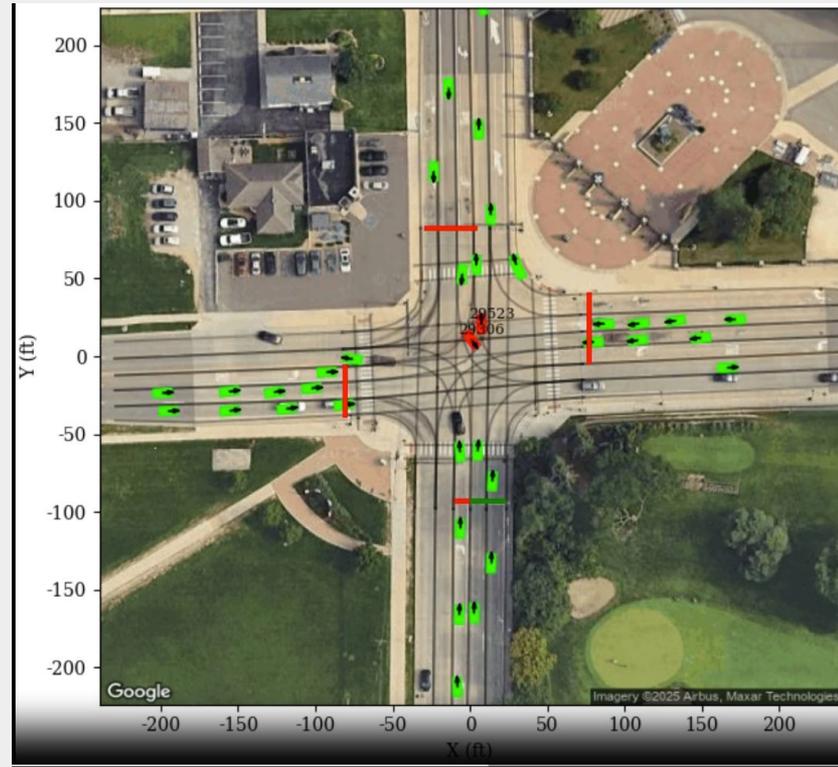
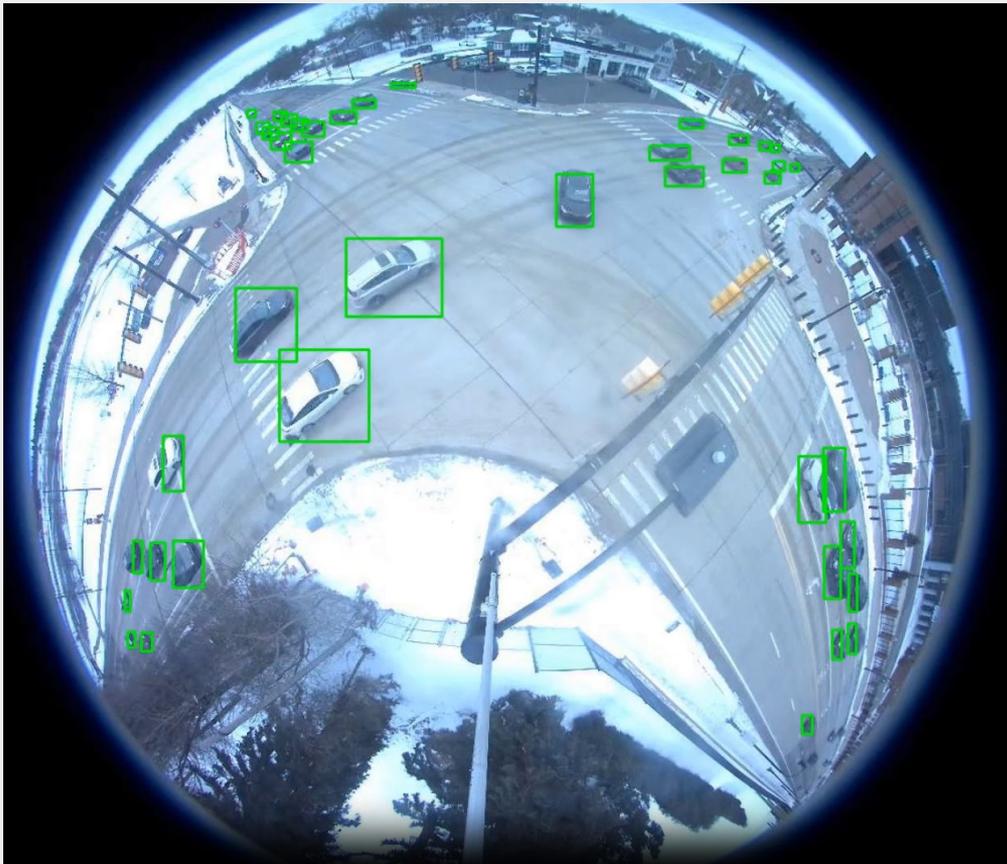
Conflict Event List CURRENT PAGE ALL DATA Heatmap Conflict Events Heatmap Trajectories

Interaction	Date	Time	Day of Week	Event Type	Severity	Object Movement	Rear User Classification	Contributing Factors
94_Faller/Geddes_Huron/Peve	11/16/2025	9:19 AM	Sunday	Near miss	Low	Through-Through	Sedan, Crossover	WTO violation
132_Alan_Stadium	11/16/2025	10:25 AM	Sunday	Crash	High	Through-Right	Sedan, Sedan	Traffic signal violation
132_Alan_Stadium	11/16/2025	11:03 AM	Sunday	Near miss	Low	Through-Left	Sedan, Sedan	Speeding, Turning movement
132_Alan_Stadium	11/16/2025	12:18 PM	Sunday	Near miss	Low	Through-Left	Sedan, Sedan	Turning movement violation
132_Alan_Stadium	11/16/2025	1:06 PM	Sunday	Near miss	Low	Through-Left	Sedan, Sedan	Turning movement violation
132_Alan_Stadium	11/16/2025	3:17 PM	Sunday	Near miss	Low	Through-Left	Sedan, Sedan	Turning movement violation
132_Alan_Stadium	11/17/2025	3:40 PM	Monday	Near miss	Moderate	Through-Left	Sedan, Sedan	None
94_Faller/Geddes_Huron/Peve	11/20/2025	3:05 PM	Thursday	Near miss	Low	Through-Right	Sedan, Sedan	None
132_Alan_Stadium	11/21/2025	7:07 PM	Friday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/22/2025	2:05 PM	Saturday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/23/2025	9:52 AM	Sunday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/23/2025	2:15 PM	Sunday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/23/2025	2:20 PM	Sunday	Crash	High	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/23/2025	7:21 PM	Sunday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/24/2025	7:51 PM	Monday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/25/2025	9:12 AM	Tuesday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/25/2025	11:26 AM	Tuesday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/26/2025	9:19 AM	Wednesday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/26/2025	10:57 AM	Wednesday	Near miss	Low	Through-Left	Sedan, Sedan	None
132_Alan_Stadium	11/27/2025	11:46 AM	Thursday	Near miss	Low	Through-Left	Sedan, Sedan	None

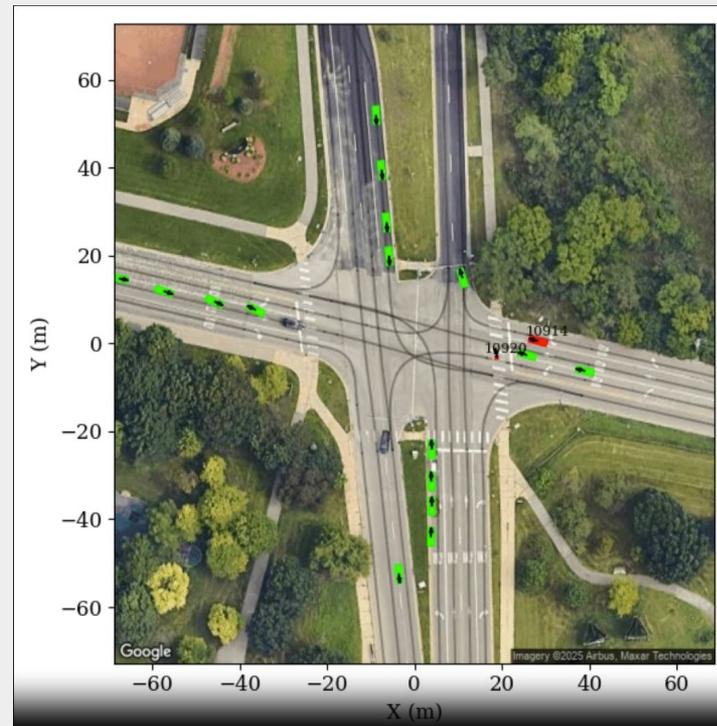
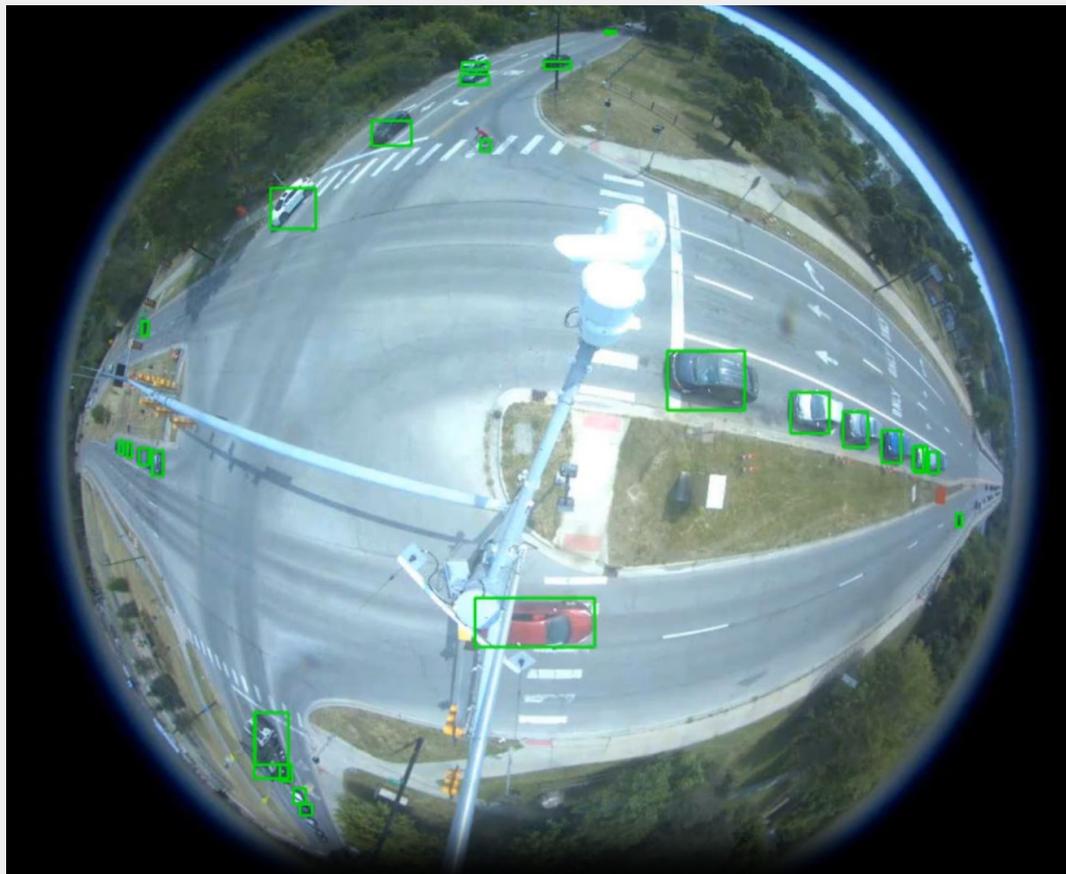
# UI – Sample Crash Event



# UI – Sample Near-miss Event (High)



# UI – Sample VRU Event



# UI – Heat Map Analysis

