Chapter 19
Drone Surveillance: Ethical Considerations for a Sustainable Future

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ABSTRACT

The evolution of drones underlines the 20th-century scientific and technological progress. They evolved within the military context and remained within that circle for almost a century. The 21st century has increased the possibilities and opportunities of drones by incorporating Artificial Intelligence and machine learning technologies. Accordingly, drones are widely used in almost all fields of human interaction. Among them, the use of drones for surveillance stands out due to its advantages and potential risks. The built-in cameras of the automated drones used not only by law enforcement agencies but also by private actors can collect personal information, raising serious ethical concerns. Although drone surveillance is beneficial to society, as it can restrict illegal activities and violations of human rights, it poses apprehensions concerning the privacy and security of people. From this perspective, this chapter examines the vital ethical considerations essential for realizing a sustainable future while using the method of drone surveillance.

1 INTRODUCTION

The rapid advancements in science and technology, as well as the latest inventions in autonomous systems such as Artificial Intelligence (AI), machine learning (ML), and blockchain, have significantly

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altered global perspectives in almost every field. Integrating AI with technological growth has provided many possibilities and opportunities for human flourishing (Fang & Savkin, 2024). Drones or Unmanned Aerial Vehicles (UAVs) (also known as Unmanned Aircraft Systems (UASs) and Remotely Piloted Aircraft Systems (RPASs)) have evolved as remotely controlled systems that are predominantly used by the military (AL-Dosari et al., 2024). Currently, they fall under the category of autonomous systems, incorporating the latest advancements in AI. The latest updates in drone technology have encouraged the world to actively use them in agriculture, search and rescue operations, military services, commercial delivery services, and surveillance (Bayou et al., 2025). Drones equipped with built-in cameras, GPS units, infrared sensors, and other advanced technologies are becoming increasingly widespread. Modern human-controlled or autonomous drones can capture photos and videos flawlessly, carry weights, target and destroy opponents and their weapons, and even act as main protagonists in places too remote for land vehicles to conduct search and rescue missions. All these affirm the unlimited possibilities of drone applications in today's society (Dilshad et al., 2020), where both the public and private sectors are progressively utilizing drones (Seidaliyeva et al., 2024).

The first attempts to build pilotless vehicles began during World War I, with initiatives from the UK and the USA. The UK's airborne Target was tested in 1917, whereas the American airborne torpedo, known as the Kettering Bug, first flew in October 1918. But neither of them was used in the war. However, they powerfully conveyed that "an aircraft could be operated without a human operator" (Rao et al., 2025, p. 33). Attempts to invent a new model continued during the interwar years. One of the British models of 1935 was given the name DH.82B Queen Bee, which is claimed to have inspired the adoption of the current term "drone." The Americans also continued to invent new models. The Vietnam War was the first to witness the widespread use of UAVs. Besides, drones started to be employed in a variety of new capacities, including dropping leaflets for psychological warfare, launching missiles against stationary targets, and serving as decoys in battle. These examples demonstrate that drones were initially developed for military purposes and were used in high-risk areas (Vacca & Onishi, 2017).

Although drones have become an essential component in almost all fields of human interactions, drone surveillance is a unique area in which drones gather information through their cameras and sensors for monitoring, security, search and rescue operations, infrastructure development, and law enforcement purposes. Such a surveillance system from the air is more beneficial than others (Edulakanti & Ganguly, 2023). In the present scenario of global interconnectedness, where terrorism, drug trafficking, corruption, and criminal activities have become quite common, this surveillance method is essential. However, many misuses, human rights violations, and insecurities can arise through the widespread use of surveillance drones, affecting human well-being. Although many studies have widely discussed the importance of drones in everyday life and the benefits of drone surveillance, very few studies have focused on their ethical and legal considerations. The studies that discuss the ethical framework of drone surveillance primarily concentrate on privacy and security, ignoring other elements (Bradley & Chiou, 2024; Wang et al., 2021; Edney-Browne, 2019; West & Bowman, 2016). From this perspective, this chapter examines the various purposes of drone surveillance, examining its advantages and disadvantages. It does not criticize drone surveillance but argues that it should be based on international human rights standards and ethical principles without violating people's dignity and privacy. It aims to broaden the ethical and legal framework for a people-centered drone surveillance system.