



PRIVACY AND FUNDAMENTAL RIGHTS IN THE SMART CITY The Use of Artificial Intelligence in Video Surveillance Systems

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ABSTRACT

This article analyses the social, ethical, and legal implications of the use of Artificial Intelligence in video surveillance systems within the context of smart cities. It addresses several essential concepts, ranging from the notion of the Smart City to the transformation of public safety through Artificial Intelligence-powered surveillance. Current applications such as predictive crime analysis and facial recognition are examined, along with the associated risks, including lack of privacy and transparency. Through the study of various international Smart City models, the article highlights the need for a regulatory framework that ensures the protection of fundamental rights and promotes a Smart City model that balances technological development with legal and democratic principles.

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1. Introduction

Information and communication technologies (ICTs) enable new forms of interaction which, in the urban environment, generate positive dynamics and feedback for cultural heritage, citizens and public administration. This is the context in which the concept of the "Smart City" has emerged, a term that implies a social transformation that manifests itself in various contexts, from greater awareness and care for heritage to greater citizen participation and the use of new Artificial Intelligence (AI) applications integrated into the city itself.

Unprecedented hyperconnectivity, particularly acute in the wake of COVID-19, manifests itself in the use of fixed and mobile devices that expand citizens' communication capabilities. Social media, *cloud computing* and *big data* have also shaped an interconnected society, changing the ways we communicate, consume, work, leisure and manage our time (Fuentes i Gasó, 2021).

As a new development, the use of AI may represent an opportunity to transform the city, making it more efficient and accessible. However, there is also concern about all its possible applications, the potential loss of the "human" factor and, in particular, the ethical and legal complexities that it may entail (Galarza Quinto et al., 2024).

In this context, public administrations are gradually incorporating all these technological innovations in order to develop a truly smart city system that is not only conceived as a passive recipient of services but also acts as an active and co-responsible player in the city (Cotino Hueso, 2018).

Among the possibilities offered by these applications, the Internet of Things is a fundamental tool for the mass collection of urban data. Traffic lights, road signs, buildings, illuminated signs and car parks are some examples of how public administrations can obtain real-time information on variables such as the movement of citizens and light intensity, among others.

The use of AI will enable computer systems to analyse and interpret the data obtained, learn from it and adapt to new situations that may arise. The most notable application is that of predictive algorithms, which are capable of anticipating situations and facilitating decision-making based on the data obtained. These algorithms allow AI to evolve through machine learning processes, progressively improving its ability to solve increasingly complex problems (Aguado i Cudolá, 2022).

The incorporation of these new technologies into AI does, however, present some risks for citizens and, in terms of law, several challenges to be addressed. The use of these technologies may violate some of the most sensitive fundamental rights, such as privacy. Especially in the case of video surveillance incorporating automated systems, it will be necessary to regulate a new legal framework and ensure human supervision to guarantee the protection of these rights.

2. Methodology and Objectives

The aim of this article is to analyse the social and legal implications of the implementation of AI in the actions of public administrations, particularly in the context of smart cities. The analysis will focus on how these technologies affect video surveillance systems and, consequently, impact the protection of citizens' privacy and fundamental rights.

To this end, the concept of the Smart City will be addressed, identifying the elements that characterise it as an "intelligent" city. The main characteristics of AI will also be presented, and the use of video surveillance will be put into context by reviewing its evolution as a technological tool.

More specifically, the legal framework regulating the use of video surveillance technologies will be examined, with particular attention to the new possibilities introduced by AI, such as facial recognition, motion detection, behaviour identification and automated decisions.

It will also include a review of international Smart City models in which these new video surveillance systems have already been implemented, with the aim of assessing their degree of compatibility with democratic principles, the transparency of public administrations and the principle of proportionality.

Through documentary analysis and a review of the most relevant scientific publications in the field of Smart Cities, video surveillance and AI, the aim is to highlight the ethical dilemmas and legal difficulties posed by their regulation. In addition, the opportunities offered by the application of AI in Smart Cities will also be highlighted.

This technology is a tool that, at the same time, has great potential to transform society and also poses a complex challenge for the protection of fundamental rights. In the specific context of "intelligent" video surveillance, it is essential to understand the technical, legal and social background that shapes its development, as well as the regulatory framework in which it will be inserted.

Ultimately, this critical approach aims to establish a context for regulatory study and also to promote the ethical, transparent and responsible use of these new technologies, which must in all cases respect citizens' privacy rights and democratic principles in the public space of the city.

3. The City Facing Legal and Technological Challenges

Although the concept of the Smart City is no longer entirely new, it continues to be the subject of debate and analysis, and the truth is that there is no established consensus on its definition. This concept is approached from different disciplines: architecture, engineering, political and business sciences, and also law.

If we identify the common denominators, we see that the most repeated concept is the use of ICTs to improve the quality of life of the population and establish sustainable development. However, it should be clarified that the presence of technology is not in itself a defining feature of the Smart City.

The implementation of these technologies has a significant impact on fundamental rights, particularly privacy and personal data protection. As mentioned in the introduction, a regulatory framework to comprehensively address these conflicts within the Smart City has not yet been developed (Aguado i Cudolà et al., 2018).

The Smart City represents a strategic opportunity in both the political and business spheres, but these expectations may be excessive and comparable to other phenomena that lose momentum over time. In any case, it is unquestionable that the deployment of video surveillance technologies redefines security in the city and opens up new possibilities for the protection, promotion and analysis of cultural heritage, for example, through more accurate monitoring of public spaces (Fuentes i Gasó, 2021).

The study of the Smart City requires an understanding of how the incorporation of AI redefines citizens' relationships with public space. In the context to be studied, that of video surveillance, it will be necessary to take into account how this tool arises, not only to guarantee security, but also as a mechanism that massively collects data on citizens. This interconnection between Smart Cities, AI and video surveillance will raise a series of ethical and legal challenges, in which a balance between rights and technological innovation must ultimately be found.

3.1. What is a "Smart City"?

The city as a political entity has always played a crucial role throughout history, with the examples of the Greek polis and the Roman city being distant and paradigmatic. But of course, the vision of the "modern" city began with the emergence of the modern and contemporary state.

However, it has been technological evolution that has been decisive in the conception of the "Smart City". In this context, the city has regained prominence as a strategic space for public decision-making aimed at providing essential services to citizens (Aguado i Cudolà, 2022).

This process has been structured around two key phenomena: firstly, the growing concentration of the global population in urban areas, which currently accounts for approximately half of the world's population and is projected to increase in the future. Secondly, the development of new Information and Communication Technologies (ICTs) has led to a digital transformation in

the Smart City, understood as the application of ICTs to the urban environment (Font i Llove, 2021).

According to the European Union, for a city to be considered "smart," it must be configured as an ecosystem in which technology is at the service of citizens, who are also active and essential agents in the interaction with political, social, and economic actors (Velasco Rico, 2019).

Several concepts are included, which we will analyse below (Villarejo Galende, 2015):

- *Smart Economy*. This refers to the incorporation of technologies that promote the creation of new products and business models, e-commerce and avenues geared towards entrepreneurship, employability and international connectivity.
- *Smart People*. This implies a more inclusive society that promotes creativity and innovation, especially in the fields of education, continuous training and the development of digital skills, thereby strengthening human capital.
- *Smart Mobility*. This encompasses transport systems that prioritise sustainable, safe and efficient solutions, with the most advanced ones monitoring in real time. This makes it possible to optimise travel, reduce costs and minimise polluting emissions.
- *Smart Environment*. This involves the implementation of energy networks based on renewable sources, and environmental measurement, control and monitoring systems. It also includes efficient waste management and resource reuse.
- *Smart Governance*. This consists of the inclusion of participatory decision-making processes involving public, private and civil actors at different levels. This encourages citizens to lead participatory processes, supported by digital infrastructures and platforms created by the public administration.
- *Smart Living*. This refers to healthy and safe lifestyles, as well as promoting the well-being of citizens without undermining their interaction with new technologies.

The Smart City model requires a profound redefinition of the ways in which we inhabit, manage, negotiate, consume and enjoy urban public space; it is not merely the implementation of sensors, communication networks and data analysis. Consequently, the concept tends towards an expansive formulation, encompassing cross-cutting dimensions and inevitably requiring citizen participation and cooperation between the public and private sectors (Ricoy Casas, 2017)¹.

Thus, the Smart City represents a new paradigm in the management of public space and the provision of services, aligned with the principles of open participation. This approach promotes collaborative, citizen-centred governance based on transparency, accountability and the strategic use of ICTs (Carmona Garias, 2020).

To this concept, we must add a fundamental social dimension linked to the concept of the Smart Human City, which emphasises the inclusion of diversity. Some authors point out that this notion arises from the need to design inclusive strategies that ensure the integration of all people in the city environment, thus avoiding inequalities. The "Smart Human City" is configured as a more humanised evolution of the Smart City model, focused on the exercise of rights and direct attention to individuals as the main recipients of urban policies.

This point of view demands even closer collaboration between the public and private sectors, as solutions will require the participation of other actors, not only public administrations but also technology providers. Ultimately, it is a matter of collectively rethinking the city so that it responds effectively to the real needs of its inhabitants (Fuentes i Gasó, 2021).

3.2. The Use of Artificial Intelligence by Public Administrations

AI is a technological application that emulates human reasoning through learning and the formulation of a series of general rules and algorithms. Currently, the most widespread AI programmes operate by analysing enormous amounts of data (Big Data), which allows them to

¹ Since the Spanish Network of Smart Cities was established, Spain has occupied a leading position as a country, with the cities of Madrid, Barcelona, Malaga and Valladolid standing out (Telefónica, 2023).

detect patterns, identify trends and generate predictions automatically, with great precision and in a very short time (Solar Cayón, 2021).

This advance represents a significant opportunity for its application in the urban environment, but it must be governed by principles of transparency, impartiality, privacy and accountability so that the benefits of AI can be exploited without jeopardising the fundamental rights of citizens (Galazarza Quinto et al., 2024).

Public administration has evolved from the classic 19th-century model, in which the only “technology” was the use of paper, the printing press and the typewriter. Administration 2.0 incorporated technologies such as computers, word processors and printers (or fax machines). With the advent of the Internet, smartphones and social networks, public administration moved towards a 3.0 model (more typical of the 21st century), in which immediacy, agility, digitisation and automation are its main characteristics (Corvalán, 2018).

The future points to a new stage, that of Administration 4.0, whose main feature is the use of AI. Therefore, from paper management to the digitisation of bureaucracy, we finally obtain an “intelligent” bureaucracy. That is, AI will automate tasks, speed up document processes and facilitate interactions through its algorithms (Muñoz, 2020).

This advance represents the starting point for the standardisation and automation of administrative processes, especially those that are in high demand and uniform. However, AI is not the only resource available, but rather the first step towards automated and instantaneous management. There are multiple algorithm-based techniques that allow the development of artificial cognitive abilities.

Authors specialising in the study of AI point out that it seeks to emulate human cognitive faculties, interpreting parameters flexibly to learn and apply the knowledge acquired in accordance with specific objectives. At a more advanced level, machine learning, a branch of AI, enables genuine learning through the processing of related data. Finally, deep learning, as an evolution of machine learning, enables the creation of abstract models that allow automated decisions to be made based on previously acquired knowledge (Muñoz, 2020).

The following are some of the most notable possibilities that Smart Cities offer for the use of AI (Sánchez Bravo, 2022):

- Smart Grids. More efficient energy management through the development of smart electricity grids, facilitating more efficient energy consumption management thanks to communication between the user and the control centre.
- Smart Metering. Smart metering systems that enable remote, real-time reading of energy consumption.
- Smart Citizen. Although citizens are obviously the main focus of the Smart City, they can rely on AI applications to increase their participation.
- Smart Sensors. Smart sensors that collect essential data for the coordinated functioning of the urban environment.

It is precisely in relation to smart sensors that the study of video surveillance takes on particular relevance, insofar as it is a technology that is based not only on image capture, but also on data processing and detection systems.

3.3. Video Surveillance and Public Safety. Historical and Legal Perspective

The origins of video surveillance are not as recent as one might think. Its historical roots can be traced back to early 20th-century France, where the first cameras were used to capture facial images of citizens who broke the law. However, it was in England in the 1930s that video surveillance began to establish itself as a systematic tool. At that time, it was used to record those who violated traffic signal regulations (Mena Bravo, 2021).

Over time, the use of video surveillance cameras spread to the private sector, with the first sectors being banking, retail and healthcare. The aim was to reduce theft and fraud rates. Initially, the technology was not very advanced and required constant human supervision (recordings could not be stored).

After the attacks of 11 September 2001, the use of video surveillance increased exponentially, especially in the United States. This event marked a turning point in the perception of public safety, generating an urgent demand for technological advances in surveillance. With the ability to store data and biometric technologies, video surveillance was incorporated into educational institutions and other urban spaces to facilitate the identification of citizens who might engage in vandalism (Nieto et al., 2002).

Today, with all the experience gained from the use of video surveillance in different countries, it has been shown to be highly effective as a security method. Nor is it necessary to use it exclusively for criminal activities, as it can also be used to identify when a situation gets out of control or there is abnormal behaviour among citizens (Galdon-Clavell, 2015).

Obviously, for the Smart City, citizen security is an issue that needs to be addressed, as there are conflicts that can have a negative impact on the daily lives of citizens. For example, phenomena such as vehicle or citizen theft, public disorder, vandalism, and in the most extreme cases, assaults on citizens or acts of terrorism. Safety is a key element, as studies show that when someone is the victim of a crime, this is immediately associated with a decrease in not only personal but also collective well-being and a decrease in quality of life.

Insecurity also has significant economic repercussions, such as reduced investment, depreciation of real estate, and the expenditure of additional resources on protective measures. Although there are several perspectives on how to address the phenomenon of public safety, the most relevant are those focused on prevention, monitoring, detection and intervention, which is why the role of video surveillance is key (Morales et al., 2023).

Automated security is not perfect either; in fact, it can generate new forms of discrimination. When AI is used, so-called "algorithmic discrimination" can arise, which derives biases in the decision-making process, producing unprecedented situations that are not so much related to "human" and traditional causes of discrimination, but rather to the possible lack of transparency and opacity of digital environments (Huergo Lora, 2020).

4. Social, Ethical and Legal Implications of the Use of "Intelligent" Video Surveillance

For a video surveillance system to be effective, it must be implemented in a space with sufficient visibility and accessibility, i.e. the observation of activities occurring in the environment must facilitate the identification of suspicious behaviour. There must also be "legibility", i.e. sufficient, clear and consistent signage so that citizens are aware of the rules of use expected in the video-surveilled space.

Although from this perspective, video surveillance is focused on making urban spaces safe and secure, the truth is that its implementation produces a series of social effects, such as the displacement of criminal activities to areas that do not have video surveillance systems. As far as citizens are concerned, there is an increase in the perception of safety in areas under video surveillance, while on the other hand, this increase in protection also contrasts with a feeling of lack of privacy and mistrust (Pérez Macías, 2024).

In any case, video surveillance is a very important tool for the security strategy in the Smart City. It does not, of course, represent a definitive solution to curb crime, but with the use of AI, the social effects will be reconfigured, so it is necessary to analyse the possibilities it offers and the regulatory framework.

4.1. Practical Applications for Artificial Intelligence in Video Surveillance

In a broad sense, any AI model applied to public safety will incorporate the use of algorithms and statistical models. These algorithms will enable spatiotemporal predictions to be made about the occurrence of crimes, facilitating, for example, the identification of areas where crime is high or where there is a recurring criminal pattern.

This application of AI must necessarily be complemented by statistical and prevention techniques, since if, for example, it is analysed that in a specific area of the city there is a higher incidence of homicides or drug trafficking, other tools for prevention can be developed. There is also the ability to identify crimes and analyse their evolution over time in order to plan security strategies (Barragán-Huamán et al., 2023).

The implementation of AI also contributes to optimising the work of law enforcement agencies in terms of police deployment and the anticipation of criminal events. Some of the most “everyday” criminal problems will relate to issues of public disorder and the disruption of social norms (Elluri et al., 2019).

An intelligent prediction system can be used to identify areas where future crime is most likely to occur. The data collected can be used to analyse geographical, demographic and temporal variables not only in the occurrence of crime but also in traffic accidents (Barragán-Huamán et al., 2023).

The use of drones is another example of the use of AI in surveillance and control tasks. These devices have a wide variety of applications, from commercial purposes, such as detecting crop diseases, to military uses. In the latter area, the case of the United States stands out, whose air force has more than 80,000 drones dedicated to counter-terrorism operations. The proliferation of these technologies raises the need to establish regulatory frameworks to govern their use, especially with regard to data collection, critical infrastructure security and the protection of human rights (Malamud, 2018).

One of the most notable applications of “smart” video surveillance is the detection and location of gunshots. This use of technology is particularly important because, in urban areas, the sound of a gunshot is probably one of the factors that most increases the perception of insecurity, not to mention the social and economic consequences it has for the urban environment.

The use of AI enables a faster and more effective response by the authorities, not only to provide better care for potential victims but also to identify and apprehend those responsible. As mentioned above, the data generated is very valuable for developing predictive algorithms and analysing crime patterns (Morales et al., 2023).

Another interesting application, although less developed, is the detection of weapons in public or private spaces, including both firearms and knives that could cause injury, disturb public order and, in the most serious cases, lead to homicide. The detection of weapons by AI-based video surveillance systems would help to fulfil two main functions: the prevention of violent incidents and the facilitation of the tracking and identification of the weapon's carrier, regardless of whether the weapon was used or not (Hashmi et al., 2021).

However, unlike the detection of gunshots, the detection of weapons (or other objects) in images presents more specific difficulties because they are small objects that move quickly and can be partially or completely concealed by their carriers. Future research will focus not only on the analysis of recorded videos to facilitate this detection, but also on enabling it to occur in real time using algorithms (Zhao et al., 2021).

There are many approaches based on AI techniques that can improve public safety, so technical and scientific interest will increase over time, as will the study of algorithms, high-processing systems and data collection. In any case, all efforts must be directed towards designing solutions that are truly effective (Morales et al., 2023).

4.2. Fundamental Rights in the face of “Smart” Video Surveillance Systems

Once the necessary technological devices, sensors, cameras and other digital components have been deployed in the urban environment, they begin to collect data in real time, feeding AI systems that process this information to generate automated responses. This scenario, which some authors dare to portray as a technological dystopia, facilitates constant control of citizens by the authorities. For example, the case of China serves as an illustrative prototype of a Smart City in terms of the risks associated with this type of intensive surveillance (Álvarez Pereira, 2019).

The interconnection of platforms, the massive use of cameras and the integration of the Internet of Things make it possible to capture how people really live, beyond their opinions or self-perceptions. This idea is already being implemented by companies such as Netflix, Google, and Amazon, which use behavioural data analysis to offer products and services tailored to users' actual preferences, thus opening the door to the individualisation of services. Although this personalisation can undoubtedly improve customer service, it also poses challenges to the principles of fairness and equality (Velasco Rico, 2019).

The implementation of video surveillance systems in the Smart City environment poses a fundamental dilemma between the protection of individual freedoms and the potential of technology to improve public safety. In this context, a regulatory and ethical balance is required, based on three fundamental pillars:

- Right to privacy. The balance between security in public spaces and respect for people's privacy must be guaranteed by the legal framework. Laws must regulate the use of video surveillance in public spaces and private spaces with public access and prohibit it in strictly private spaces. Article 12 of the Universal Declaration of Human Rights establishes that no citizen should be subject to violations of their private life, family or home.
- Protection of personal data. Video surveillance involves the collection of sensitive data, such as images, voice and behaviour, which requires robust protection. Since 2018, with the implementation of the European Union's General Data Protection Regulation, consent has become a very important factor in terms of the principles of freedom, revocability, informed consent and specificity.
- Non-discrimination. The use of video surveillance can also lead to discriminatory practices, especially when monitoring people considered "suspicious" based on subjective criteria such as skin colour, clothing or ethnic origin (Vizcaíno Zamora, 2021).

As noted, Smart Cities are based on a dual requirement: on the one hand, the inevitable technological modernisation of the administrative management of municipal services; on the other, the institutional transformation increasingly demanded by governments, driven by the intensive use of ICTs. In this context, it is proposed that Smart Cities should make a firm commitment to transparency, understood as a value that must be promoted through technological innovation.

This approach presents Smart City projects, especially those developed in Spain, with the challenge of complying with a set of administrative regulations that, in many cases, are inconsistent and lack systematicity. The regulations governing these processes have been approved in a fragmented manner, which makes it difficult to integrate them as a solid basis for building the cities of the future.

It should be emphasised that the first requirement for good governance of the Smart City should be strict compliance with the current legal system. However, as will be discussed later, this compliance does not always occur with the level of diligence that would be desirable (Velasco Rico, 2019).

5. International Models of “Smart” Video Surveillance

One of the most complex challenges in implementing AI in the context of the smart city is the ethical and legal management of data generated by applications and devices that are connected to the network. The involvement of private actors, such as automotive companies and technology providers, introduces risks related to the misuse of personal data, especially if done without the relevant consent.

The diversity of models also reflects different ways of conceiving the relationship between technology and citizenship. Some approaches prioritise the social, democratic and participatory dimension, while others focus almost exclusively on technological infrastructure and other values

such as security and protection. This last point is precisely one of the main legal concerns in the context of Smart Cities (Ricoy Casas, 2017).

A paradigmatic example is the social credit system implemented in China, which assigns scores to citizens based on their behaviour, consumption habits and Internet activities. This system, which is based on mass surveillance and data analysis technologies, conditions access to public services and basic rights, generating a series of structural discriminations. This system is clearly incompatible with the democratic principles and legal guarantees of Western states (Durán Ruiz, 2020).

The effectiveness of these systems will also depend largely on the availability of technological infrastructure, as this must at least allow for the immediate and secure capture, storage and processing of images. This technical capacity is essential for the competent authorities to be able to use audiovisual records in criminal investigations, thus contributing to the strengthening of justice and the control of crime (Malamud, 2018).

Below, we will analyse a series of models that illustrate how advanced AI-based video surveillance models are. The analysis of these models from such different countries will allow us to define the implications for fundamental rights, as well as the implications in terms of security and privacy and the ethical challenges they pose.

5.1. Technological Efficiency versus Citizen Privacy. The Chinese and Singaporean Models

For years, China has been developing one of the most sophisticated surveillance systems in the world, based on an extensive network of more than twenty million security cameras equipped with AI technologies capable of identifying individual characteristics such as gender, age, skin colour and clothing in real time.

In addition, the system also allows for traffic issues to be addressed by recognising vehicles by make, model, colour and type, as well as their status (in motion or parked). This infrastructure is actually a strategy to combat corruption and locate citizens who are involved in criminal activity, either through the use of facial recognition and machine learning, connected directly to police databases.

The implementation of this system has generated intense debate about its implications for privacy and individual freedoms, as the state's ability to identify and track citizens in real time raises questions about the balance that must exist between public safety and respect for fundamental rights (Burgueño, 2025).

One of the most curious innovations in China has been the creation of a fully automated police station, managed by AI, where no human interaction is required. This centre is designed to handle procedures related to the automotive sector, such as driving tests using simulators and document management, with user identification carried out exclusively through facial recognition (Araujo and Mendes, 2025).

Singapore is also a leader in the application of technologies to video surveillance. One of its most relevant applications is the use of drones equipped with sensors to monitor traffic and pollution, as well as androids equipped with night vision and 360-degree cameras. These drones are capable of emitting visual and audible alerts and have been designed to detect undesirable social behaviour. The so-called "Xavier" robots played a key role in enforcing social distancing during the COVID-19 pandemic, acting as technological assistants to the security forces (Bendel, 2022).

This type of innovation represents a radical change in the way public administration is conceived, introducing an automated management model that, while it may improve efficiency, also raises serious concerns about the dehumanisation of public services and the protection of personal data (Estévez Martín and Ramírez Barredo, 2018).

5.2. Smart Security in the face of High Crime Rates. The Colombian and Mexican Models

The expansion of video surveillance systems in major Colombian cities is seen as a necessary measure to mitigate the risks of high crime rates and guarantee citizens' right to move freely in public spaces. Although it is not a definitive solution, its implementation represents a significant step forward in the fight against crime (Manjarrés de Ávila & Baca Mejía, 2017).

Reducing video surveillance to a purely security function would undoubtedly be a limited view, which is why these systems also contribute to social order and urban development by providing "human" support to law enforcement agencies. This balance results in more efficient management of public spaces. As the population grows and technologies diversify, it is essential that surveillance systems are updated and extended to new sectors.

If the example of Colombia serves any purpose, it is that technological advances have transformed the traditional tactics of police forces, enabling the prosecution of crime through the capture of clear images that facilitate the reconstruction of events and the tracking of people or objects. As a result, video surveillance systems offer multiple benefits, ranging from crime prevention to strengthening justice and social cohesion (Madrugal Chacón, 2019).

The example of Mexico is also relevant, as a system has been developed there that uses cameras installed on public roads to identify prohibited traffic manoeuvres, such as turning in the wrong direction or crossing on a red light. This technology is particularly relevant, given that a significant proportion of collisions between vehicles occur at intersections. In this case, the system allows for automated monitoring of these critical areas, contributing to accident prevention and strengthening road safety (Guzmán Arenas, 2023).

Other systems have recently been developed that facilitate real-time tracking of people using multiple cameras in enclosed spaces. This system has various security applications, such as access control, crowd surveillance and people search, and can also be used for predictive analysis for commercial purposes (Vizcaíno Zamora, 2021).

The technical challenges of this technology relate to image quality and synchronisation, as well as lighting conditions. Initial detection of individuals is carried out using computer networks, specifically the YOLO (You Only Look Once) model, which allows objects to be identified in images in real time. This model uses three loss functions: classification, location and confidence, the sum of which determines the accuracy of the system (Guzmán Arenas, 2023).

5.3. Algorithmic Biases versus Legal and Democratic Guarantees. The American and European Models

The use of algorithms and AI tools in the legal and policing fields is no longer a theoretical hypothesis but has become a reality with tangible consequences, some of which have been the subject of legal disputes. Paradigmatic examples such as the COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) system in the United States, questioned for racial bias, and the SyRI (System Risk Indication) system in Europe, for its impact on classic procedural guarantees, have highlighted the risks inherent in these technologies.

The COMPAS case deserves special attention, as it has generated widespread debate in American legal doctrine and in leading media outlets such as The New York Times. This system was used by judges to determine the risk of recidivism among defendants, raising concerns about possible discriminatory biases in its predictions (Cotino Hueso 2020).

These tools are by no means infallible solutions: algorithms cannot predict the future or solve the structural problems of crime on their own. In addition, over time, certain "methodological pitfalls" have been detected in the use of algorithms, such as the use of low-quality data, misinterpretation of variables, lack of rigorous evaluation, or simply the absence of fundamental rights.

In view of these challenges, recommendations have been made for law enforcement agencies that use AI in video surveillance systems. Recently, some police departments in the United States have begun to review their strategies from scratch, gradually replacing algorithmic systems with models that also value community participation (Rivero Ortega, 2023).

Algorithmic biases should be understood as side effects of a technological transformation not anticipated by its creators, since, logically, neither software designers nor public administrators have been able to fully foresee the social implications of algorithms. However, this does not mean that algorithms should not be used at all, as even human decisions are contaminated by biases and "noise", which gives algorithms a relative advantage. Furthermore, algorithms can be modulated to correct prejudices, something that is more complex in the case of human biases (Sunstein, 2022).

Although some courts have demanded safeguards in the use of algorithms, the US Supreme Court has not declared them unconstitutional, allowing for their current and future application. This position, provided it is accompanied by measures such as transparency, human oversight and prior filters, is not misguided. AI can contribute to the realisation of the principle of legality in the rule of law, provided it is used responsibly (Rivero Ortega, 2023).

Currently, more than half of the world's population lives in urban environments, which is leading to profound changes in culture, lifestyles, social relations and spirituality. Some European authorities, including the recently deceased Pope Francis, have pointed out that cities can be both spaces of freedom and human fulfilment, but also scenes of dehumanisation and suffering. This duality reveals the complexity of the contemporary urban phenomenon (Europa Press Sociedad, 2021).

Even in the most developed and seemingly orderly cities, there continues to be what is known as an "anti-city": symbolic territories inhabited by invisible individuals, deprived of meaningful social ties and relegated to "non-places". These people, excluded from social recognition, are described as "anti-men" in a denunciation that highlights the radical dehumanisation that can occur within urban life.

Faced with this reality, warnings have been issued about the risks involved in the use of technologies such as AI, which can become instruments of discrimination and depersonalisation if they are not developed according to ethical criteria. Francis recognised technological advances as an expression of human creativity but stressed that this potential can only be fully realised when those who design and apply these technologies do so with social responsibility and moral consistency (Sánchez Bravo, 2022).

6. Conclusions

The city has become a complex space where many social, technological and political dynamics converge. Every time a new technological innovation appears, a thorough review of the current regulatory framework is necessary. Population growth and the difficulty of meeting the new needs of citizens are driving new technologies to increasingly collect data, optimise processes and, ultimately, improve public administration management.

The use of AI in video surveillance systems in the context of the Smart City raises, first and foremost, a profound transformation in how to manage citizen security while respecting their fundamental rights. The development of new technologies applied to video surveillance has shown significant advances and presents a number of opportunities in terms of improving the efficiency of public administration, as well as new techniques for improving public safety. However, this also generates a number of social, ethical and legal challenges.

Two of the key aspects of the use of AI are mass data collection and decision automation. Video surveillance is undoubtedly a key tool that is capable of performing predictive data analysis, detecting behaviour and, in conjunction with the human factor, anticipating risks and intervening quickly if necessary.

Given the possibilities analysed, it is clear that its implementation must be carefully regulated, as privacy rights may be violated. There are currently several models for how to approach these technologies. For example, the Chinese and Singaporean models give greater priority to efficiency and technological advancement over even the most personal rights, while the Colombian and Mexican models take advantage of AI to reduce high crime rates. While the European and

American models prefer a more protective model that addresses the concepts of transparency and rigorous respect for fundamental rights.

It has been highlighted that the use of AI requires oversight and accountability mechanisms, especially in the face of algorithmic biases. The protection of fundamental rights in the Smart City requires clear and consistent rules, but it is also necessary for the institutional "culture" to be one of respect for rights.

It is not enough to establish legal frameworks; it is essential to promote ethical reflection on the responsible use of technology, geared towards human well-being. If the analysis is limited to indicators such as efficiency or security, there is a risk of violating fundamental rights as important as privacy or human dignity.

The development of the Smart City must be guided by a more humanistic vision of technology, as technological innovation cannot be an end in itself, but must be a means that is in balance with justice, freedom and democratic guarantees. Only in this way will it be possible in the future to create truly "smart" cities that respect their citizens.

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