Low Cost Railway Tracking and Mobile Application Based Train Monitoring System

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The railway is one of the common and low-cost transportation systems which is used by many passengers in Sri Lanka. However, delays in trains are frequent and passengers cannot find the actual location of the train since these facilities are not supported by the current system. The main intention of this work is to provide railway tracking and monitoring to the railway passengers at a low cost. This system would help passengers to know the train delays earlier, the actual arrival time of the train, to know the nearby railway station and the shortest path. The assumed system consists of a system administrator, a set of passengers, and a tracking device. Each passenger should have a smart device with an Android operating system. The tracking device needs to be positioned in the engine controlling room of the train. The prototype software was mainly developed for the users to find the actual location of the train. The proposed system works on Arduino, GPS/GSM module. While waiting for the train, the passenger should enable the data connection and GPS if they wish to know the nearest train location and the shortest path to reach the nearest location. When the tracking device is powered on and connected to the network coverage, it will be automatically connected to the server and the location data would be uploaded. Users can run the application and select the train to view the real-time map, estimated arrival time, and other data. Moreover, if the passenger doesn't know the nearest station, the system would automatically select the nearest station, show the shortest path, and predicted travel time to the user. The cost for the construction of the system is less than 25$ and this system can be applied to the buses in public transport or school busses. Other systems in the market cost around 80$. The pilot system provides the actual location of train and arrival time with high accuracy and the average error is 46 seconds. Using this method, the railway transportation system can be carried out as a diligent service.

Keywords: Real time tracking, GPS, GSM, Android, Arduino, Train