Study of Cluster-Based D2D Communication in Next Generation Mobile Network for the Post-Disaster Response.

Shakil Ahmed*

*,*Department of Mechanical and Electrical Engineering , Massey University, NewZealand*

s.ahmed1@massey.ac.nz

***Abstract*—There are many emerging technologies introduced by the next-generation mobile network (5G), which are very promising for the emergency communication network. Device to Device (D2D) communication is one of the significant adoptions in this 5G network. In D2D communication, mobile devices can communicate with other mobile devices without any help from a Base Station (BS). In addition, it also does not depend on the core switching for routing the traffic. This independent communication feature is one of the critical values for emergency communication when infrastructure is damaged by a natural disaster or human-made disaster. Moreover, clustering-based multi-hop communication provides the communication connection in the disaster-affected people and can enhance the coverage area. In this paper, we analyse and quantify the performance of cluster-based D2D communication in 5G when the existing infrastructure fails in a disaster in a salable format. The analytical parameter is based on the outage probability, Coverage area and QoS which are essential matrices for any emergency communication network.**

***Keyword*— D2D communication, Cluster Head, Disaster network, 5G,**

Shakil Ahmed received M.Sc degree in Mobile Computing and Communication at Greenwich University, London and B.SC in Computer Engineering from American International University Bangladesh (AIUB). He is currently pursuing his PhD at Massey University, New Zealand. His research interest are Disaster Management, D2D Communication, IoT, Machine Leaning.