A Novel Geolocation-Based Routing Approach In Flying Ad Hoc Networks

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Motivation

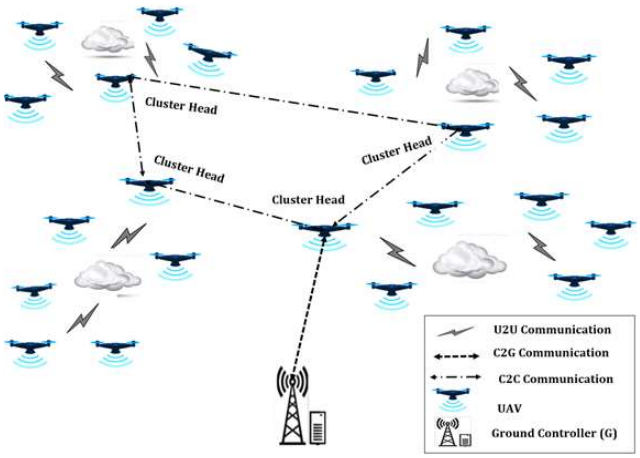
- Flying Ad Hoc Network (FANET) is promising technology that is flexible, easy and quick to deploy for time critical scenarios.
- It facilitates the capture and dissemination of data over large areas.
- Its large applicability setups encompass disaster support services; forestry inventorying; city surveillances and monitoring of mine fields.

Research Challenges

- Unreliable link connections: Nodes are faced with frequent wireless disconnections thereby resulting in increased packet transmission loses and high latency.
- Scalability: Increasing network nodes and increased node dynamics results in computational complexity and increased communication overheads.
- Network instability: FANETs have low fault tolerance and instability due to unsuitable network structuring and loads.

Goal

- To analyse optimal routing design choices for FANET deployment under reliable communication links.
- To investigate the impact of cluster-based networking solutions to handle the scalability challenges under minimum computational complexity.
- To achieve a good load balancing of traffic aiming to ensure fault tolerant and stable communications.



Scientific Contribution

- A cluster based networking solution able to divide the network in real time taking into account the mobility patterns of drones.
- A hybrid routing proposal, focusing on rank based intra-cluster and geographic inter-cluster routing.
- An entropy-based optimal-load balancing approach to enable load sharing between cluster head and substitute cluster head.

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