ASIMOV

A multicamera system that ensures safer operations using machine learning

Situational awareness

ASIMOV, an appliqué detection system based on AI and machine learning techniques, identifies and tracks people in the vicinity of ground-based platforms. ASIMOV is designed to differentiate between authorized or unauthorized personnel, bystanders, and potential hostile actors both near and far. These inferences are made from a combination of visual cues and human behavioral observations, including adversarial actions meant to mislead most systems.

Self-contained, vehicle-agnostic hardware

ASIMOV uses a combination of high-performance electro-optical (EO) and long-wave infrared (LWIR) sensors that can easily be mounted on most platforms and provide up to 360 degrees of awareness. As a self-contained system, it can be a standalone capability or integrated into other systems to augment their capabilities.


CAMERAS TRACKING:
- ● Friendly personnel
- ● Hostile actors
- ● Bystanders

[Warfighter] Standing

[Warfighter] Standing

Human (0.73) Human (0.72) Human (0.48) 0.50) Human (0.13) uman

Robust detections even in challenging conditions

Vision systems can be challenged by rural, city, and combat environments. A system's ability to perceive may be negatively impacted by poor lighting, inclement weather, and the presence of visual occlusions such as dust and vegetation. ASIMOV's use of non-emitting multispectral sensors overcomes all these conditions, allowing for robust detections with high confidence and continuous learning from the environment.

ASIMOV is expertly trained to detect and track people in many different poses such as standing, crouching, sitting, or lying on the ground, and who can be obscured by foliage or debris. ASIMOV's detection technology is built on advances from Awarion®, Charles River's Autonomous Lookout System, which has been successfully integrated and demonstrated on Navy and Army platforms.

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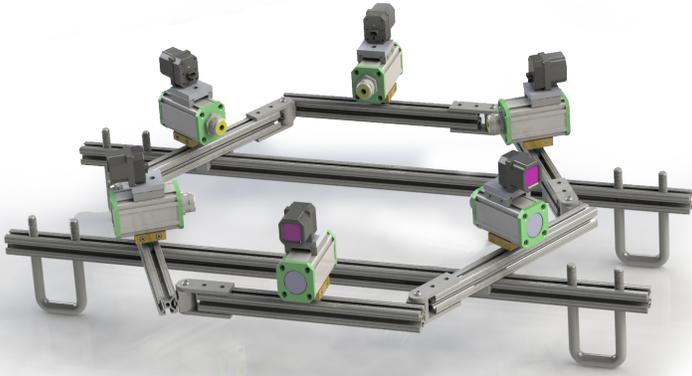
**ASIMOV hardware setup**

Safety conscious

ASIMOV's detections are directly displayed to an operator with associated alerts, which can be used to trigger external alarm systems, and then integrated into downstream architectures. Detection data is categorized and labeled to reflect the type of detection (e.g., Soldier, field worker), along with the probability of the detection being a false positive/false negative.

ASIMOV's performance can be tailored to specific scenarios like worker safety monitoring, railway systems, mining operations, warehouses, agriculture, and any autonomous system that operates alongside humans.

Relative geospatial tracking

ASIMOV tracks and displays the relative geospatial location of people with respect to the platform and can be integrated into larger GIS mapping systems. Along with the detection capability, the system identifies the path taken, even if the path taken is behind an object.

These detections can be used in advanced autonomous systems assisting in navigation or specific mission scenarios such as reconnaissance, surveillance, and threat detection.
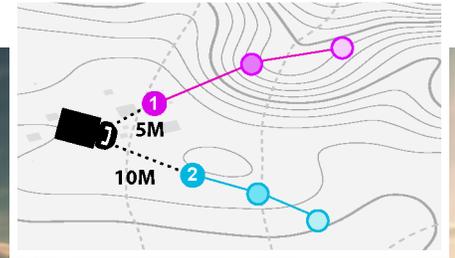
Key advantages

360-degree observations provide complete coverage of the vehicle.

Humans can be detected in atypical poses or while heavily occluded.

EO/IR sensing enables operations at day, night, and in unfavorable weather.

Self-contained technology interfaces with most vehicles.

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Autonomy you can trust

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