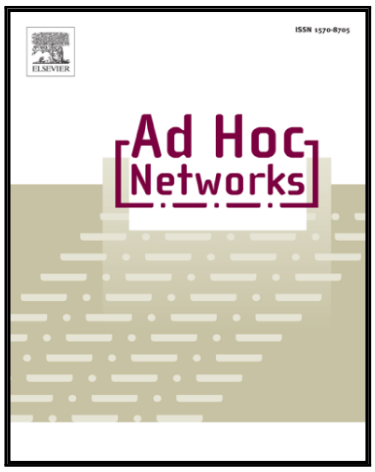


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# Energy Efficient Context Aware Traffic Scheduling for IoT Applications

Bilal Afzal[a,*], Sheeraz A. Alvi[a], Ghalib A. Shah[b], Waqar Mahmood[b]

[a] *Al-Khawarizmi Institute of Computer Science,*
[b] *Sultan Qaboos IT Chair,*
*University of Engineering and Technology, Lahore 54000, Pakistan*

**Abstract**

The evolution of Internet of Things (IoT) has increased the appetite for the energy efficient wireless infrastructures. Most of the IoT devices are inherently resource constrained and heterogeneous in respect of their traffic demand. Moreover, these devices need to be made adaptable to the varying environmental conditions. However, existing traffic scheduling and duty cycling algorithms lack the capability to meet the dynamic service quality requirements of IoT applications with variable context information. Specifically, they are infeasible for IoT use-cases where multi-hop communication is required. This paper strives to realize efficient resource allocation to the Wi-Fi based IoT devices in multi-hop IoT infrastructures. Firstly, IoT applications are characterized as per their heterogeneous traffic demand and mapped to the distinct weighted quality classes. Then, context awareness is introduced for IoT devices and an optimization model constrained by their service quality requirements and context priorities is presented. Further, an energy efficient context aware traffic scheduling (EE-CATS) algorithm is proposed wherein the convergence of model is specified by a sub-gradient projection method. The EE-CATS algorithm efficiently allocates resources to multi-hop IoT devices and reduce their total awake time by employing adaptive duty cycling. The performance evaluation is done

*Corresponding author
*Email addresses:* bilal.afzal@kics.edu.pk (Bilal Afzal ), sheeraz.akhtar@kics.edu.pk (Sheeraz A. Alvi), ghalib@kics.edu.pk (Ghalib A. Shah)