Balochistan Journal of Engineering & Applied Sciences (BJEAS) – (p-ISSN: 2518-2706)
Volume 4, No. 1

A State-of-the-art Review on Discrete Optimization-based Approaches for Multi-hop Wireless Local Area Networks

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Abstract—Discrete optimization is a mathematical formulation-based approach which provides optimal solutions for the Mixed Integer Linear Programming (MILP) problem. Multi-band multi-hop relay networks are used to re-establish the communication environment in the disastrous areas quickly. Therefore, discrete optimization can easily compute the complexity of such large-scale wireless networks to rehabilitate their services rapidly. In the existing literature, the optimization and performance analysis of wireless networks are examined for and their numerical results and effectiveness using different approaches. We outline the different factors that affect the performance of the WLAN in terms of throughput and end-to-end delay. Moreover, this paper also highlights the research, challenges, and issues for the Future Wireless Networks (FWN) and optimization techniques.

Keywords—Discrete optimization, WLAN, Multi-hop Wireless Networks, Throughput, End-to-End Delay, Multi-band Transmission