Abstract

Propagation models are keys components of coverage planning. With the deployment of 4G network worldwide, operators need to plan the coverage of their network efficiently, in order to minimize cost and improve the quality of service. In this paper, the standard model K factors is taken into account to develop a method for tuning propagation models based on particle swarm optimization algorithm. The data are collected on the existing CDMA2000 1X-EVDO rev B network in the town of Yaoundé, capital of Cameroon. The root mean squared error (RMSE) between actual measurements and radio data obtained from the prediction model developed is used to test and validate the technique. The values of the RMSE obtained by the new model and those obtained by the standard model of OKUMURA HATA in urban area are also compared. Through the comparison of RMSE from optimized model and OKUMURA HATA, it can be concluded that the new model developed using particle swarm optimization performs better than the OKUMURA HATA model and is more accurate. The new model is also more representative of the local environment and also similar to the optimized model obtained when using linear regression method. This method can be applied anywhere to optimize existing propagation model.
New Propagation Model Optimization Approach based on Particles Swarm Optimization Algorithm

References

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Index Terms

Computer Science

Algorithms
Keywords

Particles swarm optimization algorithm    Radio propagation    mobile network propagation model optimization.