Zipping Transmission for Infrastructure-Assisted Cloud Network System

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***Abstract*— The usual built-in navigation in a car needs to be upgraded periodically due to the update and change of road conditions. To solve those problems, a cloud network navigation system has been launched which can automatically request the information of roads needed. However sending the information to each user in a specific area individually is very inefficient in the radio resource utilization aspect. In this paper, we model the transmission architecture that can send geographical information to the vehicle using RSUs, and propose a new method called Zipping algorithm. Our proposed algorithm groups the car in efficient way and due to our scheme; the total transmission time will be minimized. To make this possible, we use N times M/M/N which is an extension of M/M/1 model of queueing theory. We show the different traffic congestion of the road depends on the weekdays and weekends. Then, we show the case of car groupings depending on the various Zipping time given. We analyze the above result by simulating the transmission efficiency and compare with the performance of unicast system and that of our proposed algorithm.**

***Keywords*— Zipping transmission, V2I communication, N times M/M/1, Cloud Network Navigation system**

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