Raspberry Pi Is Enough for an Anti-Drone Laser: Achieving an Efficient and Simple Anti-Drone Laser Tracking System

Park, Sihyeon (School: Sejong Academy of Science and Arts)
Choi, Donghwa (School: Sejong Academy of Science and Arts)

Recently, as drone weapons are emerging as new weapons, anti-drone lasers are drawing attention. An anti-drone laser is a laser weapon that tracks and shoots drones. It is known that many researches on the anti-drone lasers are being conducted to take advantages of high speed, high accuracy and low price. The aim of this study is to understand anti-drone technology and to realize a simple anti-drone laser tracking system by using several devices we can find easily around us. Therefore, in this study, a Raspberry Pi and OpenCV are employed to implement an anti-drone laser tracking system. To this purpose, drone tracking codes with six different algorithms are individually employed and the hardware for our anti-drone laser tracking system is configured using a commercial security camera, laser, etc. By setting three criteria for selecting algorithms: tracking speed, tracking success rate, and tracking distance and by comparing several algorithms in many experimental data, the drone tracking program including CSRT algorithm for our anti-drone laser control system is adopted. The study shows that the average tracking success rate reaches 71% when the drone tracking program with CSRT algorithm is used. It is also confirmed that our anti-drone laser tracking system is able to track an 20 cm-diameter balloon 10 m away from the system. It is highly valuable that our anti-drone laser tracking system is configured as a very simple system only by using a Raspberry Pi. This finding suggest be utilized that this control technology be applicable in many civil appliances.

Awards Won: