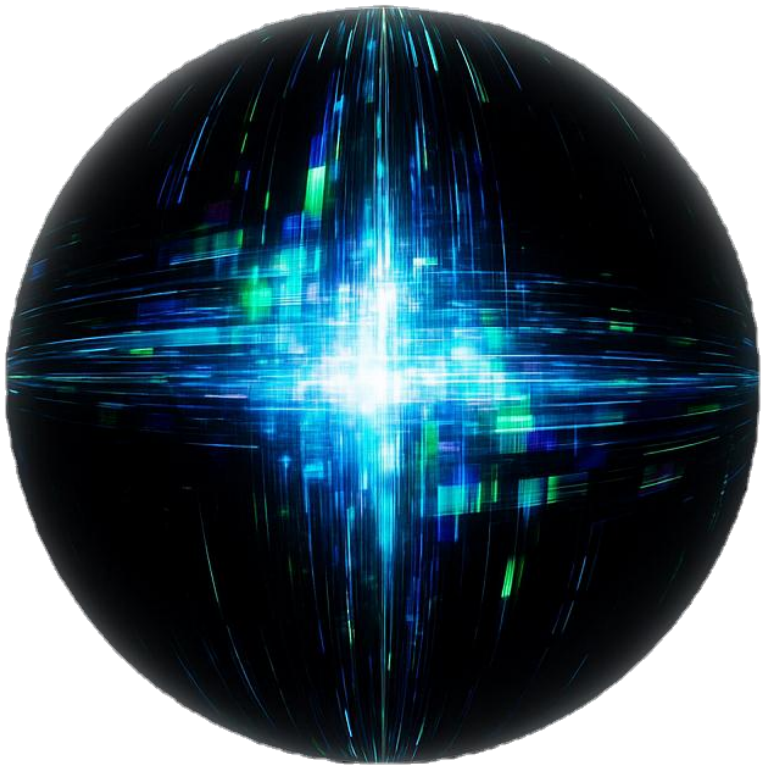
SARAHAI-INFERENCE Operator's Manual

Version 11.91

(S)ituational (A)wareness (R)esponse (A)nd (H)elp (AI)

Run from USB Thumb Drive or Copy all USB Thumb Drive contents to HDD Directory



Developer: Tensor Networks, Inc. (All Rights Reserved) [2]

Patents: Licensed by the United States of America (U.S. Patent Nos. 9,696,404 and 11,308,384) [3]

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1. Introduction: The Warfighter Advantage

1.1 Overview

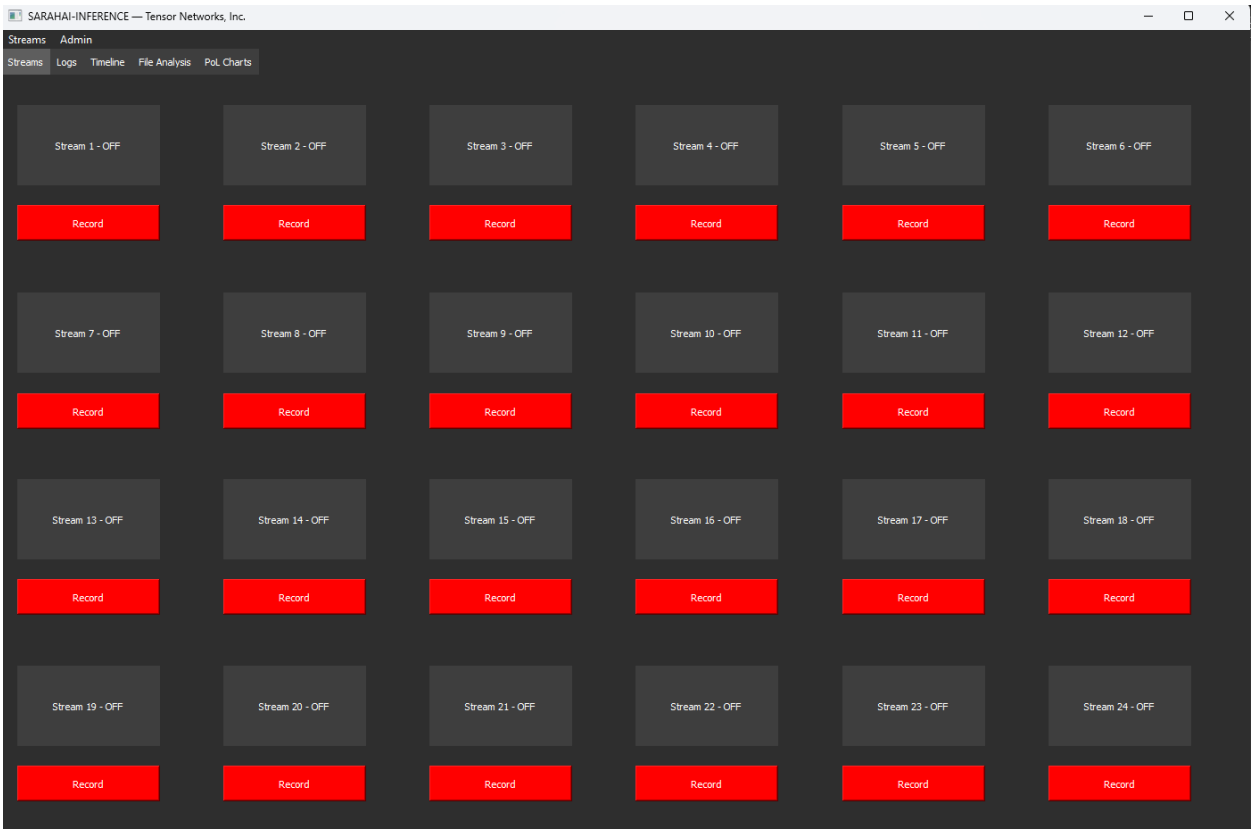
SARAHAI-INFERENCE is an advanced AI surveillance platform designed to act as a force-multiplier for modern defense and security operations[4]. By leveraging state-of-the-art artificial intelligence, it provides enhanced situational awareness for base perimeter defense, high-value asset protection, and mobile or forward operating positions. The system is engineered to strengthen the force's lethality, readiness, and resilience, enabling Security Forces and OSI to modernize and posture for great power competition by integrating advanced, autonomous technology into daily operations[5].

1.2 Core AI Capabilities

SARAHAI-INFERENCE automates the tedious and error-prone task of constant monitoring, allowing operators to focus on response and decision-making.

- **Real-Time Object Detection:** Utilizes the YOLOv8n model to identify and classify critical objects in real-time video feeds, including person, car, gun, knife, drone, and fire[6].
- **Advanced Color Recognition:** Employs the CIEDE2000 color-difference formula to identify the specific color of detected objects, providing crucial descriptive details for reports and identification (e.g., "person in a red shirt")[7].
- **Persistent Object Tracking:** Assigns unique IDs to moving objects, tracking their position and calculating their speed across the field of view[8].

- **Pattern of Life Anomaly (PoLA) Detection:** Establishes a baseline of normal activity and automatically flags abnormal events, such as unusual object types for a given time of day or objects moving in unexpected locations or speeds[9].



With up to 24 Real-time surveillance streams with cameras connected via USB, RTSP, or ONVIF

1.3 Air-Gapped Operations

For missions requiring maximum Operational Security (OPSEC), SARAHAI-INFERENCE's core AI processing and surveillance functions operate entirely on the local machine. It does **not** require an internet connection to detect, track, and record events. This makes it ideal for air-gapped networks and forward positions where connectivity is limited or denied.

Note: Functions such as sending email/SMS alerts or performing cloud backups to S3 will require a network connection[10].

2. System & Installation Requirements

2.1 Minimum & Recommended Specifications

- **Operating System:** Windows 11 (64-bit)
- **CPU:**

  - Minimum: Quad-core processor
  - Recommended: 8-core processor (e.g., Intel Core i7/i9, AMD Ryzen 7/9)
- **RAM:**
  - Minimum: 8 GB
  - Recommended: 16 GB or more for multi-stream analysis
- **GPU (Graphics Processing Unit):**
  - **Highly Recommended:** A dedicated NVIDIA or AMD GPU is critical for real-time performance.
  - NVIDIA Support: CUDA-enabled GPUs (e.g., GeForce RTX series)[11].
  - AMD Support: ROCm (Linux) or DirectML (Windows) compatible GPUs (e.g., Radeon RX series)[12].
- **Storage:** Solid State Drive (SSD) with 20GB of free space for logs and recordings.

2.2 First-Time Setup

The first time you run SARAHAI-INFERENCE.exe, the system will perform a one-time setup:

1. **EULA Acceptance:** You must read and accept the End User License Agreement to proceed[13].
2. **Dependency Check:** The application will check for necessary components and may download them if running from the source script (this step is skipped in the .exe version)[14].

3. Getting Started: The Main Interface

The user interface is organized into several tabs for ease of use.

- **3.1 Streams Tab:** Displays the live video feeds from all active cameras in a grid of up to 24 cells[15]. This is your primary dashboard for live monitoring.
- **3.2 Logs Tab:** Shows a real-time text log of all system events, detections, and errors[16].
- **3.3 Timeline Tab:** A structured table of every detection event, including timestamp, object type, confidence score, and whether it was flagged as a PoL Anomaly[17].
- **3.4 File Analysis Tab:** A tool for performing AI detection on previously recorded video files (.mp4, .mkv, etc.)[18].

- **3.5 PoL Charts Tab:** Visualizes the Pattern of Life data, helping to understand the established baseline of activity[19].

4. Core Operations: Surveillance Deployment

4.1 Step-by-Step: Adding a Video Stream

1. Navigate to the menu bar and click

Streams > Add/Start Stream[20].

2. In the dialog box, select the

Cell (1-24) where you want the new stream to appear[21].

3. Choose the

Source Type[22]:

   - **USB Camera:** For webcams or other direct-connect devices. The "Source Info" should be the camera index (e.g., 0, 1).
   - **ONVIF/RTSP:** For IP network cameras. The "Source Info" must be the full RTSP URL (e.g., rtsp://192.168.1.50/stream1).
   - **File:** To loop a pre-recorded video file as a live source. Browse to the file path[23].

4. Click **OK**. The stream will initialize and appear in the selected cell.

4.2 TTP: Overt Surveillance (Deterrence & Active Monitoring)

For overt operations like Entry Control Points (ECP) or perimeter monitoring, use SARAHAI-INFERENCE as an active situational awareness tool.

1. Position cameras to cover key areas.
2. Add all camera streams to the **Streams Tab**.
3. Click on any stream cell to open an

Enlarged View for detailed monitoring of a specific feed[24].

4. Actively watch the **Timeline Tab** as detections are logged in real-time, providing a structured view of activity.

4.3 TTP: Covert Surveillance (Automated Monitoring & Alerts)

For clandestine operations, SARAHAI-INFERENCE can operate autonomously, requiring minimal operator interaction.

1. Set up discreet camera sources.
2. Configure

Alerts (see Section 7) for high-threat objects (gun, knife, etc.) and PoL anomalies[25].

3. Start the streams. The application can now be minimized. It will continue processing in the background.
4. Operators will be notified via email or SMS when an alert condition is met, allowing them to react without having to constantly watch the screen[26].

4.4 Manual Recording

For any stream, an operator can initiate a continuous recording session.

1. On the **Streams Tab**, locate the desired camera feed.
2. Click the red

Record button below the video feed[27]. The button will change to "StopRec".

3. The system will record the raw feed to an encrypted

.mkv.enc file on the local drive[28].

4. Click

StopRec to end the recording session and secure the file[29].

5. Post-Operation: Data Exploitation & Analysis

5.1 Reviewing Pre-Recorded Video

Use the **File Analysis Tab** to run AI detection on any standard video file (e.g., from a drone, body camera, or previous SARAHAI recording).

1. Navigate to the

File Analysis Tab[30].

2. Click

Open MP4 File and select your video[31].

3. The analysis will begin automatically. Detections will populate the table with the in-video timestamp, object type, and confidence score[32].

5.2 Exporting Logs and Timeline Data

All data can be exported for reporting, intelligence analysis, or use in other data science platforms.

- **Exporting Logs:** Go to **Admin > Export Logs**. This will decrypt and save the entire system event log as a

.txt file[33].

- **Exporting Timeline:** In the **Timeline Tab**, click **Export Timeline**. This saves the detection table as a

.csv file[34].

- **Exporting File Analysis:** In the **File Analysis Tab**, click **Export Analysis**. This saves the analysis results as a

.csv file[35].

5.3 Data Science & Intelligence Analysis

The exported .csv files are immediately usable for data analysis. They contain structured data perfect for:

- **Frequency Analysis:** Determine peak times for activity (e.g., vehicle traffic, personnel movement).
- **Trend Identification:** Analyze object detection data over days or weeks to identify emerging patterns or changes in behavior.
- **Link Analysis:** Correlate detections across multiple cameras to track the movement of individuals or vehicles across a facility.

6. Advanced Capability: Pattern of Life Anomaly (PoLA) Detection

6.1 Understanding PoLA

The PoLA engine is SARAHAI-INFERENCE's most powerful proactive feature. It learns the normal "rhythm" of a location and automatically flags events that deviate from that baseline[36].

- **Numeric Anomalies:** Flags objects that are in an unusual location or moving at an unusual speed for that time and place[37].

- **Categorical Anomalies:** Flags object types that are rare or have not been seen before in the environment[38].

6.2 Tactical Usefulness of PoLA

PoLA provides early warning indicators that a human operator might miss.

- **Hostile Reconnaissance:** Can detect an individual repeatedly appearing in sensitive but low-traffic areas.
- **Insider Threat:** Can flag an authorized vehicle appearing in a restricted zone at an unauthorized time.
- **IED Emplacement:** Can identify a vehicle stopping in a location where vehicles normally don't stop.
- **Pre-Attack Indicators:** Can flag the sudden appearance of rare objects (like a drone or weapon) in an area[39].

6.3 Visualizing PoLA Data

The **PoL Charts Tab** provides visualizations of the collected data, showing scatter plots of object locations and histograms of speed and object categories. This helps operators understand what the AI has learned as "normal" for the environment[40].

7. Mission Configuration: Setting Alerts

Configure what the system alerts on and how it delivers those alerts.

1. Navigate to the menu bar and click

Admin > Alert Management[41].

2. **Alert Mode:** Choose email, sms, or both[42].
3. **Contact Info:** Enter comma-separated email addresses and/or phone numbers[43].
4. **Global Clip Length:** Set the duration (in seconds) of the video clips that are automatically generated and sent with alerts[44].
5. **Anomaly Threshold:** Adjust the sensitivity of the PoLA engine. A lower number (e.g., 0.2) is more sensitive and will generate more anomaly alerts. A higher number (e.g., 0.8) is less sensitive[45].
6. **Min Confidence to Log:** Sets the minimum confidence score for an object detection to be logged, reducing noise from low-confidence events[46].

7. Click **OK** to save the configuration. These settings will apply to all active and future streams[47].

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