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Predicting Seoul Bus Ridership Using Artificial Neural Network Algorithm with Smartcard Data

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Abstract : Currently, in Seoul, users have the privilege to avoid riding crowded buses with the installation of Bus Information System (BIS). BIS has three levels of on-board bus ridership level information (spacious, normal, and crowded). However, there are flaws in the system due to it being real time which could provide incomplete information to the user. For example, a bus comes to the station, and on the BIS it shows that the bus is crowded, but on the stop that the user is waiting many people get off, which would mean that this station the information should show as normal or spacious. To fix this problem, this study predicts the bus ridership level using smart card data to provide more accurate information about the passenger ridership level on the bus. An Artificial Neural Network (ANN) is an interconnected group of nodes, that was created based on the human brain. Forecasting has been one of the major applications of ANN due to the data-driven self-adaptive methods of the algorithm itself. According to the results, the ANN algorithm was stable and robust with somewhat small error ratio, so the results were rational and reasonable.

Keywords : smartcard data, ANN, bus, ridership
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