

EMERGING METHODS FOR EARLY DETECTION OF FOREST FIRES

Forest fires are occurring throughout the year with an increasing intensity in the summer and autumn periods. These events are mainly caused by the actions of humans, but different nature and environmental phenomena, like lightning strikes or spontaneous combustion of dried leaves or sawdust, can also be credited for their occurrence. Regardless of the reasons for the ignition of the forest fires, they usually cause devastating damage to both nature and humans. To fight forest fires, different solutions were employed throughout the years. They were primarily aimed at the early detection of the fires. The simplest of these solutions is the establishment of a network of observation posts - both cheap and easy to accomplish, but also time-consuming for the involved people. The constant evolution of the information and communication technologies has led to the introduction of a new generation of solutions for early detection and even prevention of forest fires. ICT-based networks of cameras and sensors and even satellite-based solutions were developed and used in the last decades. These solutions have greatly decreased the direct involvement of humans in the forest fire detection process, but have also proven to be expensive and hard to maintain. In this paper we will discuss and present two different emerging solutions for early detection of forest fires. The solution involves the use of unmanned aerial vehicles (UAVs) with specialized cameras. Several different scenarios for the possible use of the drones for forest fire detection will be presented and analyzed, including a solution with the use of a combination between a fixed-wing and a rotary-wing UAVs.