A Store-and-delivery Based MAC Protocol for Air-ground Collaborative Wireless Networks for Precision Agriculture

Soung-Yue Liew*, Saiful Azad†, Hock Guan Goh*, Boon Yaik Ooi* and Arafatur Rahman†

*Faculty of Information and Communication Technology, University Tunku Abdul Rahman, Kampar, Perak, Malaysia
Email: syliew@utar.edu.my, gohhg@utar.edu.my, ooiby@utar.edu.my
† Faculty of Computer Systems and Software Engineering University Malaysia Pahang, Malaysia
Email: saifulazad@ump.edu.my, arafatur@ump.edu.my

Abstract—Due to rapid population growth, the demand for food is also elevating, which inspires farmers to embrace precision agriculture to increase production by exploiting predictive analytics on relevant real-time data. The exactitude of a prediction is vital to decide the next course of actions to be taken to compensate current demands, which again relies on a competent data acquisition technique. The Media Access Control (MAC) protocols have significant contribution in designing data acquisition technique. In this paper, we propose a new Store-and-Delivery base MAC (SD-MAC) protocol for Air-Ground Collaborative Wireless Networks (AGCWNs) to acquire data efficiently from the sensing devices which are deployed in the ... proposed protocol is evaluated using simulations and involving another such protocol, where the proposed protocol outperforms the other protocol.