Reliability of Breadth First Search Finding Missing Link of Bluetooth Data Collection: Case Study Bangkok, Thailand.

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- **Abstract:** Bluetooth technology is used in this study to observe the travel route of vehicles by detecting MAC address and time stamp. However, Bluetooth detection rate is not so high which leads to some links in that observed travel route is expected to be undetected, those undetected link in the observed travel route stated as a missing link. The effectiveness of detection of travel routes by Bluetooth is reduced by existence of missing links. Therefore, the aim of this study is to seek for those missing links to complete the observed travel route from undetected scanners. The Breadth First Search (BFS) which is one of the most well-known algorithms for shortest path is used based on the average travel time. The objective function is to minimize the absolute value of the shortest path travel time estimation of the missing trip and received travel time from Bluetooth detected data. Moreover, this study examined the reliability of proposed method by using RMSE. The results show that using observed link travel time data can be sufficiently efficient way to recover missing link. Moreover, the proposed method (BFS) can provide the efficient results.

- **Keyword:** Bluetooth technology, MAC address, undetected scanners, Breadth First Search, RMSE, BFS,