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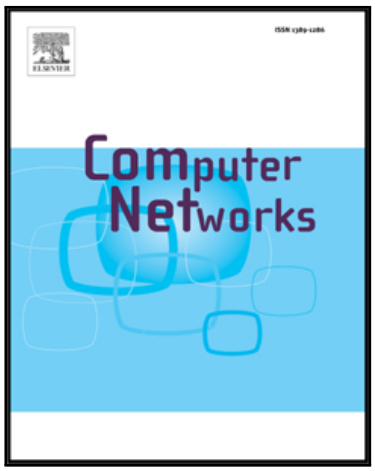

Content-Aware Packet Scheduling Strategy for Medical Ultrasound Videos over LTE Wireless Networks

Moustafa M. Nasralla, Manzoor Razaak, Ikram U. Rehman, Maria G. Martini

PII: S1389-1286(18)30234-2
DOI: 10.1016/j.comnet.2018.05.014
Reference: COMPNW 6493

To appear in: *Computer Networks*

Received date: 25 December 2017
Revised date: 20 April 2018
Accepted date: 16 May 2018

Please cite this article as: Moustafa M. Nasralla, Manzoor Razaak, Ikram U. Rehman, Maria G. Martini, Content-Aware Packet Scheduling Strategy for Medical Ultrasound Videos over LTE Wireless Networks, *Computer Networks* (2018), doi: 10.1016/j.comnet.2018.05.014

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Content-Aware Packet Scheduling Strategy for Medical Ultrasound Videos over LTE Wireless Networks

Moustafa M. Nasralla[a,*], Manzoor Razaak[b], Ikram U. Rehman[b], Maria G. Martini[b]

[a] *Department of Communications and Networks Engineering, Prince Sultan University, Riyadh, Saudi Arabia*

[b] *Department of Science, Engineering and Computing, Kingston University London, UK*

Abstract

In parallel to the advancements in communication technologies, telemedicine research has continually adapted to develop various healthcare applications. The latest wireless technology Long-Term Evolution (LTE) is being increasingly deployed across developed countries and rapidly adopted by developing countries. In this paper, a content-aware packet scheduling approach for medical ultrasound videos is proposed. The contribution of this work is introducing a utility function based on the temporal complexity of the video frames. The utility function is used with four schedulers to prioritise the video packets based on their temporal complexity and type of frame (e.g. I frame). The results show that the utility function improves the packet delay performance obtained in our simulation when compared with content-unaware approach. Further, gain in average PSNR and SSIM are also observed in the received video quality. Research on content-aware packet scheduling for telemedicine applications over advanced wireless networks is limited and our work contributes towards addressing this research gap.

Keywords: `Packet Scheduling Algorithms`, Resource Allocation, Content

*Corresponding author
Email address: `mnasralla@psu.edu.sa` (Moustafa M. Nasralla)
URL: `http://www.psu.edu.sa/en/Colleges/Engineering` (Moustafa M. Nasralla)

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