

Missing Link Data Estimation with Recurrent Neural Network: An Application Using Speed Data of Daegu Metropolitan Area

Authors : JaeHwan Yang, Da-Woon Jeong, Seung-Young Kho, Dong-Kyu Kim

Abstract : In terms of ITS, information on link characteristic is an essential factor for plan or operation. But in practical cases, not every link has installed sensors on it. The link that does not have data on it is called "Missing Link". The purpose of this study is to impute data of these missing links. To get these data, this study applies the machine learning method. With the machine learning process, especially for the deep learning process, missing link data can be estimated from present link data. For deep learning process, this study uses "Recurrent Neural Network" to take time-series data of road. As input data, Dedicated Short-range Communications (DSRC) data of Dalgubul-daero of Daegu Metropolitan Area had been fed into the learning process. Neural Network structure has 17 links with present data as input, 2 hidden layers, for 1 missing link data. As a result, forecasted data of target link show about 94% of accuracy compared with actual data.

Keywords : data estimation, link data, machine learning, road network

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