URN etd-0407109-183717-1342
Author CHAO-MING YANG
Author's Email Address No Public.
Statistics This thesis had been viewed 38 times. Download 0 times.
Department
Year 2007
Semester 2
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Using Artificial Neural Network to Forecast the Teletraffic of a Base Transceiver Station–The Case of K Mobile Communication Company in Taiwan
Date of Defense 0000-00-00
Page Count 89

Keyword
Base Transceiver Station of mobile communication
Traffic forecasting model
Back-propagation Network

Abstract
The establishment of Base Transceiver Stations (BTSs) of mobile communication is critical to telecommunication companies, which not only leads to the quality of telecommunication provided to customers, but also costs large expenditure. Traditionally, while establishing a new BTS, the engineers select the location of a new BTS roughly according to their subjective judgments with the help of electronic maps. They merely put the coverage under consideration; however, it is not sufficient. The teletraffic of a BTS is the most crucial factor because teletraffic, not coverage, will directly yield to profit. Thus, this research tries to utilize the Back Propagation Network (BPN) approach of Artificial Neural Network to construct a teletraffic forecasting model. The causal relationship between the environmental parameters and teletraffic will be identified through the BPN approach. After finding the well-constructed BPN based forecasting model, the teletraffic of a new BTS could be obtained in advance and telecommunication companies will be capable to do more cost-effectiveness analysis to promote the quality of decisions.
The collected data are divided into two parts: the data of year 2006 is used to train the BPN based forecasting model and the data of year 2007 is used to test the result. Through many tries on various combinations of environmental parameters, eight parameters are adopted as the input neurons, including the frequency of the signal carrier, the height of the antenna, the angle of the antenna, the type of the area, the channel numbers of the BTS, the power gain, the longitude and the latitude of BTS's position. The teletraffic of the BTS is regarded as the output neuron. In the results, the proportions of the test data whose simulation error is less than 10% for Taipei area, Taichung area, and Kaoshiung area are 85.23%, 49.26%, and of 66.67% correspondingly. This shows that the proposed BPN based forecasting model provides an efficient technique to the forecast of teletraffic.
Advisory Committee - advisor

Files No Any Full Text File.
Date of Submission 2008-07-09