AI-SMART RETAIL

AI-SMART RETAIL

AI-Smart Retail includes all the plugins needed to monitor your point of sale, in the most universal sense of the term; it includes counting people at a gate, assessing the crowd occupying an area, the time density map as well as biometric profiling of people in the area.

APPLICATIONS

AI People

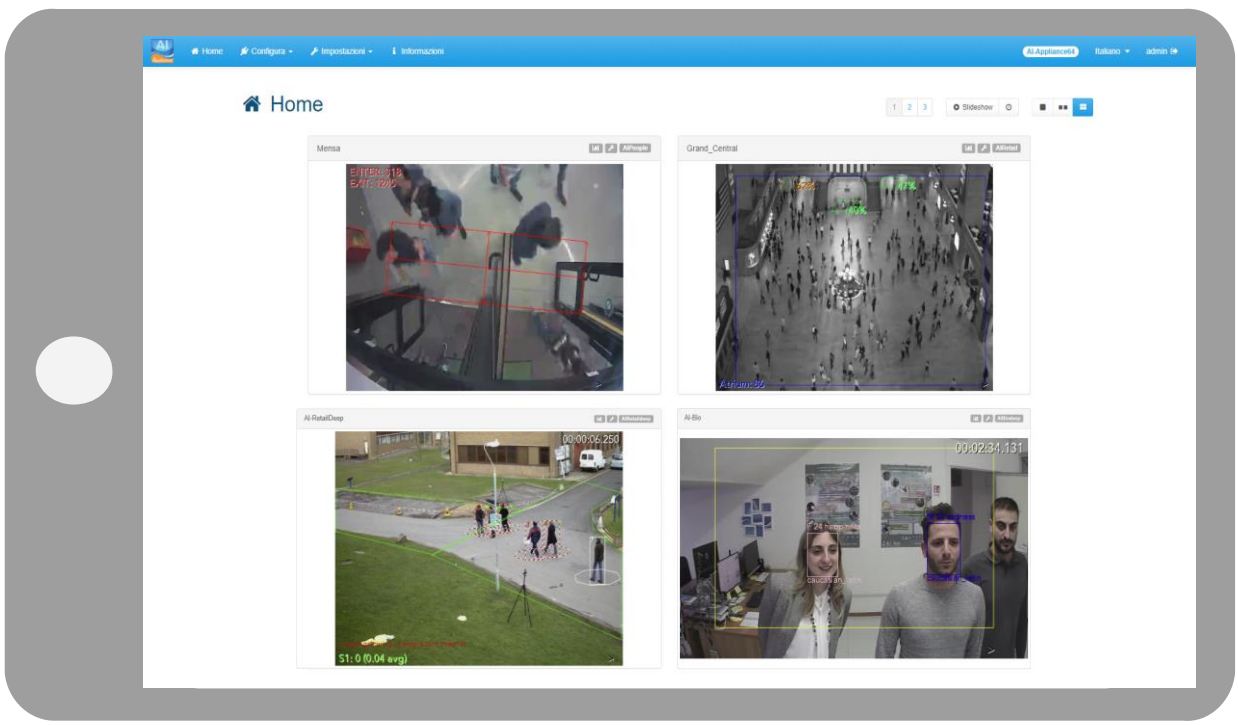
AI Occupancy

AI Heat

AI Crowd

AI Bio

AI Retail



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AI-PEOPLE People Counting

AI-OCCUPANCY Percentage of occupation and over-occupation of an area

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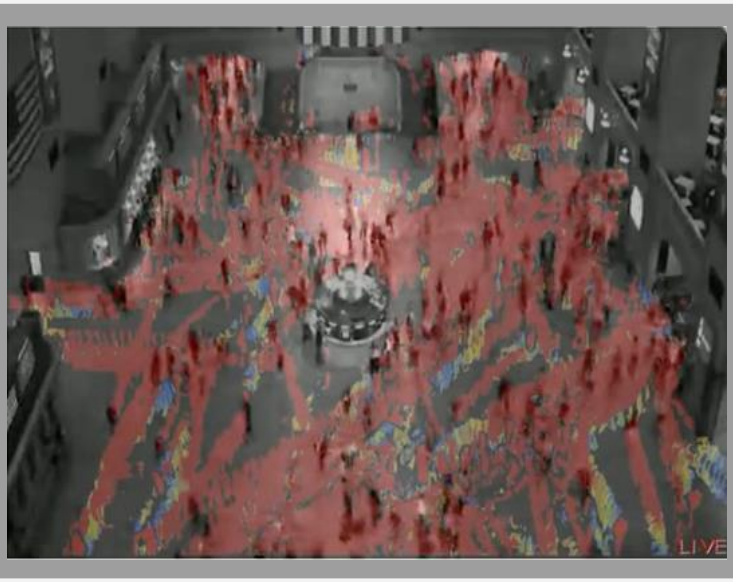

AI-HEAT Heat Map

AI-CROWD Detection of crowding and overcrowding of an area

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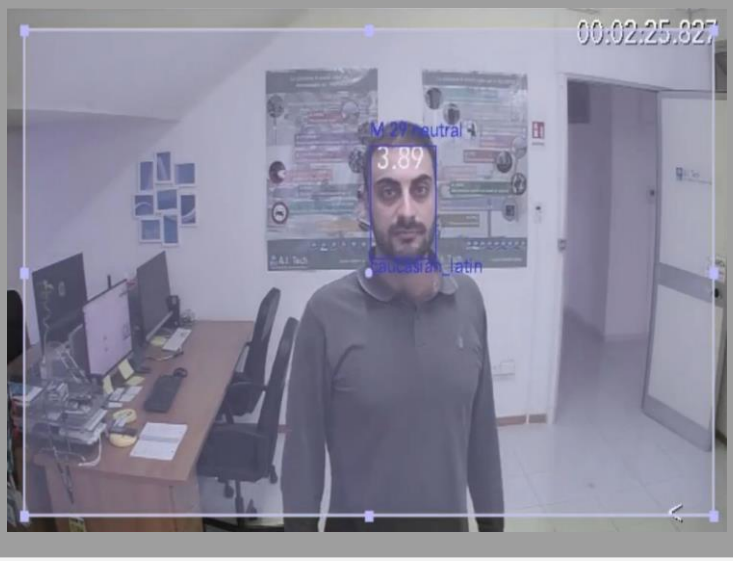

AI-BIO Gender recognition, age estimation, ethnicity and emotion recognition

AI-CROWD-DEEP Pedestrian flows monitoring

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AI-RETAIL-DEEP

People counting, crowding estimate, gathering, social distance assessment

AI-PEOPLE

Using the most advanced computer vision algorithms, **AI-People** is able to count people at gates by detecting people passing through fully configurable virtual sensors. **AI-People** requires the use of a camera positioned with an overhead view and guarantees 95% accuracy and 85% recall in indoor environments and 85% accuracy and recall in outdoor environments.

AI-People places no limits on the number of virtual sensors and can work with multiple people passing by, both if they walk in the same or if they walk different directions, as well as in the presence of backpacks, luggage or shopping trolleys.

USE CASE

Where can we use AI-PEOPLE?

AI-People is the video analytics solution designed to meet the needs of marketers. It can be used in buildings, museums, restaurants, shops, shopping centres, airports and parks, but more generally in all those situations where it is essential to monitor your sales area by estimating the number of visitors during different hours of the day, different days of the week etc.

In these same scenarios, **AI-People** can also be used to estimate the number of people inside a room, a shop or a building and, combined with the AI-DASH-PRO dashboard, to aggregate people counting data coming from multiple cameras installed at the entrances, and thus to assess possible overcrowding situations inside buildings.

The **AI-People** solution is therefore transformed from a fundamental marketing tool to a powerful way of ensuring the safety of the area.

AI-OCCUPANCY

AI-OCCUPANCY is a video analytics application that uses advanced artificial vision algorithms to assess the movement of objects within an area and estimate the relative occupancy rate. **AI-OCCUPANCY** can also generate an alarm as soon as the occupancy rate becomes higher (or lower) than a threshold set by an operator during the setup phase.
AI-OCCUPANCY can be used both indoors and outdoors. The app sets no limits on the number, shape and position of virtual sensors that can be placed in the scene.

USE CASE

Where can we use AI-OCCUPANCY?

AI-OCCUPANCY is a video analytics solution designed to meet various needs in buildings, museums, shops, shopping centres, airports and parks, but more generally in all those situations where it is essential to know the density of crowding, and therefore the percentage of occupation of the area you wish to monitor. As there are no particular installation constraints, **AI-OCCUPANCY** can be used both in new generation systems and in combination with systems for surveillance purposes already installed.
Indeed, **AI-OCCUPANCY** is a key tool for detecting queues at supermarket checkouts or airport gates, or for blocking access to overcrowded museum or shop areas.

AI-HEAT

Thanks to the use of the most advanced artificial vision algorithms, **AI-HEAT** analyses the movement of objects moving within the scene and identifies the areas of greatest interest (hot spots) and the areas of least interest (dead areas), this is achieved thanks to a heatmap-based visualization. **AI-HEAT** can be used in both indoor and outdoor environments.

USE CASE

Where can we use AI-HEAT?

AI-HEAT is a video analytics solution designed to meet the needs of marketers, for example in buildings, museums, restaurants, shops, shopping centers, airports and parks, but more generally in all those situations where you want to know how customers move around your facilities and which points of the different areas are of most (and least) interest.

For example, it can be used to know the most visited aisles or shelves in a supermarket, the most crowded shops in a shopping center, the paintings near which people stop for the longest time or in general of greatest interest to visitors in a museum.

AI-HEAT, combined with a dashboard for data management and visualization (e.g. AI-DASH-PRO), then allows the heatmap to be visualized in the form of an image: the 'background' of the camera scene (i.e. the scene without any moving objects) will be overlaid by colored regions. Typically, the warmest colors (red, orange, yellow) represent the 'hot zones', i.e. those areas most frequented (and therefore of greatest interest to visitors). Vice versa, as the colors become progressively cooler (green, light blue, blue) the areas within the picture represent regions of the facility that are of decreasing interest, leading to the so-called 'dead areas'.

AI-CROWD

Thanks to the use of advanced artificial vision algorithms, **AI-CROWD** can estimate the number of people moving within an area.
AI-CROWD can also generate an alarm as soon as this number exceeds a threshold set by the operator during the configuration phase.
AI-CROWD requires the use of a camera positioned with an overhead view, so its use is recommended in indoor environments. The app places no limits on the number of areas that can be configured in which to perform the analysis.

USE CASE
Where can we use AI-CROWD?

AI-CROWD is the video analytics solution designed to meet different needs in buildings, museums, restaurants, shops, shopping malls, airports but more generally in all those situations where it is essential to know the number of people in the area you want to monitor.

For example, it can be used to regulate access in a store during the release of a product or in a museum area when a particular exhibition is taking place. Another use scenario can be in the management of buildings, for example in the regulation of lighting and air conditioning systems linked to the number of people in the room.

AI-BIO

AI-BIO is a video analytics application that is capable of detecting faces using a detector based on deep neural networks, and analysing them in order to recognise features for each face that are both static (such as gender, age and ethnicity) and dynamic (such as the emotion at any given moment). Face classification is performed by using an advanced artificial intelligence technique based on multitask learning. **AI-Bio** also allows to evaluate the time a person stays in front of the camera.
The app requires the use of a camera positioned at a height of about 1.80 metres, so that people's faces are framed frontally.

USE CASE

Where can we use AI-BIO?

AI-BIO is the video analytics solution designed to meet the needs of marketers, e.g. in buildings, museums, restaurants, shops, shopping centres, airports and parks, but more generally in all those situations in which it is essential to know not only the number of people crowding your sales area, but also their characteristics, through the identification of gender, age, ethnicity and emotion.

AI-BIO also proves to be a key tool for Digital Signage, as today monitors displaying advertising content are becoming increasingly popular. However, this content is static, in the sense that it does not depend on the specific person who is watching it. AI-BIO-DEEP allows instead to maximise the effectiveness of such advertising campaigns, through the personalisation of the content to be shown on the screen on the basis of the specific person who is looking at the monitor at that moment. In such a scenario, understanding the emotional state of the person while watching the video and evaluating the time spent in front of the monitor can be extremely useful in assessing the effectiveness of that specific advertising content.

AI-CROWD-DEEP

AI-CROWD-DEEP allows to estimate the number of people present within an area; this is done by using the most advanced vision and artificial intelligence algorithms, combined with a deep neural network capable of detecting people within the scene. It can also generate an alarm in case of overcrowding situations (i.e. the number of people in an area is above a certain threshold), in case of gatherings or when the social distance between people is not respected. **AI-CROWD-DEEP** can be used both indoors and outdoors, and guarantees accuracy and recall of more than 90%.

USE CASE

Where can we use AI-CROWD-DEEP?

AI-CROWD-DEEP is the video analytics solution designed to meet a variety of needs that may arise in buildings, museums, restaurants, shops, shopping malls, airports, train stations or in various areas of the city.

AI-CROWD-DEEP is the key tool for marketers to understand how visitors move around their sales area, determining the most crowded and the least crowded areas. At the same time, it is the ideal tool to perform checkout management, as it can be used to minimise waiting time in queues and thus improve the customer experience: for example, it is possible to detect the number of people waiting to make a payment and alert staff to open a new checkout, or to perform the automatic single checkout management mechanism.

AI-CROWD-DEEP is also the tool needed to monitor crowds on platforms in train stations or at gates in airports, in order to automatically detect crowds and advise people to observe social distances.

Thanks to the possibility of operating reliably in both indoor and outdoor environments, including in combination with existing surveillance cameras as well as with new generation cameras, **AI-CROWD-DEEP** is also a must-have tool for the smart management of a city, for which on one hand it is necessary to know how citizens move around the city, and on the other to provide citizens with a tool to support them in ensuring that they meet social distancing regulations.

AI-RETAIL-DEEP

AI-RETAIL-DEEP makes it possible to estimate the number of people present within an area and to count the number of people crossing a virtual line; this is achieved by using the most advanced vision and artificial intelligence algorithms, combined with a deep neural network capable of detecting the people within a scene. It also allows an alarm to be generated in the event of overcrowding situations (i.e. the number of people in an area exceeds a certain threshold), in the event of gatherings or where the social distance between people is not respected.
AI-RETAIL-DEEP can be used both in indoor and outdoor environments, guaranteeing accuracy and recall of 90%.

USE CASE

Where can we use AI-RETAIL-DEEP?

AI-RETAIL-DEEP is the video analytics solution designed to meet a variety of needs that may arise in buildings, museums, restaurants, shops, shopping centres, airports, stations or in various areas of the city.
AI-RETAIL-DEEP is the key tool for marketers to understand how guests move around their sales area, determining the most crowded and the least crowded areas, through people counting mechanisms, crowd estimation or even assessment of the occupancy density of an area.
At the same time, it is the ideal tool to perform checkout management, as it can be used to minimise waiting time in queues and thus improve the customer experience: for example, it is possible to detect the number of people waiting to make a payment and alert staff to open a new checkout, or to perform the automatic single checkout management mechanism.
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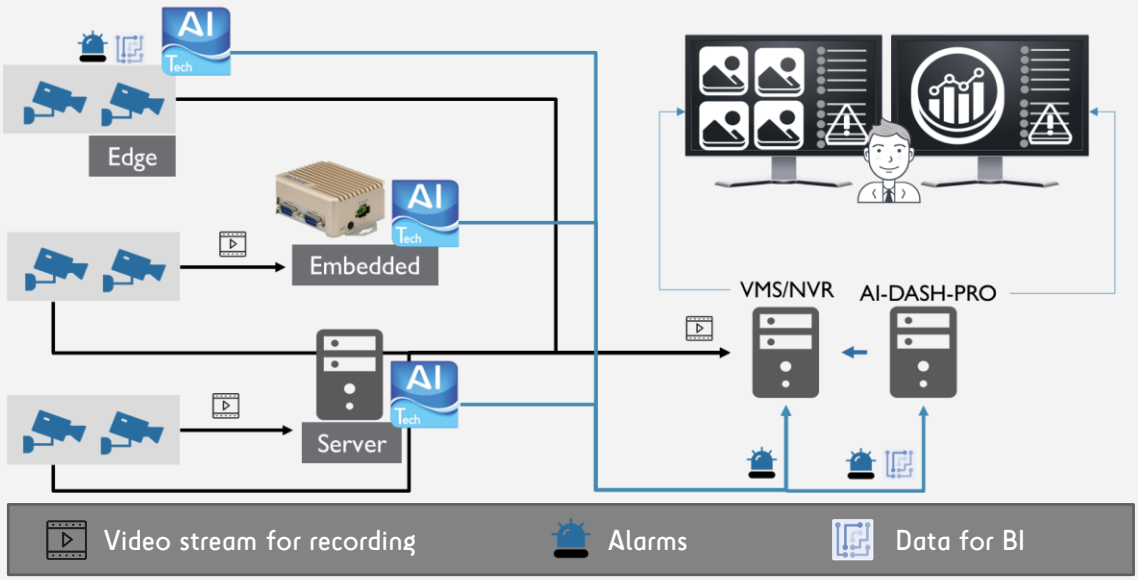
ARCHITECTURE

Where can we install the apps?



Edge

Embedded

Server

The detailed list of specific compatible platforms can be reached via the link on the right.

INTEGRATION

Where can we notify the events generated by the app?

Events can be sent to external servers using over 20 different mechanisms, which include third-party VMSs, standard protocols (such as HTTP, FTP, MODBUS and MQTT) and also A.I. Tech proprietary protocols, which allow the notification of events to the dashboards of A.I. Tech. More information via the link on the right.

THE SOLUTIONS OF A.I. TECH

AI-SMART TRASPORTATION

AI-SMART SURVEILLANCE

AI-SMART PARKING

AI-SMART TOTAL

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