

Machine learning in Drone-based Warehouse Management for Perishables

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ABSTRACT

Drone-based warehouse inventory management is gaining popularity as is seen in the increasing number of firms in this space as well as the number of research publications. A majority of these include either the use of cameras to read barcodes or take pictures followed by the use of computer vision methods to identify objects or the use of other automated identification technologies such as RFID to facilitate object identification. Machine learning is then used to make appropriate decisions such as the next object to pick or place in the warehouse environment, where to place newly arrived objects, the sequence of tasks to be performed, among others. The complexity of these processes is compounded when the objects are perishables that have several constraints such as ambient conditions for storage, placement of one type of perishables (e.g., banana) far away from another type of perishables (e.g., strawberries). We consider the use of drones and machine learning for perishables in a warehouse environment and highlight important considerations. While machine learning and drones have been successfully utilized in inventory management of non-perishables, the use of learning to improve the effectiveness and efficiency of operations in a warehouse for perishables has not witnessed its fair share as evidenced by the lack of publications in this domain and general area. This paper is a step in the direction to address this void in published literature.

Keywords: drones, inventory management, machine learning, perishables, warehouse