

ABSTRACT

Technological advances in Artificial Intelligence open up new opportunities for autonomous war machines to assist soldiers in fighting the enemy. This has been proven in the Russian-Ukrainian war with the use of reconnaissance drones and Kamikaze drones. Therefore, major countries are competing to master the field of AI both in terms of software and hardware. Although the level of use of Artificial Intelligence is still in its early stages, the tracking and targeting systems used to destroy combat vehicles are already in use, for example the Switchblade and KUB-BLA drones. These drones can identify and classify objects seen by their cameras so that they can distinguish between targets and non-targets. In this research, the implementation of the turret controlled by YOLOv8 was successfully implemented using NVIDIA Jetson Nano and the factors affecting the performance of the detection system have been identified. For the performance of the Turret itself, there are parameters that meet expectations and some that do not. For confidence in all tests, it has reached expectations except for the second horizontal test, where the confidence level is only 0.689 from the expected 0.7. For deviations, all meet expectations, which are on average below 40 pixels, but all runtime results do not meet expectations with the best average result of only 601 ms while the expectation is 200 ms. Accuracy also does not meet expectations with the best result being 27.1% from the expected 70%. Low accuracy and slow runtime due to unstable detection and NVIDIA Jetson hardware limitations caused turret to have difficulty tracking accurately. It is hoped that in the future we can use a better camera accompanied by hardware that has good specifications.

Keywords: Artificial Intelligence, Turret, Targeting, Tracking