www.aitech.vision



AI-SMART TOTAL







AI-SMART TOTAL

AI-SMART TOTAL is a special license that does not activate a single app but gives you the possibility to activate on a single stream captured by a camera one between all video analysis apps made in A.I. Tech. For example, you can decide to use this special license to activate during the day, on the cameras inside your shop AI-RETAIL-DEEP to count people and estimate crowds, and at night on the cameras outside your shop AI-INTRUSION, to detect intrusions.

There are two versions of this license, depending on which app you need to activate.

In particular, with the AI-SMART TOTAL license you can activate particolare A/-People, AI-Crowd, AI-Heat, AI-Occupancy, AI-Intrusion, AI-Lost, AI-FaceDetect, AI-ATM, AI-Spill, AI-Masking, while with the AI-SMART TOTAL-PRO licence you can activate AI-Retail, AI-Retail-Deep, AI-People, AI-Crowd, AI-Crowd-Deep, AI-Heat, AI-Occupancy, AI-Bio, AI-Security, AI-Intrusion, AI-Lost, AI-Fire, AI-Smoke, AI-Fire+, AI-FaceDetect, AI-ATM, AI-Spill, AI-Parking, AI-Road3D, AI-Incident, AI-Road3D-Deep, AI-Incident-Deep, AI-LPR, AI-Violation.



. Tech

The Vision of the future. Now



AI-OCCUPANCY

Percentage of occupation and over-occupation of an area

in









AI-HEAT

Heat Map



AI-CROWD

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Detection of crowding and overcrowding of an area

in







You Tube



AI-BIO

Gender recognition, age estimation, ethnicity and emotion recognition



in

AI-CROWD-DEEP

Pedestrian flows monitoring





AI-RETAIL-DEEP

People counting, crowding estimate, gathering, social distance assessment



AI-MASKING

Live stream display in a masked way











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AI-SMART SURVEILLANCE





AI-SMART SURVEILLANCE



AI-SMART SURVEILLANCE

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You Tube

AI-SMART TRANSPORTATION



AI-SMART TRANSPORTATION



AI-VIOLATION

Traffic red light violation detection









AI-SMART PARKING



AI-PARKING

Parking monitoring







You Tube

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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.

Al-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?

Al-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

Vision of the future. Now



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 heatmapbased 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-CROUD 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-CROUD 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.



Vision of the future. Now







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

Vision of the future. Now

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

Vision of the future. Now



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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AI-MASKING

AI-MASKING è l'app di analisi video che consente di garantire la privacy delle persone, grazie alla possibilità di mascherare in tempo reale delle aree di interesse specifiche, identificate staticamente, o in generale di ogni oggetto in movimento all'interno di una o più arre di interesse all'interno della scena inquadrata dalla telecamera.

AI-MASKING può essere utilizzata sia in ambienti indoor che in ambienti outdoor e non pone limiti al numero di aree da definire, siano queste aree in cui effettuare sempre il mascheramento, aree in cui non effettuare mai il mascheramento o infine aree in cui effettuare il mascheramento dei soli oggetti in movimento.

USE CASE In che contesti posso usare AI-MASKING?

AI-MASKING è la soluzione ideale per tutti quei contesti in cui è importante, al fine di garantire la compliance con le normative privacy, consentire la visualizzazione dei flussi live mascherati su monitor visibili alle persone di passaggio (quindi non addette alla sicurezza), pur registrando direttamente a bordo camera, su un VMS o un NVR il flusso video in chiaro (ossia non mascherato).

Esempi di tali contesti sono negozi, centri commerciali, musei, ospedali, aeroporti, stazioni, fabbriche, parcheggi o città.

In un negozio, ad esempio, è possibile visualizzare sui monitor installati nei presso delle casse i flussi video di tutte le camere installate nel punto vendita. O ancora, in ambito cittadino, **AI-MASKING** consente il mascheramento del flusso video acquisito dalle camere posizionate sul territorio per fungere da webcam, consentendone quindi la visualizzazione pubblicamente su internet ai cittadini senza necessità di credenziali per l'accesso.



AI-INTRUSION

AI-INTRUSION is a video analytics app based on the most advanced artificial intelligence and computer vision algorithms. It enables intrusion detection, in terms of access and/or persistence in a sterile area (sterile zone detection), virtual line crossing (crossing line or tripwire detection) and multiple virtual line crossing.



In addition to the real size of the object (obtained thanks to an advanced 3D reconstruction mechanism of the scene), **AI-INTRUSION** uses a deep neural network to filter objects according to their class (human, animal, vehicle).

AI-INTRUSION places no limits on the number of virtual sensors that can be defined within the scene and can be used both in indoor and outdoor environments and in combination with both traditional and thermal cameras.

USE CASE Where can we use AI-INTRUSION?

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AI-INTRUSION is the ideal video analysis solution to meet security needs. It can be installed indoors, for example in museums, shops, shopping centres and factories, but also outdoors, for perimeter protection, for example in private homes, industries, factories and airports.





AI-LOST

AI-LOST is a video analytics app, based on the most advanced computer vision algorithms, that allows you to detect the presence of abandoned or removed objects in areas of interest.

The app places no limits on the number of virtual sensors that can be defined within the framed scene and can be used for indoor and outdoor environments and in combination with both traditional and thermal cameras.

USE CASE Where can we use AI-LOST?

AI-LOST is the ideal video analysis solution to meet security needs. It can be installed to detect suspicious abandoned objects such as luggages in public places like train stations, universities, squares, shopping malls, museums or for the automatic detection of wastes in streets and parks.

AI-LOST can also be a useful tool for detecting theft in museums, through the detection of removed objects such as paintings or statues.



AI-FIRE

AI-FIRE-DEEP is a video analytics app that uses deep neural networks to enable early flame detection. The app is particularly useful in all those environments where traditional fire detectors are ineffective or cannot be used, like large indoor and outdoor environments, such as factories, car parks, waste management areas, or even forests and woodlands; even at a great distance from the installation site of the cameras.

The app does not require the use of thermal cameras, and places no limits on the number of areas that can be configured within the framed scene.

USE CASE Where can we use AI-FIRE?

AI-FIRE is the ideal video analysis solution to meet the needs of security environments. The app can be used in indoor environments (for instance houses, museums, shopping centers, factories, warehouses), but also in outdoor environments (such as parks, landfills or storage sites).





AI-SMOKE



AI-SMOKE is a video analytics app that uses deep neural networks to enable early flame detection. The app is particularly useful in all those environments where traditional fire detectors are ineffective or cannot be used, like large indoor and outdoor environments, such as factories, car parks, waste management areas, or even forests and woodlands; even at a great distance from the installation site of the cameras.

The app does not require the use of thermal cameras, and places no limits on the number of areas that can be configured within the framed scene.

USE CASE Where can we use AI-SMOKE?

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AI-SMOKE is the ideal video analysis solution to meet the needs of security environments. The app can be used in indoor environments (for instance houses, museums, shopping centers, factories, warehouses), but also in outdoor environments (such as parks, landfills or storage sites).





AI-SPILL is a video analytics app that enables the detection of a person falling within an area of interest. The app combines an advanced mathematical model to analyse pose variations, and therefore falling movement, with the most advanced deep neural networks for object classification, thus allowing people to be distinguished from other objects in the scene.

AI-SPILL places no limits on the number of configurable areas within the framed scene. The app can be reliably used in both indoor and outdoor environments.

USE CASE Where can we use AI-SPILL?

AI-SPILL is the ideal video analytics solution to meet the security needs of hospitals, nursing or retirement homes for the elderly, or more generally in all those applications in which it is essential to detect patients' or guests' falls in real time, in order to guarantee a prompt response from the competent personnel.

AI-SPILL is at the same time the perfect gift for the private homes of the elderly, as it allows family members to be alerted in real time in the event of a fall. **AI-SPILL** can also be used in schools, in order to protect students by detecting falls in corridors and unattended areas.

Other areas of application are warehouses or cold rooms in warehouses, and more generally all those areas where staff rarely enter and therefore, in the event of a fall, the risk of not being able to be quickly rescued by colleagues is very high.









AI-FACEDETECT

AI-FACEDETECT is a video analytics app that can detect faces within an area, generating an alarm if faces are (or are not) covered by a mask. The app utilizes the most advanced deep neural networks for both face detection and face analysis.

AI-FACEDETECT requires the use of a camera positioned with a frontal view at human height and can be reliably used in both indoor and outdoor environments.

USE CASE Where can we use AI-FACEDETECT?

AI-FACEDETECT is the ideal video analytics solution to meet the security needs in all those areas where it is necessary to verify that people are wearing face masks. Examples include shops, banks, gyms, museums, offices, universities, sports halls, stations and airports.









AI-ROAD3D

AI-ROAD3D is a video analytics app that allows counting and classification of vehicles passing by a virtual sensor in a given direction. Three vehicle classes are considered: motorbikes, cars and trucks. The app also identifies the color and average speed of each vehicle, and generates an alarm if this speed exceeds a certain threshold chosen by the operator. It is also able to assess traffic volume in real time.

AI-ROAD3D combines an advanced 3D calibration and reconstruction mechanism of the scene with the most advanced artificial vision and artificial intelligence algorithms.

The application is available in two versions: AI-ROAD3D uses the latest deep learning algorithms to classify moving objects; whereas AI-ROAD3D[-DEEP] uses these algorithms for both object detection and classification, guaranteeing high accuracy even in extremely complex scenarios, such as in tunnels or crowded city streets, at night or in severe weather conditions.

USE CASE Where can we use AI-ROAD3D?

AI-ROAD3D makes it possible to meet the needs of any city that would like to be defined as 'smart'. It provides the possibility of understanding and analyzing vehicle flows in the various city arteries by counting the various categories of vehicles. Analyzing the average speed of vehicles on the various routes allows the identification of roads crossed with a higher average speed (possibly higher than a set threshold), thus suggesting an optimal position for positioning surveillance patrols or automatic systems that can be used for sanctioning purposes.

AI-ROAD3D can also be used to monitor tunnels or motorways.

Finally, in combination with the AI-DASH-PRO dashboard, the app can be used to monitor car parks by counting vehicles at the gates.





AI-INCIDENT

AI-INCIDENT is a video analytics app that can detect anomalous situations on the road, such as vehicles driving on the wrong side of the road, stationary vehicles, or pedestrians standing in forbidden zones. It is also able to assess tailbacks in real time.

AI-INCIDENT combines an advanced 3D calibration and reconstruction mechanism of the scene with the most advanced artificial vision and artificial intelligence algorithms.

The application is available in two versions: **AI-INCIDENT** uses the latest deep learning algorithms to classify moving objects (distinguishing vehicles and people); **AI-INCIDENT-DEEP** uses deep neural networks for both object detection and classification, ensuring high accuracy even in extremely complex scenarios, such as in tunnels or crowded city streets, at night or in severe weather conditions.

USE CASE Where can we use AI-INCIDENT?

AI-INCIDENT makes it possible to meet the needs of any city that would like to be defined as "smart". It provides the possibility of identifying potentially dangerous situations on the road, such as: queuing, vehicles crossing the wrong way, or the presence of pedestrians on the road.

AI-INCIDENT can also be used to monitor tunnels or motorways.





AI-LPR



AI-LPR is a video analytics app that utilises an advanced artificial intelligence algorithm to perform license plate detection and recognition. Thanks to the use of an innovative engine based on semantic technologies, it also enables automatic correction of license plates based on the specific nationality of the plate [*].

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The solution can detect vehicles up to a maximum speed of 230 km/h (depending on the chosen hardware platform) and can be used both indoors (e.g. for monitoring car parks) and outdoors (e.g. for monitoring city streets).

* Countries for which the semantic engine is currently available: Italy.

USE CASE Where can we use AI-LPR?

AI-LPR is a video analytics solution designed to meet the demands of licence plate reading. The application has various usage scenarios.

The first is in car park management, as it is a fundamental tool for managing black and white lists, or even simply for associating number plates with parking tickets.



AI-LPR-DEEP can also be a valid support in logistics, detecting the number plates of the various vehicles entering a port, a factory or a landfill site. At the same time, the application is also very useful in city scenarios. In fact, thanks to its ability to detect number plates at speeds of up to 230 km/h, it can be used to detect access to restricted traffic areas or access to reserved lanes.



AI-VIOLATION

AI-VIOLATION is a video analytics app making it possible to **detect traffic red light violations**, i.e. vehicles that cross the stop line when the traffic light is red.

The application also allows the identification of the vehicle that has committed this infraction, its vehicle type among the **categories of car**, motor vehicle and motorbike as well as **average speed** and the **time elapsed** since the red was turned on.

The detection and tracking of vehicles are based on the use of deep neural networks, as well as the analysis of the traffic light status. In fact, the application is able to determine the status of the traffic light (red, yellow, green) automatically, with only artificial intelligence applied to the processing of the video acquired by the camera, **without the need for any physical connection with the traffic light**

USE CASE Where can we use AI-VIOLATION?

AI-VIOLATION is the **key tool for public administration**, since it allows them to identify irregularities related to vehicles passing red lights. Understanding the areas where these violations occur can be a useful indication for the public administration, in order to decide the most suitable position where installing the device that will be used for **sanctioning purposes**.

Also, AI-VIOLATION can also be considered the ideal solution to be integrated into whole systems approved for fining purposes.



AI-PARKING





AI-PARKING è l'app di analisi video in grado di rilevare in modo automatico lo stato di occupazione di un posto auto, identificando quindi che questo sia libero o occupato.

Grazie all'impiego di algoritmi avanzati basati su reti neurali profonde, **AI-PARKING** può essere utilizzato sia in ambienti indoor che outdoor e richiede che il veicolo sia solo parzialmente visibile all'interno del posto auto.

USE CASE In che contesti posso usare AI-PARKING?

AI-PARKING è la soluzione definitiva per il monitoraggio dei parcheggi, siano questi perimetrati (ossia dotati di varchi d'ingresso e d'uscita, come capita ad esempio per i parcheggi privati, di supermercati o di aeroporti), o su strada (ad esempio in ambito cittadino).

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In entrambi i casi l'app, combinata con il cruscotto AI-DASH-PRO, consente di fornire inoltre informazioni statistiche utili nella gestione del parcheggio, come il tempo medio di occupazione di un parcheggio, lo stato di occupazione di un singolo posto, di un'area (ossia una aggregazione di posti) o di un intero parcheggio.



AI-PARKING



AI-PARKING is the video analytics app that can automatically detect the occupancy status of a parking spot, identifying whether it is free or occupied.

Thanks to the use of advanced algorithms based on deep neural networks, **AI-PARKING**can be used both in indoor and outdoor environments and only requires the vehicle to be partially visible inside the parking space.

USE CASE Where can we use AI-PARKING?

AI-PARKING is the ultimate solution for monitoring car parks, whether they are bordered (i.e. with entry and exit gates, such as in private, supermarket or airport car parks) or on-street (e.g. in city centres).



In both cases the app, combined with the AI-DASH-PRO dashboard, also provides useful statistical information in parking management, such as the average occupancy time of a parking space, the occupancy status of a single space, an area (i.e. a cluster of parking spaces) or an entire car park.



AI-SMART TOTAL



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 RETAIL



AI-SMART SURVEILLANCE



AI-SMART TRASPORTATION



AI-SMART PARKING









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AWARDS





CIOApplications TOP 25

ARTIFICIAL INTELLIGENCE SOLUTION PROVIDERS - 2017

A.I. Tech

2020 Award Winner

Most Innovative in Video Analytics



