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Detection, direction finding and localization of selected radio emissions with swarm technology

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Abstract: Due to the dynamic growth of applying civilian and military unmanned aerial platforms, a large saturation of the airspace with this type of objects is observed. There are many problems associated with this, among which there are the following: lack of systems informing about the location of other flying objects and violations of protected areas by unauthorized flying platforms. In this paper the concept of direction finding and localization of radio emissions using the Unmanned Aerial Vehicles based on the idea of a hierarchical "swarm" is presented. It is also discussed the UAV detection methods taking into account the specific features of detected radio signal and selected aspects related to the functioning of UAS. Geolocation techniques are presented and one of them, dedicated to direction finding sources of radio emissions, is indicated as preferred. Additionally, relevant mathematical formulas for geolocation method are proposed.

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