

Navigating Uav Applications in Remote Sensing A Review of Image Acquisition, Processing, And Ethical Considerations

ABSTRACT

Unmanned aerial vehicles (UAVs) in remote sensing are a complicated and highly technical matter. It is important to follow the right discipline in preparing the process and handling aerial data, as well as to obtain the right results based on the aerial images collected. The application of UAVs in remote sensing involves assessment of physical parameters, acquisition of aerial images, processing of images and compliance with laws and regulations. This review paper aims to provide researchers with a reference for the use of UAVs as an aerial image acquisition platform and image processing workflow. Relevant articles from 2000 to 2023 published in Web of Science, SCOPUS, Elsevier, ScienceDirect and other reliable sources were reviewed based on four aspects: (1) UAV specification, (2) image acquisition, (3) processing, and (4) general legal and ethical aspects related to remote sensing. In accordance to brief historic background and regulatory status analysis, this paper discusses the importance of UAV specification, the evolution of imagery acquisition methods, and the trend in the method of processing aerial imagery data collected by researchers on various marine targets. The rapidly evolving technologies and understanding of new technological capabilities, the differences, and distinctions between each method of image capture, the accuracy of execution in processing aerial data and the reliability of techniques in image processing are discussed in this paper. The use of UAVs has led to high accuracy in mapping and this paper will help researchers to understand the idea and concept of UAV use in marine remote sensing.