AI-based Video Content Analytics for Industrial Safety & Security

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XRVision Company Overview

A Singaporean AI-based Video Content Analytics (VCA) technology provider
Focusing on **Security**, **Safety**, **Productivity** & **Operations** in challenging uncontrolled and crowded environments

Locations:
Singapore (HQ, Sales, R&D), Various distributors and resellers in Asia, MEA and Europe

Key Markets:
Smart City/Campus, Transportation (Sea/Air/Land), Logistics, Manufacturing and Construction

Product Portfolio (On-Premise / Cloud-Based):
- XR-VCA (Server-based VCA)
- XR-Raven (Wearable & Mobile VCA, for Smartphones/BWC/Smart-Glasses)
- XR-Edge (Edge VCA, for Nvidia Jetson product line and other Edge devices)

Portfolio of **~100 security/safety/productivity/operational** <u>portable</u> VCA Algos (a.k.a 'Rules')

Accreditations & Formal Evaluations:
Singapore MHA, Singapore LTA, Govtech, PSA, JTC Corporation, Taiwan Police, Israeli Police, Hong Kong Airport etc.

XRVision™

Customers, Partners, Awards & Recognition

**Key Customers:**

Key Technology Partners:

Awards:

Current State of Public/Commercial CCTV Surveillance

There are >500M Surveillance cameras ('CCTV') deployed globally at Public/Private/commercial estates, with only <500K pair of eyes monitoring these cameras at an effective rate of 5 mins per hour.. (ITC Global Research, May 2018)

Hence, only 1 min of video out of every 12,000 recorded mins is currently assessed in RT by a human operator trying to detect a behavior/object/person of interest..

XRVision bridges the cameras-to-operators gap with a Robust AI-based Video Content Analytics (VCA) Product Line

Smart City & Public Safety	Casinos, Resorts & Hotels	Transportation	Retail & Mall Security	Ordinance & Environmental
Identification of individuals involved in an illegal transaction	Identification of individuals involved in prohibited activity	Identification of POI at the point of embarkation	Identification of POI in the store	Identification of POI in juvenile delinquency and gang activity
Identification of individuals via an Access Control List	Identification of blacklisted POIs at ticket counter	Identification of POI at ticket machine and station entry or exit gates	Identification of POI at ATM machine	Identification of POI in graffiti related activity
Identification of individuals involved in suspicious activity	Early identification of individuals on the VIP list	Identification of POI prior to boarding a vessel	Proactively identifying and servicing VIP at POS or customer service counters	Illegal drug cultivation
Identification of POI at a check point	Identification of blacklisted individuals on gaming floor	Identification of POI at gate prior to boarding and after arrival	Identification of POI at entrance to the store	Illegal hunting and fishing
Identification of POI during a public gathering	Pro-actively identifying and servicing individuals on VIP list	Identification of POI at the baggage carousel	Customer shopping and floor activity	Illegal logging and nature reserve exploitation
Rioting and civil disturbances	Disturbances on the gaming floor	Identification of POI en route	Shoplifting activity	Illegal gambling
Looting and flash mob activity	Luggage mishandling, loss, and transport damage	Documenting details of individuals detained at a store	Mall facility and parking lot activity	Public intoxication and loud/lewd behavior
Mega events coverage	Slip and falls and other guest related accidents	Cargo loading and unloading activity	Merchandise loading and unloading operations	Illegal industrial waste dumping
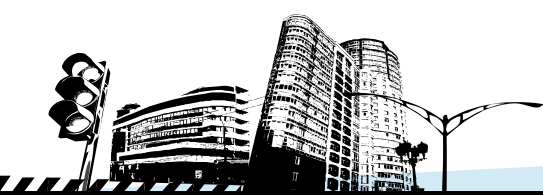
The Challenge – VCA in Uncontrolled, Crowded Environments

Today's leading Video Analytics Products, operating in uncontrolled, environments, under any weather and lighting conditions, monitoring crowded scenes with uncooperative and in-motion subjects/objects, via cameras with varying FOV achieves as low as **<40% TP Rate**

XRVision ground-breaking VCA technology consistently achieves >80% in uncontrolled, crowded & in-motion environments (x2 the industry standard!)

FR in Controlled Environments
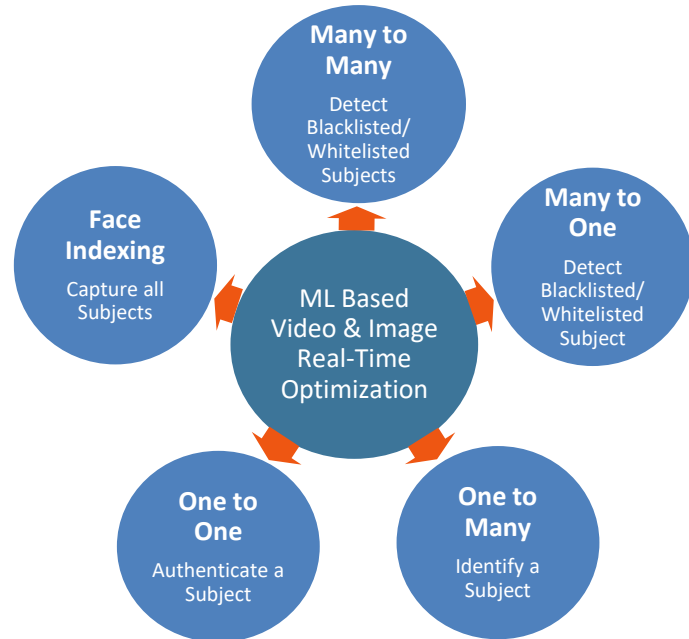

Facial Recognition in Uncontrolled Environments
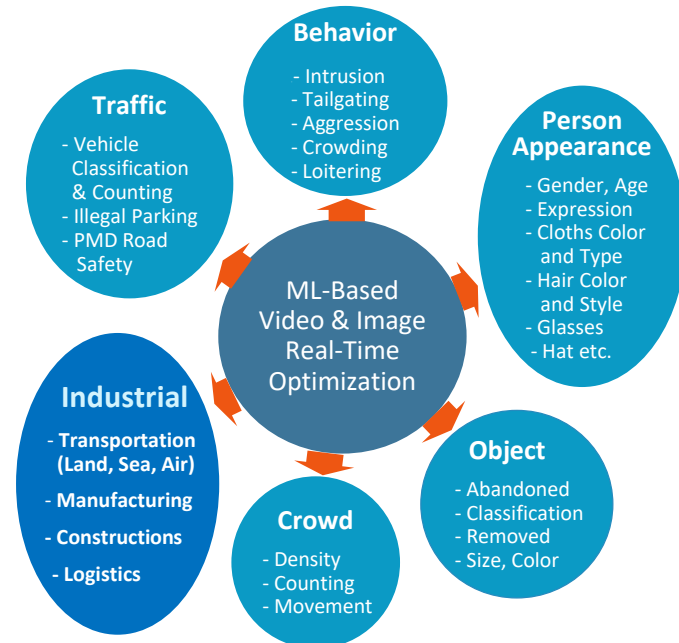

Video Analytics in Uncontrolled Environments

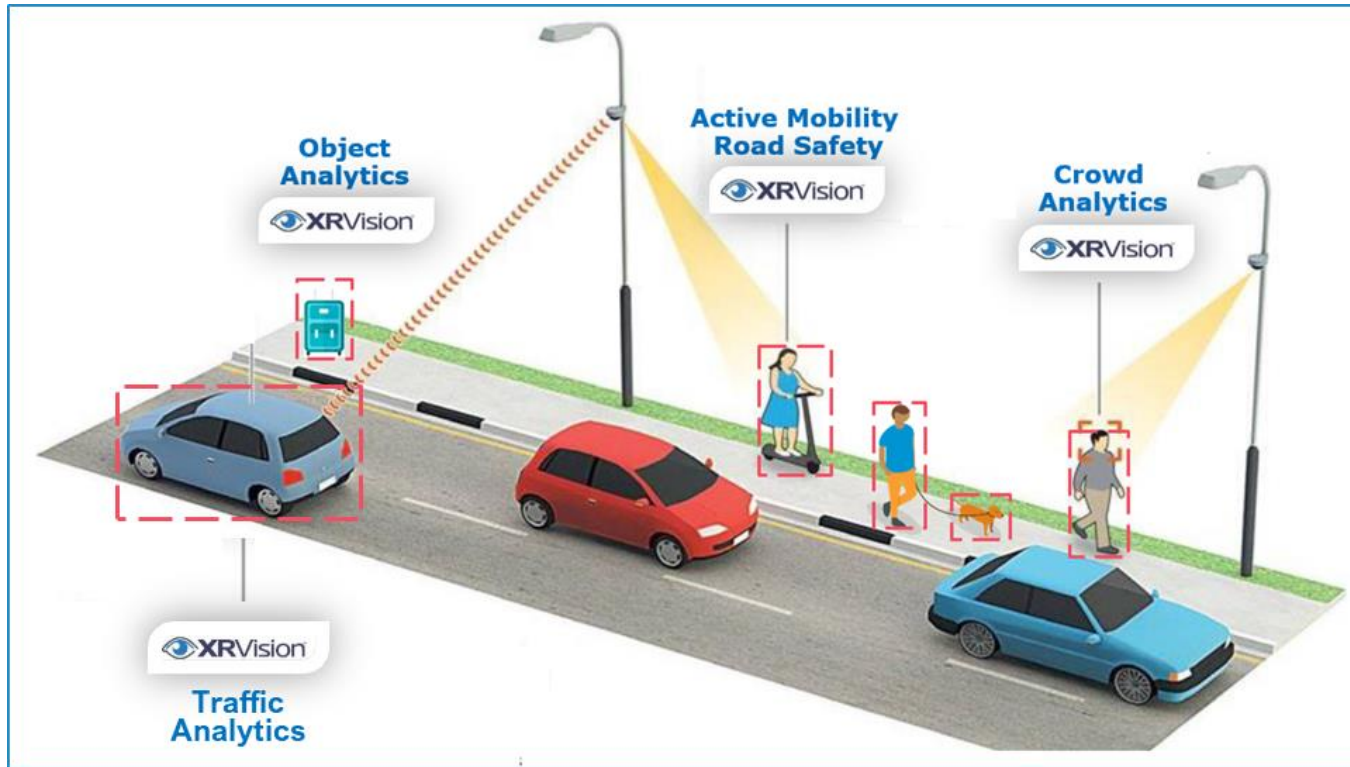# XRVision Video Content Analytics (XR-VCA) Portfolio
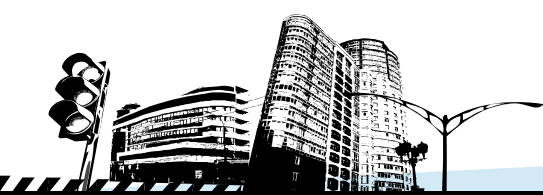
Facial Recognition & Indexing

Many to Many
Detect Blacklisted/Whitelisted Subjects

Face Indexing
Capture all Subjects

Many to One
Detect Blacklisted/Whitelisted Subject

ML Based Video & Image Real-Time Optimization

One to One
Authenticate a Subject

One to Many
Identify a Subject

Intelligent Video Analytics

Behavior
- Intrusion
- Tailgating
- Aggression
- Crowding
- Loitering

Traffic
- Vehicle Classification & Counting
- Illegal Parking
- PMD Road Safety

Person Appearance
- Gender, Age
- Expression
- Cloths Color and Type
- Hair Color and Style
- Glasses
- Hat etc.

ML-Based Video & Image Real-Time Optimization

Industrial
- Transportation (Land, Sea, Air)
- Manufacturing
- Constructions
- Logistics

Crowd
- Density
- Counting
- Movement

Object
- Abandoned
- Classification
- Removed
- Size, Color

A Portfolio of +100 security/safety/productivity/operational portable VCA Algos

XRVision Safety-related VCA Portfolio

Sea Ports
- Workers Safety
- Crane & Prime-Mover Safety

Airports
- Apron & Airside Safety
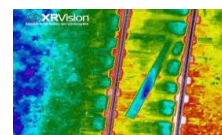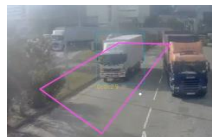- Worker Safety

Land Transportation
- PMDs & Vehicle Road Safety
- Driver Safety

Rail Transportation
- Commuters Safety
- Railway Safety (Aerial)

Construction
- Workers Safety
- Equipment & Vehicle Safety

XRVision **Productivity-related** VCA Portfolio

Sea Ports
- ➤ Workers Productivity
- ➤ Operations Productivity
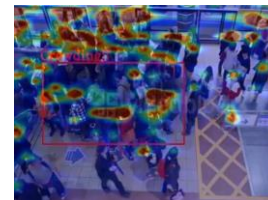
Land Transportation
- ➤ Vehicles & Traffic Analytics
- ➤ Crowd Movement Analytics

Rail Transportation
- ➤ Commuters Traffic Analytics
- ➤ Carriage Density
- ➤ Commuters unable to Board
- ➤ Train Arrival and Departure

Construction & Logistics
- ➤ Workers & Equipment Productivity
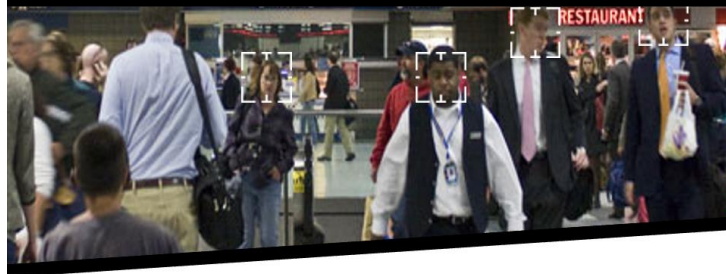- ➤ Tracking & Recognition

XR-Raven

Wearable & Mobile
AI-based Video Content Analytics

for uncontrolled, crowded and in-motion
environments

XR-Edge

AI-based Video Content Analytics
on Nvidia Jetson Edge Devices

for uncontrolled, crowded and in-motion environments

Summary

- **AI as a Force Multiplier for SATS**

- **XRVision VCA technology is designed for highly challenging Industrial environments**

- **Joint VCA Journey from Safety to Security and Productivity**