Determination of Subscribers Coordinates using Flying Network for Emergencies

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Abstract— In the last decade, unmanned aerial systems have emerged in different fields, such as entertainment, military, Internet of Things, emergencies. In these systems, unmanned aerial vehicles (UAVs) communicate with each other based on a flying network to provide services to customers such as live streaming, high-speed access point, etc. The mobility of UAVs can bring numerous advantages in emergency cases, for example, rescuing and searching victims in areas where the network infrastructure is not available. However, the crucial task needed to be done first is to locate the victims' coordinates. In this paper, we propose a method for detecting the coordinates of subscribers with the Wi-Fi signals generated from victims' phones in the absence of network infrastructure of communication operators using a flying network for emergencies based on UAV-swarms. We develop a new protocol for communication between UAVs and UAV-swarms. A structure of UAV-swarms is considered to optimize the searching time. The results of the proposed method are achieved by simulation.

Keyword— SAR, UAV, Flying Network, positioning, Wi-Fi, IEEE 802.11p

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