

Opportunistic Computational Offloading System for Clusters of Drones

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(Pt9)Abstract— Providing many beneficial characteristics, Unmanned Aerial Vehicles (UAVs) have become extremely popular in terms of their utilization in everyday life and military system. As they have bigger and more advanced tasks as time goes by, clusters of small UAVs are preferred rather than one single large UAV since they offer bigger coverage area, higher flexibility, and even more reliability. However, the drone system has limited computing power and energy resource which makes it a challenge how to utilize this system to have a long operation time. In this paper, we propose an *opportunistic computational offloading* system which borrows computing power from other drones cluster to help finishing tasks on a specified cluster. When there is a drone cluster having a lot of computing tasks exists with another cluster in the communication range that has enough computing resources or in the idle state, our proposed scheme will make a cluster head to opportunistically decide to do offloading or not by considering various costs. The proposed scheme aims to increase the drone's lifetime and also to shorten the response time.

Keywords—Cluster, Computational Offloading, Drone, Multiple UAVs, Wireless Communication



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