

HIGH QUALITY VOICE TRANSMISSION OF 3G AND 4G WIRELESS TECHNOLOGIES

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Abstract

The operation and maintenance of the 3G mobile networks will be challenging. These networks will be strongly service driven, and this approach differs significantly from the traditional speech dominated 2G approach. Compared to 2G, in 3G the mobile cells interact and interfere with each other more, they have hundreds of adjustable parameters, and they monitor and record data related to several hundreds of different variables in each cell. This paper shows that a neural network algorithm called the Self-Organizing Map (SOM) together with a conventional clustering method like the k-means can effectively be used to simplify and focus network analysis. It is shown that these algorithms help in visualizing and grouping similarly behaving cells. Thus, it is easier for a human expert to discern different states of the network. This makes it possible to perform faster and more efficient trouble shooting and optimization of the parameters of the cells. The presented methods are applicable for different radio access network technologies.

Keywords: Network management, 3G cellular system, radio access network, Capability of 4G cellular system.