Abstract

Traffic congestion in big cities is a severe problem affecting transportation efficiency and residents' quality of life. To address this problem, predicting road congestion is essential to help better traffic planning. In this research, the authors provide a method using an Artificial Neural Network (ANN) algorithm to predict road congestion based on GPS time series data of urban transit. First, the authors collected a dataset including GPS time series data of city transit fleets. This data includes coordinates, time, speed, and traffic status. In this study, 35320 datasets have been prepared by dividing them into training data and test data. Next, the author implemented the ANN algorithm using an architecture appropriate to the time series prediction problem. The author trained the artificial neural network using the prepared training data and performed performance evaluation using the test data. The experimental results show that this research can provide a relatively accurate prediction of road density based on GPS time series data with an accuracy value of 98%.

Keywords: Road Density, Time Series, GPS, City Transportation, Artificial Neural Network, Prediction.