



THE SMART CITY'S COMPLETE GUIDE TO FACE RECOGNITION

 **BriefCam**

TABLE OF CONTENTS

Safe and Smart:
Citywide Digital Transformation

Face Recognition Technology:
An Overview

Face Recognition for Strategic City
Management

Driving Safety and Efficiency with
Artificial Intelligence

About BriefCam

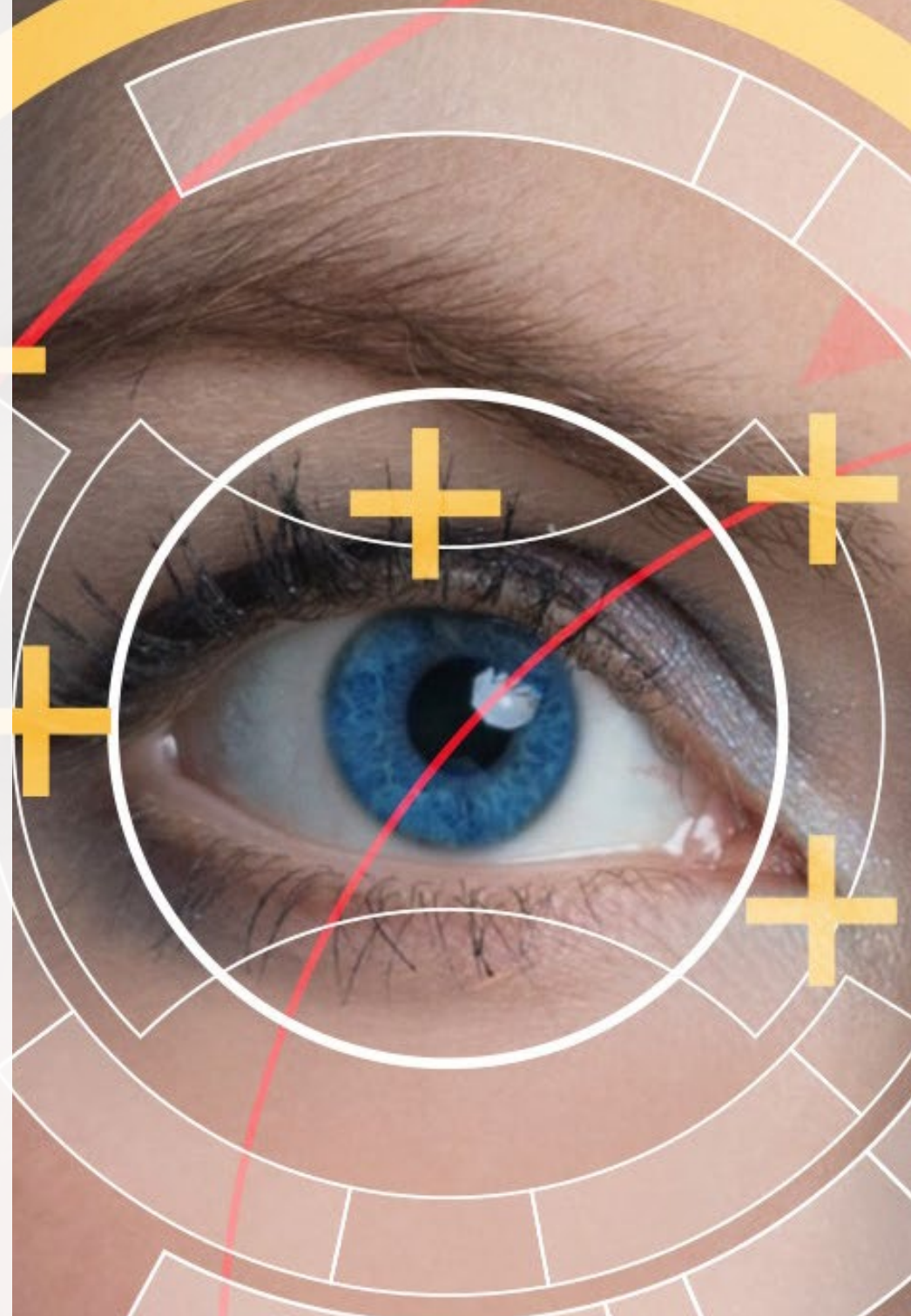
3

4

5

9

10



CHAPTER 1

SAFE AND SMART: CITYWIDE DIGITAL TRANSFORMATION

Today, digital transformation is at the heart of every forward-thinking organization: Diverse businesses are evolving and embracing data-driven technologies backed by artificial intelligence (AI). The Smart City – powered by data insights and grounded in values of sustainability, mobility and connectivity – is the foundation on which local corporations, small businesses and even individual households are themselves transforming. Therefore, municipalities increasingly are investing in transitioning into Smart Cities, integrating emerging data-driven technologies for preserving public safety and maximizing productivity for local government and law enforcement.

Face recognition, for instance, is enabling cities to leverage data from multiple digital sources in order to guide intelligent decision-making and optimized processes. Based on AI, facial recognition solutions match or verify individual faces by correlating biometric features from processed images or video frames. Read on to understand what face recognition is, [how cities use the technology](#) and why it's central to cities' broader digital transformations.



CHAPTER 2

FACE RECOGNITION TECHNOLOGY: AN OVERVIEW

The face recognition industry is poised to grow by more than 26% by 2025, and the Smart City will certainly be a driver of this growth. Based on artificial intelligence and deep learning techniques, face recognition matches existing images of individuals with other appearances of the same faces in digital media. For instance, by uploading external images or using images extracted from video, video analysis systems operators can create watchlists of the faces they seek to match. Whether the goal is to locate a missing person or a criminal on the run, the Video Content Analytics (VCA) technology will process the watchlist of images and use it to detect and identify the same or similar faces that appear in video footage and feeds.

This capability can be used for combing existing footage for appearances of targets, accelerating investigators' evidence collection processes, or for locating targets in real-time. VCA operators can configure alerting rules to detect appearances of matching faces and trigger an alarm when a suspect from the watchlist is detected in live video. This enables immediate assessment as to the accuracy of the face matching and situation response as deemed necessary.

Recent improvements to camera technology, the widespread installment of high-definition and ultra-high-definition cameras and the growing sophistication of Video Content Analytics have enhanced the accuracy of face recognition applications and are driving its adoption. Now Smart Cities and governments around the world are exploring how this technology can serve the interests of their residents.

Part of these considerations are legal and regulatory – the laws governing the use of video surveillance and face recognition vary from country to country, and, in general, face recognition regulation is still maturing. Technology producers and users, governments and video subjects are still navigating how to drive policies that ensure fairness, transparency, accountability and privacy compliance for face recognition, while [balancing the significant benefits for enabling superior security, increased public safety and streamlined city operations.](#)



CHAPTER 3

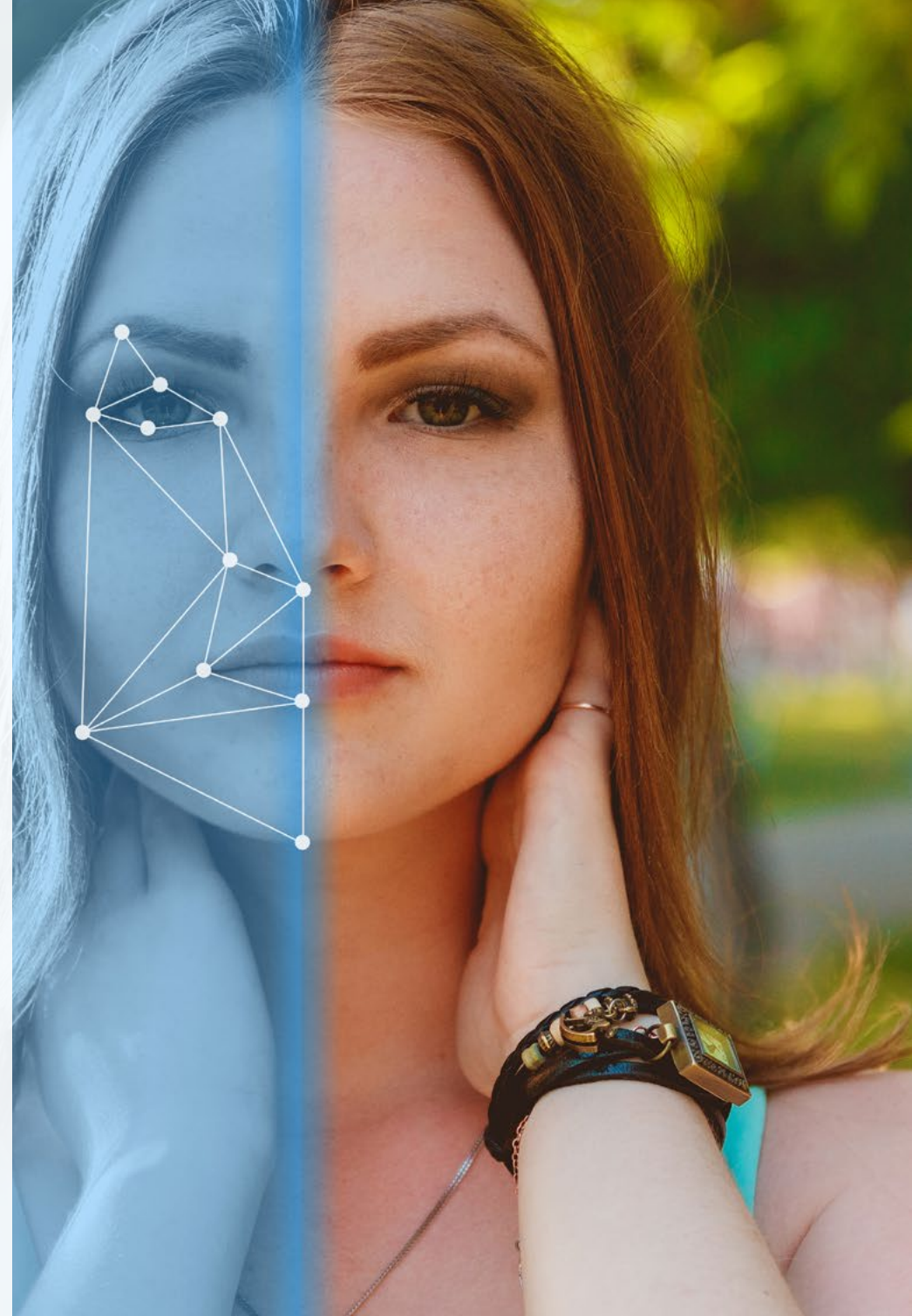
FACE RECOGNITION FOR STRATEGIC CITY MANAGEMENT

Smart Cities around the world are leveraging intelligent video analytics and sophisticated face recognition technologies to drive productivity and increase public safety. Face recognition is only one way cities can maximize their investment in video surveillance infrastructure and extract more value from video data. Here are some of the ways cities and local law enforcement can use face recognition to streamline their day-to-day activities.

FIND AND RECOVER MISSING PERSONS

Face recognition has been instrumental in helping law enforcement identify and track missing persons and, ultimately, safely recover them. Technology operators can take reference images provided by the missing person's loved ones and add the face to a watchlist. Using face recognition, the operators can then search video recordings to match the missing person's face with past appearances of that face that have been captured on video. By isolating past appearances of the missing person, law enforcement can efficiently understand the person's movements before going missing and locate where a specific person last appeared on camera. Police also could try to determine whether the person was abducted – based on their interactions with others in the video.

Once the missing person is added to a watchlist, the police can configure real-time alerts to trigger a call to action when face matches are detected. Law enforcement can facilitate immediate assessment to confirm the accuracy of a match. When a match is identified, first responders can be deployed to quickly recover the missing person and, if relevant, apprehend the abductor.





In a cityscape, there are many places for a person to get lost or go missing – such as at [crowded stadiums or mass events](#). Face recognition capabilities can ensure the rapid reunion of missing people with their parties.

IDENTIFY AND TRACK KNOWN OFFENDERS

Regulations around police use of face recognition vary from place to place, but the utility of face recognition to identify and monitor known offenders is ubiquitously important. While face recognition regulation and policy is still in flux, its use cases for law enforcement abound and will only become more significant once regulation is more definitive.

For example, face matching can be used to identify past offenders and criminals and track their movements. Video analytics operators can take an image of an offender from within a video or an uploaded external image and use it for detecting similar faces that appear in live video. Using artificial intelligence backed video analytics, law enforcement can [respond proactively in real-time](#) when a past offender is identified engaging in suspicious behavior.

Consider the case of a convicted sex offender: By adding the offender's face to a watchlist, police can trigger alerts any time an individual resembling the convict is detected in the vicinity of a playground or local school. By confirming whether the lurking individual is the past transgressor, police can be mobilized to confront the suspect and prevent further abuse.

EFFICIENTLY INVESTIGATE AND REDUCE CRIME

The same way face matching can be used to detect suspicious misbehavior in real-time, it can be used to [support investigators searching for video evidence](#) after an incident. Whether this means reviewing video from before the event – to identify appearances of the suspect at or around the scene of the crime – or continuing to monitor the suspect's movements after the event, the ability to isolate appearances of specific individuals is a gamechanger for collecting supporting evidence.

When the police identify a suspect for a bank robbery, for instance, they can quickly review video footage from the weeks and days leading up to the robbery from all the on-site cameras and cameras positioned near the bank. Reviewing the surveillance footage, the police can identify whether any matching faces had appeared in the weeks leading up to the robbery and assess the accuracy of the match.

Once a match is confirmed, investigators can then track perpetrators who are on the run. By extracting the offender's image from video surveillance, the police can configure real-time alerts to notify them of other appearances of that face. For instance, operators can trigger calls to action for appearances of the suspected bank robber around other local banks. Should the suspect approach another bank, law enforcement can easily track the thief, deploy responders and apprehend the perpetrator – potentially preventing an additional robbery.

STREAMLINE ACCESS CONTROL AND IDENTIFICATION

Biometric technologies, such as face recognition, are a trusted tool for granting access to certain physical and digital domains. Schools and government buildings can integrate biometric-based access control, relying on technologies such as face recognition to identify people entering the building and determining whether they are approved to





enter. Barring entry to unrecognized individuals, these mechanisms help buildings and public spaces manage and maintain on-site safety.

Currently, many international airports are experimenting with face recognition technology: From identifying ticket holders to verifying passports and visas and streamlining traffic at security checkpoints, face recognition may become integral to streamlining the travel experience – both for guiding travelers through and securing transit hubs.

MANAGE CITY STAFF AND OPTIMIZE THEIR PRODUCTIVITY

Managing and maintaining a Smart City is no easy feat, and the dedicated men and women who protect and serve their city are critical drivers of the city's safety, prosperity and quality of life. Face recognition technology can also be used for optimizing internal operations and ensuring that municipal staff and law enforcement are being effectively managed.

With face recognition, city operations officers can monitor employee attendance: By tracking the appearances of city workers across the cameras at city hall, managers can verify the attendance records of employees and evaluate their productivity.

With AI-enabled video analytics, surveillance data can be collected over time and visualized into data dashboards to offer qualitative operational insights. The city management can, for example, see how many people come to city hall for assistance on a daily basis; understand how long – on average – people wait in line to be served; discover how long it takes for individual city employees to provide support and, based on all this data, determine whether the municipality's workforce and overall strategy are operating productively. By using face recognition to identify individuals, the city can carefully assess its employees and ensure that everyone is working in the most efficient and effective ways possible to improve the city's productivity and the residents' quality of life.

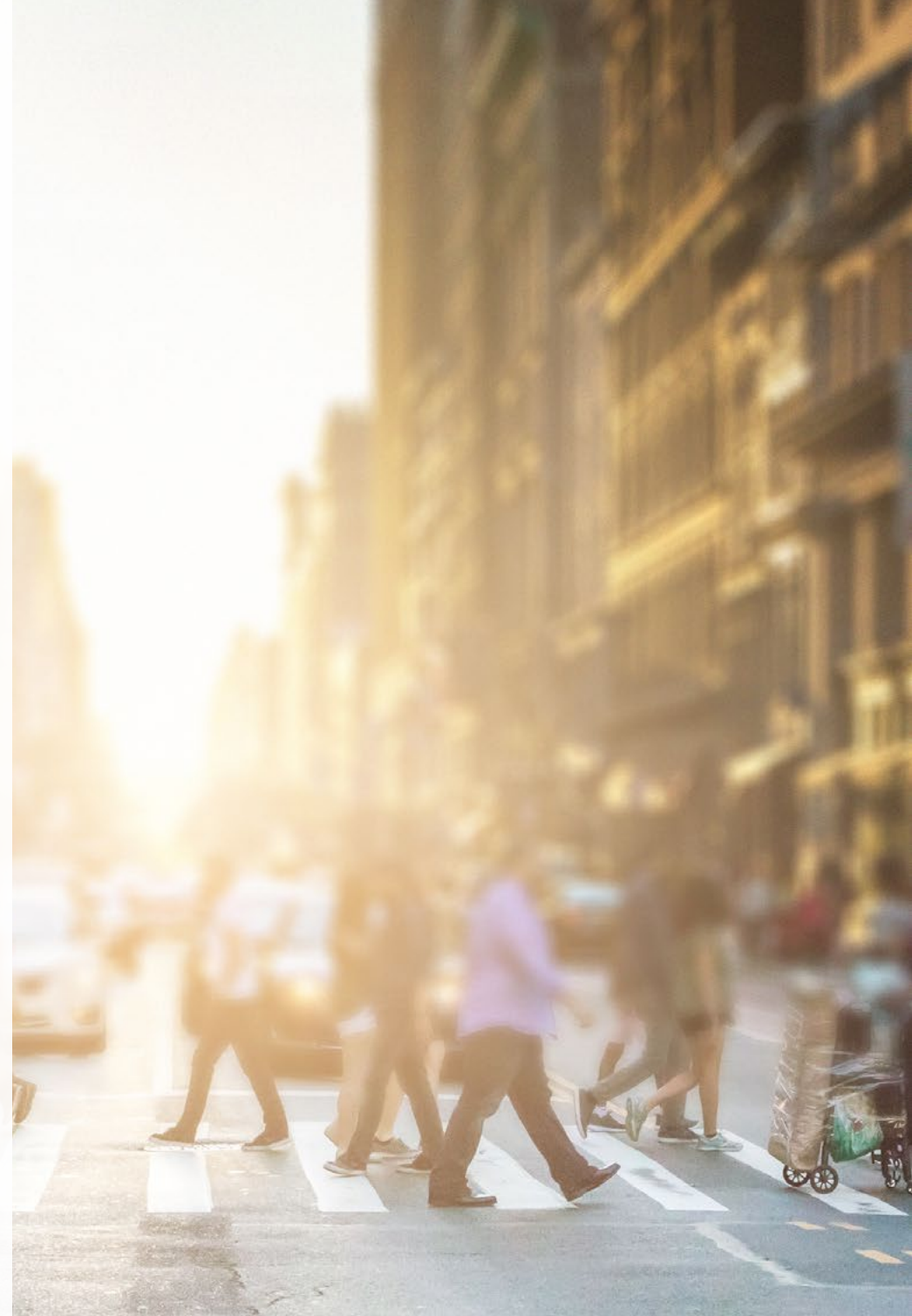
CHAPTER 4

DRIVING SAFETY AND EFFICIENCY WITH ARTIFICIAL INTELLIGENCE

AI-driven technologies, such as face recognition, are making it possible to detect, identify, analyze and recognize individuals for a variety of ends: Whether for physical or information security, streamlining operations or investigations or optimizing real-time response to suspected – or actual – threats, artificial intelligence is playing an increasingly central role in daily life. Therefore, cities must embrace AI-based technology as part of their future planning, as they adopt Smart City approaches and solutions.

Beyond face recognition, other technology systems can equip cities to safely and effectively support their activities and optimize their efficiency. Many cities rely on license plate recognition software, to identify vehicles that have violated traffic laws or to locate stolen vehicles. Technology solutions are being developed to recognize identifying behaviors – for example, cities will soon be able to leverage gait recognition to identify suspects and offenders based on their unique walking patterns. Advanced Video Content Analytics systems enable operators to search based on other identifying criteria, such as gender, size, color, speed, path, direction, and dwell time and thus pinpoint relevant people or objects in recorded and live video.

Solutions will continue to develop and support the changing needs of local municipalities and law enforcement as the Smart City becomes the standard city and technology-driven intelligence and data analytics become inseparable from urban planning and city management.





ABOUT BRIEFCAM®

BriefCam is the industry's leading provider of VIDEO SYNOPSIS® and Deep Learning solutions for rapid video review and search, face recognition, real-time alerting and quantitative video insights. By transforming raw video into actionable intelligence, BriefCam dramatically shortens the time-to-target for security threats while increasing safety and optimizing operations.

BriefCam's award-winning products are deployed by law enforcement and public safety organizations, government and transportation agencies, major enterprises, healthcare and educational institutions, and local communities worldwide.