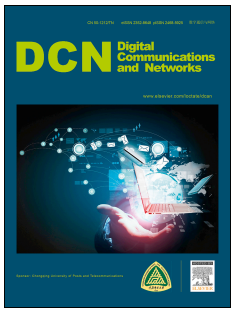
# Accepted Manuscript




Transmission in mobile cloudlet systems with intermittent connectivity in emergency areas

Chhabi Rani Panigrahi, Joy Lal Sarkar, Bibudhendu Pati

PII: S2352-8648(17)30007-X

DOI: 10.1016/j.dcan.2017.09.006

Reference: DCAN 106

To appear in: *Digital Communications and Networks*

Received Date: 5 January 2017

Revised Date: 2352-8648 2352-8648

Accepted Date: 8 September 2017

Please cite this article as: C.R. Panigrahi, J.L. Sarkar, B. Pati, Transmission in mobile cloudlet systems with intermittent connectivity in emergency areas, *Digital Communications and Networks* (2017), doi: 10.1016/j.dcan.2017.09.006.

Digital Communications and Networks(DCN) ACCEPTED MANUSCRIPT

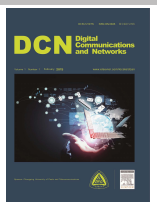
HOSTED BY

ELSEVIER

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/dcan



# Transmission in Mobile Cloudlet Systems with Intermittent Connectivity in Emergency Areas

**Chhabi Rani Panigrahi[1], Joy Lal Sarkar*[2], Bibudhendu Pati[3]**

[1,2,3]**Department of Computer Science and Engineering, C.V. Raman College of Engineering, Bhubaneswar, India**

## Abstract

Recently, the development of Mobile Cloud Computing (MCC) helps in solving numerous real-life problems. The rate of growth of mobile devices also has been increased at a very high pace. The mobile devices have made substantial contributions to solve emergency situations. Owing to mobility of mobile devices, cloudlets and their intermittent connectivity, sometimes it is very difficult to handle emergency situations. To elucidate this problem, in this work a transmission model is proposed in mobile cloudlet systems where a mobile device is used to designate a cloudlet by using the Borda scores Method (BSM) and the mobile device can offload the part of an application to this cloudlet. The simulation results also demonstrated that the proposed work makes a significant role to elucidate the problems of emergency situations.



*KEYWORDS:* Mobile Cloudlet Systems, Emergency Areas, BSM, RNL

## 1. Introduction

Recently, the scope of cloud computing technology has been broadened to include the Mobile Cloud Computing (MCC) paradigm [1]. The traditional MCC techniques help mobile users for performing multiple remote operations from different geographical locations where the energy hungry applications are offloaded to the cloud and results are sent back to the mobile devices [2]. The idea behind the offloading technique is to reform the energy related issues and the degree of resources of mobile devices. For an example, let us consider that a mobile user wants to perform *Activity Recognition Algorithm (ARA)* in his mobile device. The main problem behind that if the mobile user performs whole operation in the mobile device then so many things needs to be added for running ARA and after completion of this process, the energy of mobile devices gets reduced at a higher label [3]. On the contrary, if the same algorithm runs on the cloud and the results are sent back to the device, this will reduce the energy consumption as well as maximize the degree of resources [4]. Owing to the larger communication and execution cost for performing cloud operations, sometimes the offloading may disrupt and consequently the mobile device does not able to respond user requests. The mobile device may be able to tackle this challenge by considering the local executions using cloudlets [5]. The cloudlets are placed nearby mobile devices and a mobile device can offload its applications to the nearest cloudlet [5]. This will improve the latency as well as minimize the local or remote execution cost. As a result, mobile device can choose from all offloading possibilities that whether the jobs will be executed locally or nearby

*[2]J. L. Sarkar (Corresponding author) received his M. Tech degree from BPUT, Odisha. Currently he is working as Research Associate at C. V. Raman College of Engineering, Bhubaneswar, India (*joylalsarkar*@gmail.com).

[1]C. R. Panigrahi is currently working as an Associate Professor at C.V. Raman College of Engineering, Bhubaneswar. She received her Ph.D. degree in Computer Science from IIT Kharagpur, India (*panigrahichhabi*@gmail.com).

[3]Bibudhendu Pati is currently working as an Associate Professor and Head in the Department of Computer Science and Engineering at C. V. Raman College of Engineering, Bhubaneswar. He received his PhD from IIT Kharagpur, India(*patibibudhendu*@gmail.com).