

TRAFFIC SPLITTING IN HYBRID VIRTUAL-MIMO SYSTEMS

Name of Student : Pawanjot Kaur (1452681)

Deptt. : ECE

Guide : Ameeta Seehra

Mode of Study : F. Time

ABSTRACT

Wireless sensor networks (WSNs) have become an inextricable part of contemporary era. At the same time, MIMO technology has also been regarded as beneficial due to various advantages offered by it. Ergo, with the collaboration of these two concepts, virtual-MIMO came into existence. This collaboration overcame the major problem of WSNs, energy limitation. V-MIMO has been proved highly effective to increase the network lifetime along with the given constraints of BER, transmission energy and received energy. After several years of its efficient use, hybrid virtual- MIMO system has been developed which utilizes V-MISO and V-SIMO along with V-MIMO, according to the requirement.

HV-MIMO provides flexibility to the user as compared to V-MIMO where user is bounded to use only MIMO topology in every hop which sometimes increases the complexity of system. Also, in less dense networks, it is difficult for source node to determine multiple neighbouring nodes. However, HV-MIMO is efficient in all kind of networks because in this system V-MISO and V-SIMO topologies can also be used.

This thesis deals with the improvement in HV-MIMO system with the help of traffic splitting which helps to lower the complexity of the system. Delay and throughput are two main parameters which get affected by splitting of traffic. A significant reduction of 50.4% in delay is achieved as compared to V-MIMO system. Similarly, throughput is increased by 15.4 % as compared to conventional V-MIMO systems. Thus, the proposed work would be highly useful for real time applications which need quick transmission and retrieval of data such as health monitoring and camera surveillance systems.