電機系 DEPARTMENT OF ELECTRICAL ENGINEERING

Wireless Mobile Internet Lab

Advisor: Zi-Tsan Chou

Research Directions:

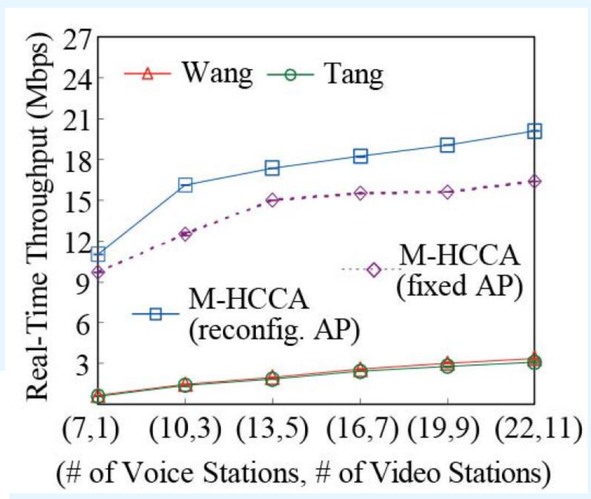
(1) Wireless Networks: wireless local area network (WLAN), wireless sensor network, advanced cellular network, wireless vehicular network, cognitive radio network.

(2) Communication Protocols (Based on Artificial Intelligence and Game Theory): media access control (MAC), routing, full-duplex communications, quality-of-service, multimedia transmissions, power saving, network optimization.

Research Results on Multimedia and Quality-of-Service (QoS):

design a new MAC protocol with QoS support for a WLAN with multi-beam access point (AP).

multi-antenna access point

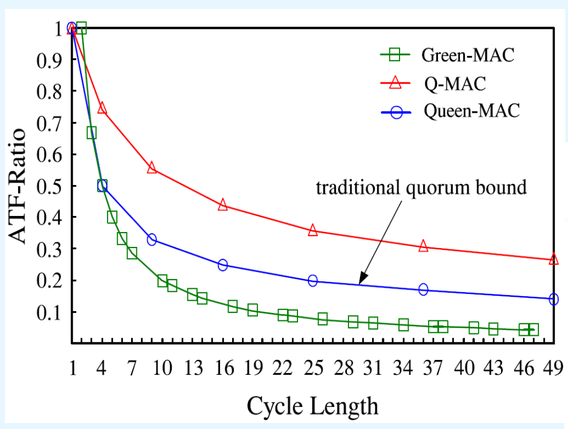


Our protocol has best performances.

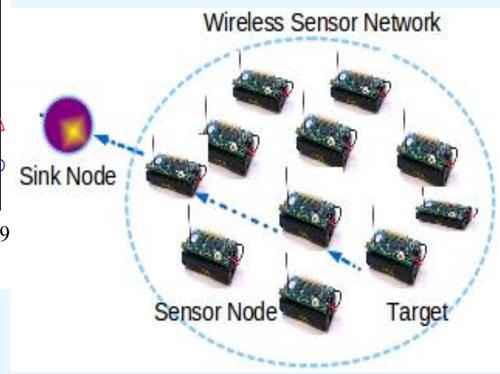
Research Results on Power Saving:

design a new MAC protocol with minimum duty cycle and maximum adaptiveness for wireless sensor networks.

sensor

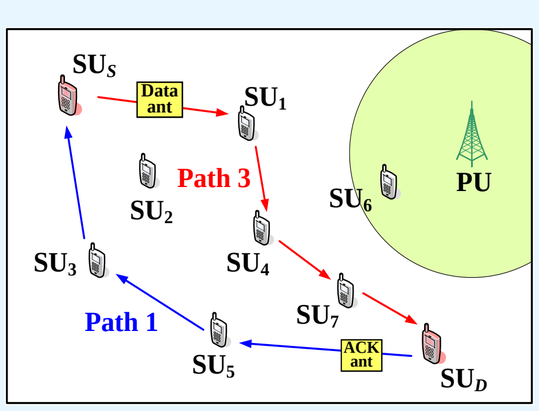


Our protocol breaks the traditional quorum limit.

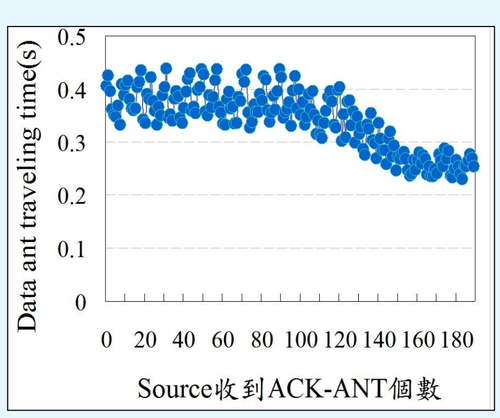


Research Results on Artificial Intelligent Routing:

design a new routing protocol based on any colony optimization (ACO) for multi-hop cognitive ad hoc networks.



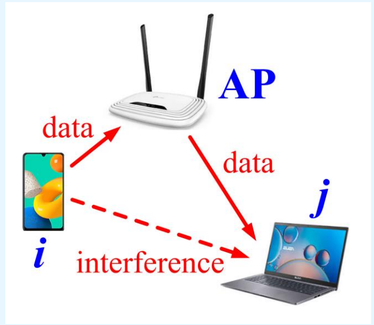
using pheromone mechanism to find the fastest path



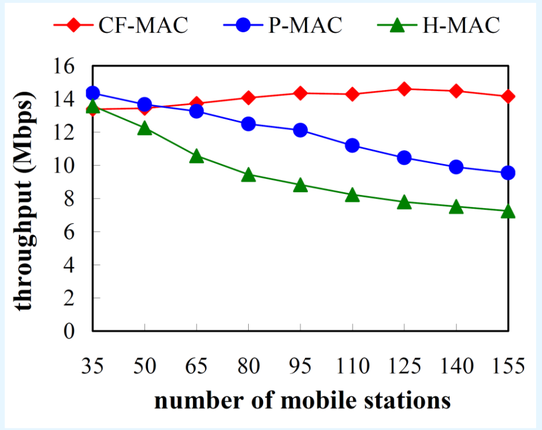
The time to find the fastest path is about the traveling time of 140 ACK-ants.

Research Results on Game-Theoretic Based MAC:

design a new cluster/group MAC for asymmetric full-duplex WLANs based on coalition formation game theory.



asymmetric full-duplex WLAN: when *i* sends data to AP, AP simultaneously sends data to *j*.



Our protocol has best performances.

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