



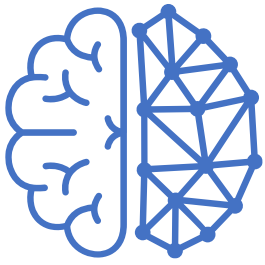
commend

Inspired by our customer's voice 

COMMEND AI

Cloud Based Audio Video AI Platform





Why COMMEND AI?

The world is changing, populations are expanding, and habits are evolving. Cities, buildings and public spaces are having to plan & adapt faster than ever to keep up.

COMMEND AI provides the platform that enables those who see these challenges, to not only manage them but embrace them.

COMMEND AI is an Audio/Video based service for evidence-based safety, designed to empower environments. With a smart integration of Computer Vision AI, Audio Biometrics, Big Data, and Enterprise Messaging, COMMEND AI allows cities, buildings & public spaces to adapt to ever-changing threats to combat 21st-century problems such as pandemics, overcrowding, missing people and crime whilst simultaneously provide a better experience for all.

What is COMMEND AI?



Vision AI

- Monitor missing/wanted lists.
- Get foot traffic statistics with masks and demographic features.
- Detect crowds and queues.
- Detect dangerous behaviour.
- Get the average speed from any point A to point B
- Measure stopping/parking time.
- Detect road accidents, congestions.
- Detect traffic violations.
- Count vehicles by type.
- Detect smoke and fire
- Detect emergency exit blocking
- Detect intrusions in restricted areas of critical infrastructure
- Detect other safety violations

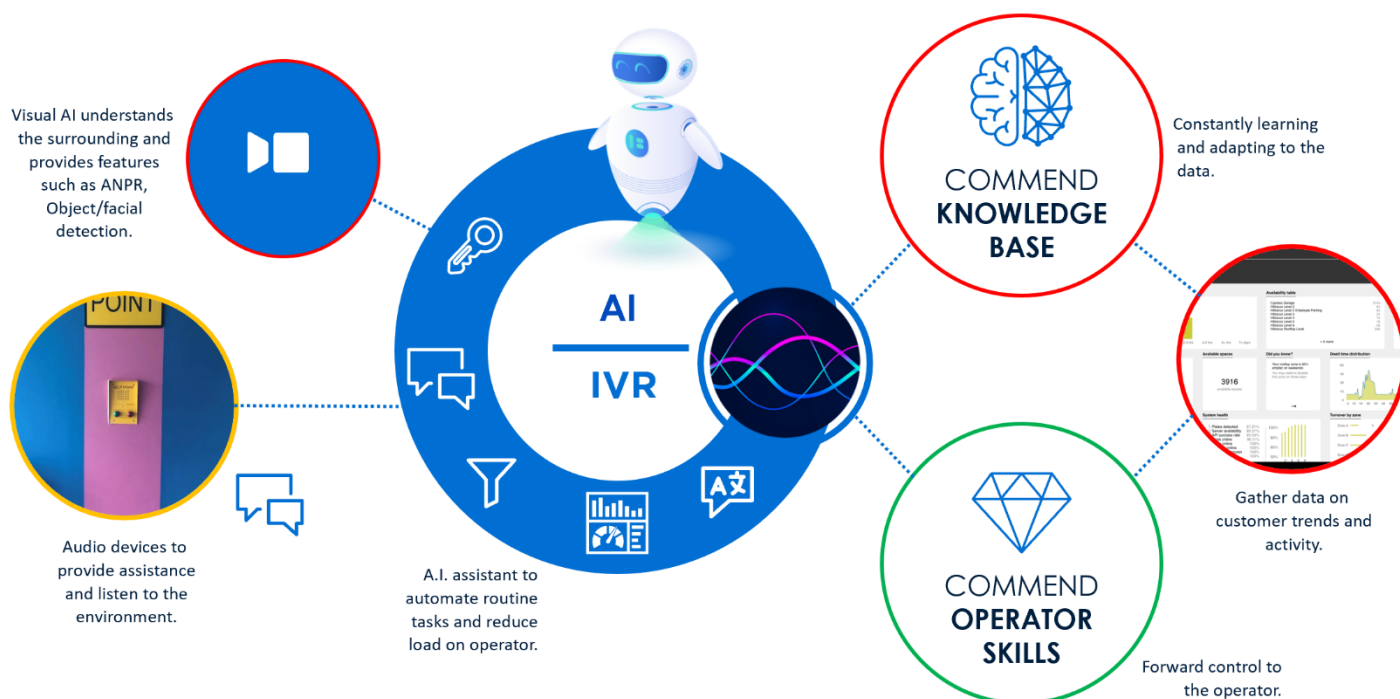


Audio Biometrics

- Automate Routine Tasks: FAQ's will not even reach the human operator.
- Detect and filter ghost calls: Reduce control room time through intelligent analysis and interaction.
- Keyword detection: build in automated, instant responses for both normal use cases and emergencies.
- Audio surveillance: Understand emotion in scenarios to allow a clear response on emerging incidents.
- Data analysis: gather data on trends and topics as well as understanding customer experience.
- Multilingual interfaces: Improve bi-directional conversations by translating to words or text.

How Does Commend AI work?

COMMEND AI connects to any existing IP CCTV camera, audio device (standard protocol such as SIP) and IoT sensor. COMMEND AI runs Computer Vision AI and Audio Biometrics to detect public safety threats such as, unattended items or key word detection and sends alerts directly to first responders, security teams, venue managers, and other stakeholders. The teams can then collaborate on the COMMEND AI Messaging Platform to share media and track progress. The government and local police can use the COMMEND AI Surveillance engine to find suspects, missing people, vehicles, and incidents such as vandalism. COMMEND AI event statistics can be used to improve safety, security and customer experience as well as drive efficiencies and understand trends by which it learns and adapts.



Unlike conventional video management systems (VMS), audio platforms and physical security information systems (PSIM), COMMEND AI is designed to serve multiple organizations from a single Secure Private Cloud. For example, a service provider for a smart city can connect City Government, Local Businesses, First Responders, and Police. All these users can share cameras and data, yet can be completely isolated from each other.

Technically speaking, COMMEND AI carried-grade features include:

- Multi-tenant product design
- Multi-vendor support for cameras and servers
- Cross-platform clients (web browsers, desktops, and mobile devices)
- High availability, no single point of failure
- Horizontal scaling by the number of cameras, the number of users, and retention period
- Advanced monitoring and logging tools
- Rolling updates (i.e. without stopping the service)

COMMEND AI Core features

Mapping and camera management

- Assign names and tags to cameras;
- Place cameras on a scalable map (OpenStreetMap) and building floor plans;
- Scale the map with smart clustering of cameras and other devices;
- Search cameras by name, tags, video analytics, resolution and status;
- Use OpenStreetMap in a closed network (for on-prem deployments).

Smart video player

- Play low-latency live and recorded video/audio at a variable speed
- Share media with a deep link from a given camera and timestamp
- Rewind fast with client-side media caching
- Review events on the scalable timeline with key snapshots
- Use a digital video zoom
- Export and share video to the COMMEND AI cloud storage
- Export video to MP4 file
- Export frames to JPEG files

- View AI overlay annotation
- Search objects in video using visuals tools (tripwire, region of interest)
- Control PTZ cameras using mouse or touchscreen (ONVIF Profile S required)
- No browser plug-in required (HTML5)
- Switch to other cameras nearby
- Adaptive interface to any screen size

Real-time alert monitors

- Create multiple monitors (event pre-sets or filters)
- Create multiple people and vehicle lists to receive alerts
- Arm and disarm monitors
- Receive monitor alerts in web browsers and mobile apps
- Receive monitor alerts in messenger chats
- View alert screenshots and play video
- Review alert details (people/vehicle ID, tags, location etc)

Surveillance Engine: global event search

- Find instantly people, vehicles, event instantly across thousands of cameras
- Filter events by type, camera tags, event tags, location, data and time etc
- Manage lists of people and vehicle for automatic event tagging

Multi-organizational collaboration

- Provide role-based media access for users in multiple organizations
- Support users on different platforms (Windows, MacOS, Linux, Android, iOS)

- Integrate enterprise messenger to push alerts and track response
- Share cameras
- Share people/vehicle lists
- Share alert monitors and events

Integrations

- Use open COMMEND AI API to connect third-party applications
- Import/export data

COMMEND AI Threat Detection AI

Weapon Detection

Detects handguns, machine guns, and knives in public spaces
(not a standard feature)

People Falling or Laying

Detect heart attacks, elderly falling and homeless lodging

Crowd Density

Counts people in public spaces (stations, squares, streets etc)

Intrusion Detection

Detects people and vehicle in security areas (tripwire/secured zone alerts)

Railway Safety

Detects people on railways, tunnels while ignoring trains and passenger boarding

Early Fire Detection

Detects smoke in the video stream (recommended for indoor use)

Unattended Items

Detects unattended item in public spaces (bags, boxes, etc) with a variable time threshold

Audio Analytics

- Loud sound
- Gunshot (needs Local Command sensor for muzzle flash)
- Glass breaking
- Scream

Audio Bot – IVY

- Automate Routine Tasks: FAQ's will not even reach the human operator
- Detect and filter ghost calls: Reduce control room time through intelligent analysis and interaction
- Keyword detection: Operational support and instant response for both normal use cases and emergencies
- Audio surveillance: Detect exceptions and speed up response on emerging incidents (abnormalities, analysis of sound patterns)
- Data analysis: Automated proposals to improve efficiency (peak time predictions, dynamic pricing)
- Multilingual interfaces: Improve bi-directional conversations in multiple languages

COMMEND AI People AI

Face Recognition

- Detects faces at any angle (en face, in profile, top/bottom views);
- Builds a robust descriptor from multiple images as the person moves;
- Finds the best angle of view to display the person;
- Monitors missing/wanted/staff lists;
- Searches people by photo, person name, passport number, etc.;
- Detects appearance features (gender, age, headdress, glasses, beard, moustaches, mask, skin colour) for searching and traffic statistics
- Detects spoofing for access control systems

Foot Traffic

- Count people against a tripwire in both directions
- Count people for queue management
- Estimate demographics (gender, age, skin colour)

COMMEND AI Vehicle AI

Traffic Management

- Detect road congestion
- Detect accidents
- Detect hard shoulder stopping
- Measures the average speed
- Measures the approximate speed on video
- Measures the precision speed by radar integration

Number Plate Recognition (NPR/LPR)

- Reads plates of 30+ countries using preloaded templates (including single-line / double-line / normal / inverted plates)
- Reads plates of other countries using a universal reader
- Searches by vehicle number, owner name and other data

Vehicle Appearance

- Classifies passenger cars, vans, trucks, buses, bikes, construction vehicles
- Detects vehicle colour
- Detects vehicle make and model
- Searches by vehicle appearance

Driving Violations

- Detects stopping and parking violations with a variable time threshold
- Detects double line crossing violations
- Detects lane violations
- Reads number plates of violating cars

Parking Management

Detects vacant spaces

COMMEND AI Video Quality AI

Video Stream Quality

- Signal loss
- Frame rate too low

- Camera shifted
- Scene too dark
- Scene too bright
- Scene too blurry

COMMEND AI Media Input

Camera streaming protocols

RTSP (TCP or UDP)

Media containers (for file uploads)

MP4, JPG

Media compression algorithms

H.264 / G.711.ulaw

H.265 / AAC*

Video resolution

Up to 4K / 8MP / 3840 x 2160

Media bitrates

Up to 10 Mbps

PTZ camera control

ONVIF Profile S

COMMEND AI Cybersecurity and Compliance

Active protection

- Multilayer Web Application Firewall (WAF) with Proactive Defense
- Intrusion Detection System (IDS)
- Internet Protection System (IPS)
- Network Filter

Encryption

HTTPS / TLS 1.3 + VPN encryption for RTSP and maintenance

User permissions

- Hierarchical user groups
- User roles: Viewer, Member, Operator, Group Manager, Admin
- Resource groups: cameras, IoT devices, buildings, people lists, vehicle lists

Key management

- JSON Web Tokens (JWT) with asymmetric signatures
- Dynamic keys for all services
- Automatic key refreshment

Penetration tests

Regular tests for each major release in accordance with OWASP Testing Guide, The Web Application Security Consortium Threat Classification, Mobile Security Testing Guide (MSTG), OSSTMM2 and NIST 800-115

Infrastructure software

100% open source (Ubuntu Linux, Kubernetes, etc)

Service hosting

USA, UK, or any data-center hosting per client choice

Camera hardware

Any IP Camera.

Audio hardware

Any standard protocol audio device