Chapter 11
Artificial Intelligence, Machine Learning, and Internet of Drones in Medical Applications

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ABSTRACT

Internet of drones (IOD) plays an important role in the delivery of emergency medicine to remote locations. Furthermore, it is employed for blood transfer, disaster assistance, missing persons, discovering lost hikers in the hill station, and a variety of other emergency services. The use of drones for emergency response services, particularly in medical circumstances, offers new avenues for life-saving interventions. Using drones to have "eyes" on a risky scenario or to transport medical supplies to stranded patients may increase the capacity of emergency response physicians to provide care in dangerous conditions. IOD provides several emergency response services that have an influence on daily life. The Federal Aviation Administration (FAA) conducts completely autonomous missions beyond visual range and flights above people to provide critical medical supplies. Artificial intelligence and machine learning are the future of the unmanned aerial vehicle in multiple applications.

INTRODUCTION

As a result of rapid technological advancement, the aviation industry has undergone a paradigm shift. The introduction of unmanned aerial systems has aided in this. Advances in Unmanned Aerial Vehicle (UAV) technology have benefited military operations, civil applications, agricultural applications, and research and development. Unmanned aerial vehicles (UAVs) are attracting operators, manufacturers,

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and industries from all over the world. Unmanned aerial vehicles (UAVs) are aircraft that do not have a human pilot on board. In recent years, unmanned aerial vehicles (UAVs) have grown in popularity in the field of research and development. The duration of flight (endurance) and the distance travelled are the two performance metrics that are examined (range). The two most significant limitations of UAVs are battery power and payload. To predict the performance characteristics of UAVs, the experimental work must be performed as a real-time problem. As a result, the range and endurance required for completing tasks with a UAV can be calculated (Balasingam et al., 2017; Sun, G et al., 2021).

Smaller aircraft, such as unmanned aerial vehicles (UAVs), are now being developed for a variety of applications. The main advantage is that, when compared to large planes, the cost and training requirements are significantly lower. These UAVs can also be controlled manually or programmed to fly autonomously. The functional capacity of the UAV varies greatly depending on the model (Bogle et al.,2019; Li, H. et al.,2021). Drones used for military purposes can reach speeds of up to 45 m/s, whereas small rotary wings can only reach speeds of 17–26 m/s. A UAV's flying time, endurance, and payload vary depending on its size. Small unmanned aerial vehicles (UAVs) have a payload capacity of 3–4 kg and a range of 20–40 minutes. Furthermore, depending on payload and fuel supply, small UAVs typically have a range of 32–96 kilometres. Military unmanned aerial vehicles, on the other hand, have a range of 1,500 kilometres (Amukele et al., 2016; Hua, M et al., 2021).

Drone technology for healthcare is still in its infancy in advanced countries. Much of the existing research in developed countries is theoretical and focuses on how to organise drone technology applications in healthcare (Braun et al., 2019). This article aims to map actual drone technology applications in industrial countries for healthcare and other health-related goals. The article's concept is to: (1) describe how drones are being used for healthcare in developed countries; (2) synthesise the knowledge base being generated in published descriptions of various applications; and (3) identify knowledge gaps within that foundation. This study provides an overview of the use of drones for healthcare and health-related purposes in developed countries and suggests future research objectives.

BACKGROUND

In this sample, various healthcare participants were extensively studied, including those involved in biomedical supply transport, emergency first responders, and telemedicine providers. While these are natural categories for academics seeking to have their drone applications implemented by healthcare policy and decision makers, little thought was given to how such applications might affect patient groups and communities. This begs the question of who is developing drone health applications and why. Eight of the studies had no authors with a background in health, medicine, or health-related fields. Working with target communities was advocated by less than one-third of the author groups (Claesson et al., 2017). Even fewer people actually follow through on their invitations to participate (Mulero et al., 2017). Taken together, these characteristics of drones for health indicate that some may be more interested in leveraging the health context to advance drone technology and markets than in designing drones to meet a specific health need. While this may not be a problem in some cases, it can be a problem when people with a good understanding of patient and healthcare system needs, such as system users, front-line workers, and administrators, are not given the opportunity to develop competence and autonomy in their own field. Engagement with a broader range of users may encourage the development of health-related drone apps