Welcome to…
Further INTO THE DEEP

AI BOX®

DON HELMS | Vertical Market Manager

Don joined the security industry in 1997 after serving 10 years in the Military. He has 12 years of experience in AI and Analytics. A seasoned professional, he specializes in physical and electronic security, with many years of experience in the Manufacturing, Commercial, Municipal, State and Federal security sectors. Don has specified, sold and project-managed physical and electronic systems for the Department of Defense, Homeland Security, FBI, US Treasury, and other entities nationally and globally.

OUR TEAM

Keith Sowa
Director of Product Development
Q&A

ALISA WATLINGTON
Marketing Communications Specialist
Moderator

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What is AI?

Artificial intelligence, or deep learning, is a **neural network** with multiple layers. These neural networks attempt to mimic the behavior of the human brain, allowing it to "learn" from large amounts of data.

Within the security industry, deep learning is a **cutting-edge solution** for current and future security systems. For instance, the Ganz AI Box uses deep learning and analysis to recognize and classify detected objects, including people, vehicles, motorcycles, bicycles, and more.

What is deep learning and how does it affect me?

Deep learning is a field of artificial intelligence. It is essentially when machines can do tasks that typically require human intelligence. It encompasses machine learning, where machines can learn by experience and acquire skills without human involvement.

Deep learning can, and is, changing the future for every industry, especially the security, scientific, and medical industries. It saves employees hundreds of hours worth of work by scanning data much more efficiently and performing an action based on the information it finds.

What are AI analytics and how are they used?

AI-driven **security** analytics operate using predictive intelligence and are becoming deeply integrated into physical security. AI analytics collect data and provide risk analysis and predictive behaviors, enabling a proactive response with real-time machine intelligence.

For instance, with the Ganz AI Box, our system **receives** the data from the existing security cameras, **learns** that a person has breached a perimeter, and can be **programmed** to set off an alarm or initiate other actions.

What is predictive intelligence and how does that help me?

Predictive analytics or <u>predictive intelligence</u> is also used to create a customer experience that is unique to a particular individual by monitoring customer behavior and building a profile of their specific preferences.

Behavioral analytics data discovered via artificial intelligence can also be used to predict an individual's future behaviors.

Recent technologies such as our AI Box have tapped into behavioral analytics for responsive monitoring in retail, government, construction, medical, and other industries.

AI BOX – Key Features

- Cutting-Edge proprietary **Deep Learning** AI engine

- Various **AI analysis** support: 'Intrusion', 'Occupancy', 'Loitering', 'Enter/Exit', 'Line Crossing', 'Behavior Analysis' and more

- Compatible with **existing** Onvif-based VMS, NVR/DVR and Alarm monitoring system or it can be used in RTSP mode

- Integrated in **CORTROL, Immix, Sentinel, Safestar, Kronos,** and more

Classifications, Options, Customization, & Behaviors

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Built-in features

Object Detection

Object Tracking

Line Crossing

Loitering

Enter/Exit

Stopped

Classifications

Human

Vehicles

Bike

Options (Ready)

Facial Recognition

License Plate Recognition

Options (Customization)

Vehicle Types

Animals

Clothes

Options (Behavior's customization)

Eating & Drinking

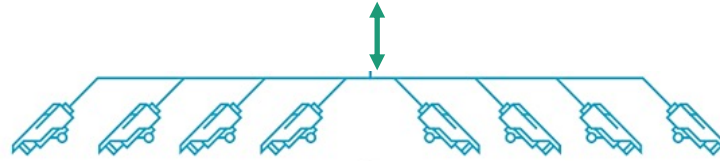**AI Box Setup**
Sample System Overview

Remote Video Monitoring Center

Event

AI BOX

Receives &
analyzes streams to send
only "positives"
while removing
false positives

Alarm System

Recorder

Cameras

Case Study

A large remote monitoring service company with clients ranging from Commercial establishments, to high net worth individuals and private residences, introduced a new concept.

In order to provide a **cost-effective AI solution**, they implemented a Centralized Verification Service called *AI Cloud*. This competes with other cloud solutions based on a subscription rate where costs could quickly escalate.

A number of 16-Channel AI Boxes were installed at a centralized location over the Internet. This provided an **analytics solution** at a **low price** for remote sites with few cameras (1-6) with low video stream (704x576@3fps). Due to the ROI it presents, the solution is quickly gaining traction.

Central AI Verification Station
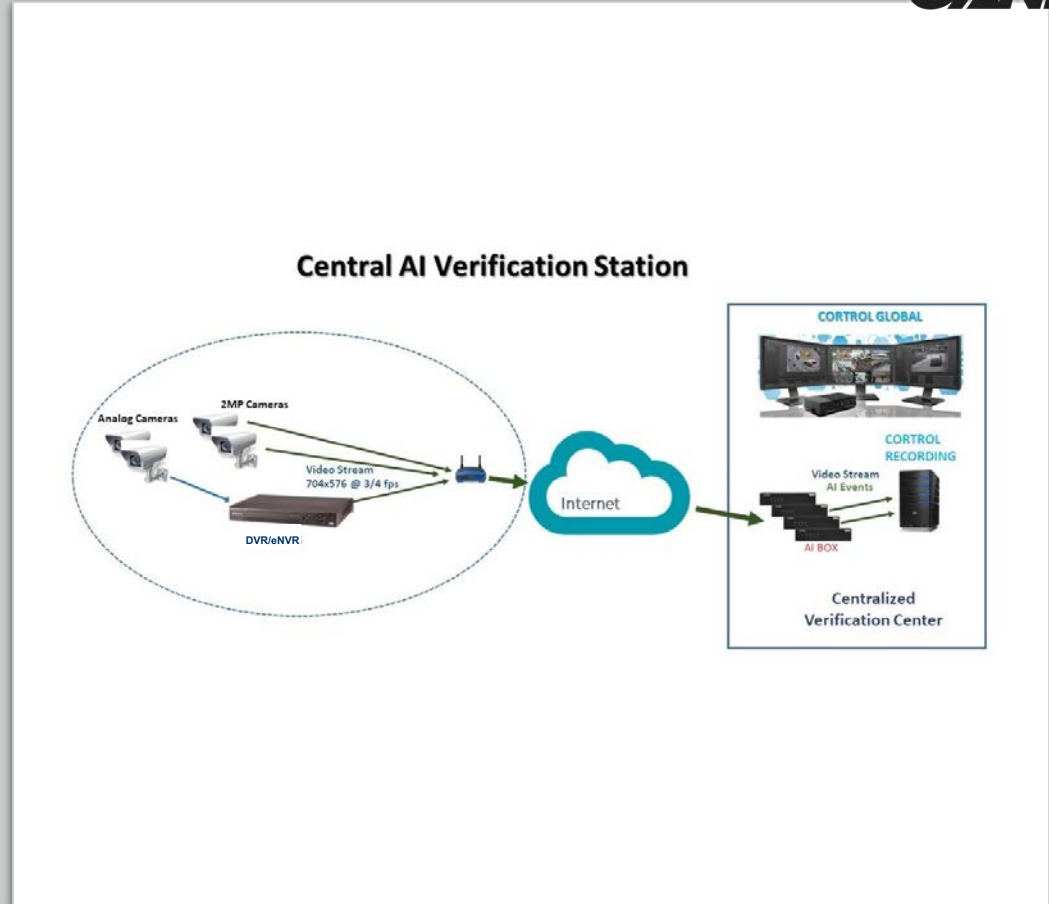
# Other Surveillance & Security Capabilities

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- Object Classification (Humans/Cars/Bikes)
- Virtual Fences in Difficult Conditions (Low Light Sensitivity)
- Occupancy Management/ (ex: 1 person/4 people)
- Fast Object Classification (ex: speeding cars)
- Illegal Parking Detection
- Multiple Rules: Loitering & Virtual Fence Combination
- Boats– Alarm Notifications for Fallen People
- National Park Enter/Exit Management
- Wrong-way Driving Notification
- Railway Crossing Notification
- Multiple Channel Object Notifications
- Notification for Prohibited Objects in Playground

License Plate Recognition (LPR)

* LPR engine recognizes characters & number by OCR type files to be figured out from any recorder systems.
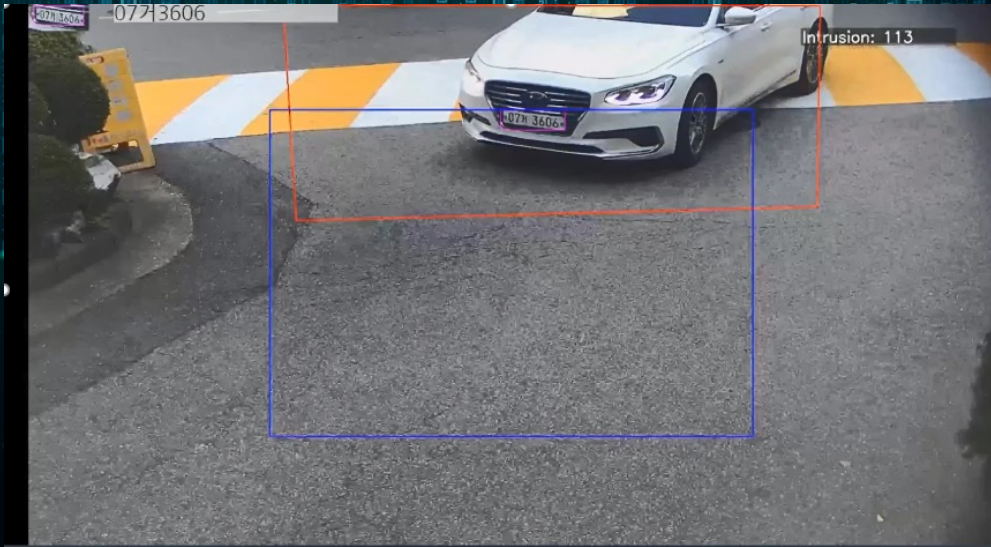
Multiple plates recognitions from 1CH

Face Recognition

- **Group management**

Unapproved   Approved   Employee

Face Recognition

Face Recognition Solution detects the specific face of a person
who is detected in real time and generates events.
Distinguishing between 'approved' visitors and suspicious
visitors
AI search is available by channel,
time, and other options.
You can view the preview video
when you select the search results

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Other Options

- Active Privacy Masking (scrambled objects in target area protects privacy)

Ganz AI Box – Customizations
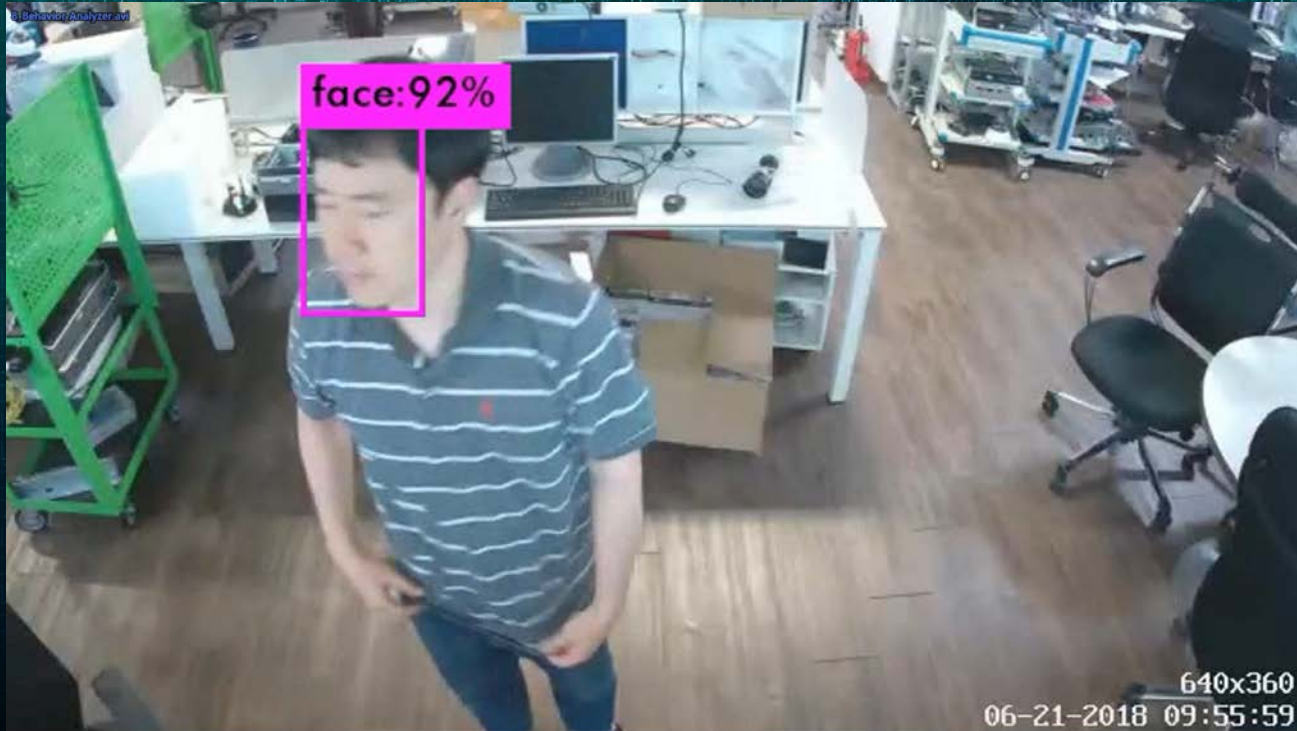
(NRE based)

Helmet Recognition

Behavior Recognition (Optional)
Unmanned shop management application to recognize 'eating' & 'drinking'

face:92%

640x360
06-21-2018 09:55:59

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Object Recognition (Optional)
Unmanned shop management system to recognize items

Ganz AI Box – Features and Benefits

AI vs Traditional Analytics

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Traditional Analytics

- Static
- Only answers the "what"
- Driven by hypothesis
- Input data + algorithm → output

INPUT DATA + ALGORITHM → OUTPUT

AI Analytics

- Dynamic
- Answers the questions "why" and "how"
- Driven by data
- Input data + historical output [both used for training] → algorithm

INPUT DATA + HISTORICAL OUTPUT → ALGORITHM

Improved Operator Efficiency

AI BOX deep learning **only forwards 'true' alarms** to operators, enabling them to make better decisions in response to alarms – without the burden of excessive false alarms.

- Operators only receive 'true' alarms to review
- Reduce the likelihood of operator fatigue
- Improve staff efficiency by reducing alarm volumes
- Helps scale up sites with same number of staff

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Respond faster to genuine security threats

With **90% fewer false alarms** being sent to the monitoring station, operators will have more time to focus on 'true' alarm verification and a **quicker response** to genuine threats.

- Reduce average response times
- Offer more competitive SLAs to customers
- Improve overall loss prevention standards

Growing Your Security Business Faster

As an affordable and powerful alternative to traditional video analytics software, AI BOX helps in scaling your business - while improving operating margins.

Reduced alarm traffic could help streamline resources to take on additional sites.

- Scale business up and down on demand
- Grow without the need to hire additional staff
- AI BOX can be hosted on a "Central Verification Center" atmosphere

Deliver a Better Customer Experience

Actionable events mean first response is always provided on genuine alarms **increasing client confidence** in the deployed solution.

- AI BOX can be deployed on existing systems both IP and Analog
- Remotely optimize cameras to reduce false alarms
- Provide a higher value service for end-users

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Ganz AI Box – Specifications

AI Box Specifications – 4Ch / 16Ch

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1. **USB**: Universal Serial Bus (USB) ports for additional devices such as USB Mouse.
2. **HD Monitor:** For connecting a monitor to view connected cameras. Note, AI Box cannot be configured locally.
3. **Ethernet T1:** RJ-45 port for connecting internet and other platforms such as interoperable VMS, recorders and IP cameras.
4. **Ethernet T2:** Network port for connecting camera and other through a separate network disconnected from the outside.
5. **Alarm In:** Alarm input signal line terminal.
6. **Replay:** Replay connection terminal.
7. **RS485:** Relay RS485 communication device connection terminal.
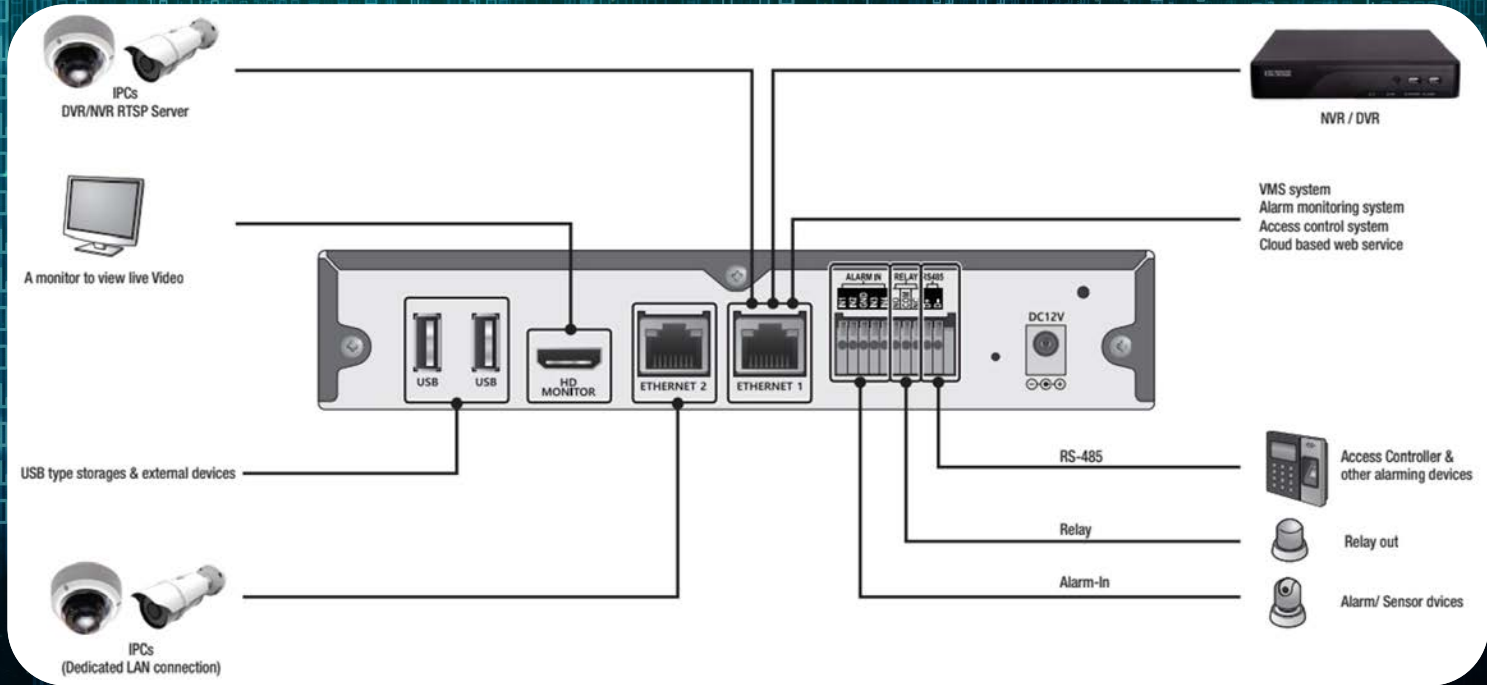8. **DC12V:** 12V adapter plug

4Ch AI Box
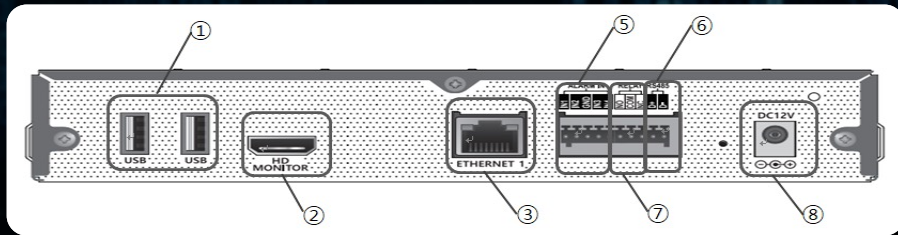
16Ch AI Box
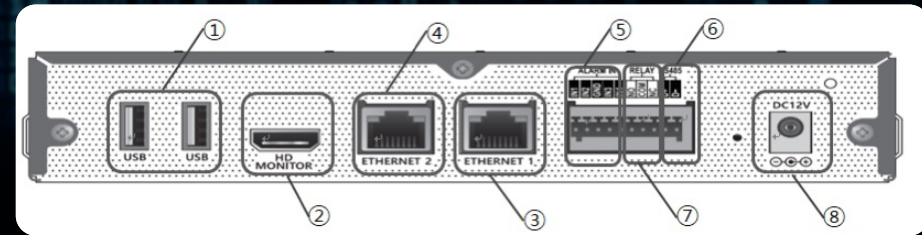
Basic Connection Configuration

AI Engine	**Detector**	Deep learning based, Object Detection & Classification - Human, Car, Bike and other objects		
	Tracker	Multi object Tracking		
	Recognizer	Face Recognition Engine (Option: License)		
		License Plate Recognition Engine (Option: License)		
	Behavior Analyzer	Human behavior analysis (Option: License / Customizing)		
	False Alarm Filter	Yes		
Event Trigger	**False Alarm Filter**	Intrusion, Presence, Loitering, Enter/Exit, Line Crossing, Stopping, Direction, Tailgating		
	Counting Trigger	Object Counting(Line, Zone, Queue(Presence)), Event Counting		
	System Trigger	Alarm-In, Recurrence		
	Recognition Trigger(Option)	Face Recognition, License Plate Recognition		
	Combined with other triggers	Yes (Customizing)		
Event Action	**Network Action Handler**	Onvif, HTTP, TCP, FTP, E-mail		
	System Action Handler	Relay Out, RS485		
	Pre/Post snapshot	Yes		
Analytics Report	**Counter Report**	Number of objects in zones, Line crossing counting (Line cross, Enter, Exit), Event counting		
	Visitor Analytics Report	Age, VIP (Need to enable face recognition): Option License		
	Queue Management Report	Queue length, Average Queue Time: Option License		
	Heatmap Report	Yes: Option License		
	Pathmap Report	Yes: Option License		
UI	**Web UI**	HTML5 Web UI (No Plugins)		
API	**API**	Onvif, REST		
VIDEO	**INPUT VIDEO CHANNELS**	Up to 4ch		Up to 16ch
	MAX VIDEO INPUT RESOLUTION	4K @ 30fps - (1080P @ 120fps)		4K @ 120fps - (1080P @ 480fps)
	VIDEO INPUT METHOD	RTSP, Onvif		
	INPUT VIDEO FORMAT	H.265 / H.264		
	ANNOTATED VIDEO	4 + 1 (Channel0 encoding)	8 + 1 (Channel0 encoding)	16 + 1 (Channel0 encoding)
	VIDEO OUTPUT STREAM METHOD	RTSP over TCP, RTSP over Web Socket		
	MONITOR OUT	HDMI x 1		
	MONITOR RESOLUTION	Up to 1080p (For Diagnostic)		

Q & A

To learn more or to book an appointment, please visit:

ganzsecurity.com/aibox