



PreVAIL™

Predictive Vehicle Activity for Identification & Location



PreVAIL is an AI/ML framework that enables the state-of-the-art for satellite-based tracking capabilities using a novel approach to automated target detection and recognition (ATD/ATR). PreVAIL leverages commercial and military assets using sensor-agnostic algorithms to maintain custody of targets, even in periods of intermittent coverage, increasing GI-ISR mission effectiveness.

Key Features

- Accurately predicts the vehicle location, orientation, and appearance before the target is acquired by the sensor.
- Reveal subtle, anomalous vehicle behavior across multiple sensors, times, and locations.
- Leads to faster target engagement with fewer false alarms.
- More flexibility by leveraging commercial and opportunistic surveillance assets.
- Sensor-agnostic capabilities save time and allows for optimized use of ISR assets.



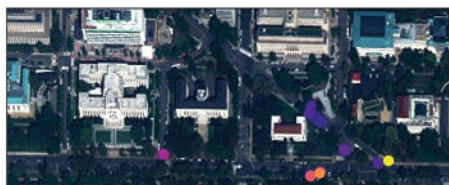
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How PreVAIL Works

- PreVAIL algorithms use machine learning and road networks to predict the appearance and orientation of target vehicles in future imagery.
- PreVAIL integrates traffic data and driving characteristics to determine the most probable search area for a given timepoint.
- PreVAIL requires minimal information about previous detections and vehicle type to make accurate predictions of the future vehicle position.



$\Delta t = 22.50 \text{ sec}$: $D = 188.48 \text{ meters}$: $V_{avg} = 18.74 \text{ mph}$



ROADMAP

Phase 1 - AFRL Air Force
Explore Proof of Concept Completed
2nd Qtr 2022

Phase 2 - Advanced Algorithm Development
Basic UI/UX
3rd Qtr 2022 - 3rd Qtr 2024

Initial PreVAIL Prototype
Enhanced UI/UX
IOC Architecture Integration

Prototype Demonstration in Exercise

End Goal:
IOC as a Program of Record

