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Data collection on UAV-assisted wireless sensor nodes using fault-tolerant energy efficient reinforcement learning techniques

Abstract:

Since the limited range and power of the dynamic UAV would make its sensor systems vulnerable, transmissions would fail and a lot of time would be wasted, it is very challenging to coordinate its placement and trajectory. This research evaluated a unique wireless sensor network (WSN) consisting of numerous sensor nodes supported by airborne drones or unmanned aerial vehicles (UAVs) as base stations (UAV-BS). By simultaneously optimising the dynamic placement of UAVs and their trajectory based on user information, we seek to minimise the total task completion time among multiple UAVs during data collection while ensuring fairness among SNs. Therefore, to address the multiple objectives of UAVs in WSNs in a large geographical area, we propose reinforcement learning based multi-UAV assisted WSNs scenarios to minimize the total task completion time of UAVs.

Biography

Mesfin Leranso Betalo, He has currently completed his Ph.D. degree in Information and Communication Engineering at the University of Electronic Science and Technology of China (UESTC), his M.Sc. degree in Information Technology from the University of Madras in 2016, India, and his B.Sc. degree in Computer Science from Hawassa University in 2012, Ethiopia. He served as a lecturer as well as a member of the postgraduate committee at Wachemo University, Ethiopia, from 2018 to the present. He is also a member of the Ubiquitous Wireless Networks research team at UESTC. His research interests include the following: Unmanned aerial vehicle networks, 5G/6G wireless networks, machine learning, vehicular networks, the Internet of Things, and mobile computing