Creative Research on Automatic Detection of Flying Objects

Abstract

With the increasing development of China's modernisation and the growing demand for national defence security, it is very important to detect unidentified flying objects in the air and eliminate potential threats to ensure national security. In order to solve the dual problems of high cost of manual inspection and poor performance of the detection model with low accuracy, this paper proposes a way to automate the detection of flying objects by using the YOLOv5 target detection model, improving the loss function CIOU_Loss to EIOU_Loss by default to speed up the convergence speed of the model, and at the same time adopting a variety of novel data enhancement methods to improve the accuracy. This paper also compares the performance of the YOLOv5 model before and after the improvement in the training and flying objects detection process to demonstrate the effectiveness of the improvement.

Keywords: YOLOv5; Flying Object Detection; Neck Network; EIOU_Loss; Data Enhancement