Unmanned aerial vehicles research paper examples

War, Intelligence

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Introduction

Technology plays a major role in the development of any country and also the human civilization. From battery-operated missiles for the defense authority to processor-run laptops in a common man’s home, technological developments have shaped and influenced the lifestyles across all types of organizations and touched many human lives. One such bright facet currently trending is the Unmanned Aerial Vehicles (UAVs), which represent a sector of aerospace and defense organization. Piloted remotely by human operators, these automated aircraft systems are mainly used in the military to launch missiles, deliver intelligence and surveillance reports across the borders, and provide real-time imaging and data . However, recent progress in the robotic fields has grown to a level where these UAVs are used for civilian missions as well. This includes a wide array of services like aerial photography, agricultural observation, online store home delivery – the list goes on. Recently, Amazon, the online retailer giant, launched its first unmanned drone to deliver orders to its customers . It has huge scope and

usability; with the right communication control and security systems, UAVs can be used for most indoor and outdoor activity environments.

Military Applications

UAVs have overturned the battleground, with its largest application in the military domain. They provide armed-combat support, making them an asset to the defense industry, which develops weapons that are to be specifically used on armed UAVs for aerial combat. UAVs provide the obvious benefit of safety and cost, since there is no human pilot flying the aircraft. It can be programmed to attack a specific target location, and then can be controlled remotely. They are also used for swarm intelligence and ISR (Intelligence, Surveillance and Reconnaissance), target detection and recognition and mine warfare. Other government applications include Inspection of terrains and pipelines, security surveillance, environmental monitoring, agricultural and forestry, and so on .

Other Applications

One particularly interesting paper by Jae-Neung Lee and Keun-Chang Kwak talks about the application of UAVs in Image Processing. In countries with a huge population, it is difficult to conduct disaster management, especially in areas that are highly difficult to reach in a short span of time. In such situations, UAVs image processing can be very helpful in assisting officials perform operations without needing to access the area. The paper specifically mentions the high usability of such a technology in Korea, where 70% of the landscape is mountains. Some of these image processing techniques include target tracking, edge detection, target sensing and

avoidance. The paper also shows a series of trends analysis regarding image processing, all of which shows great applicability of UAVs in disaster control and public services.

The last ten years have shown a potential growth in UAVs, becoming a major focus of research. However, the advantages of UAVs in military are also faced with a downside of predator UAVs. Military attacks using drones collect very little critical intelligence, resulting in it being akin to manned raids and a population’s view as an attack to its sovereignty. Also, barring the initial cost, even the smallest error in the side of the human controller can cause the drone to crash, resulting in a loss of millions, including unintended casualties.

An overview analysis indicates that the advantages of UAVs far outweigh its disadvantages, especially in small scale and civilian markets. It has a variety of applications ranging from the military to the field of engineering to bioinformatics. The technology for the design of such vehicles is emerging, providing significant leverage to the human civilization at large.

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