

Real-Time Bus Tracking System for Minimizing Passenger Time Wastage in Sri Lanka

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Bus transportation has become the major transportation mode in Sri Lanka due to ease of access and cost-effectiveness. However, the passengers, mainly those who are in the middle stations, face the difficulties of getting a bus because of the unavailability of a solid mechanism to get the real-time bus location. After several field visits and interviews with the respective bodies, the study has introduced a solution for the passenger time wastage by developing an Arduino based device and a simplified user environment. This device consists of UNO microcontroller, SIM800c GSM module, and NEO 6m GPS which is capable of achieving the highest sensitivity of the industry by tracking up to twenty-two satellites on fifty channels. The Tiny GPS++ library was included and some conducive core sub-objects like the latest position fix, latest altitude fix, the number of visible participating satellites, and horizontal diminution of precision adapted to succeed in the process. After setting up the configuration of the GSM, checks the availability of AT commands. AT commands are used for receiving an SMS sent by the user requesting the current location. As the user environment, a Cross-Platform web application is developed, including bus information in which the user can get bus journey/fare details, bus ID which is provided by the system to uniquely identify a particular bus, and its real-time location. The user can receive the location just via an SMS as a google maps link, using that bus ID. Moreover, to assess the functionalities and usability, the Arduino based tracking device was placed in a bus and a potential user was provided with the web application. The user could manage simple operations and get information about the desired bus. Further, the study recommends the use of this web application to trivialize the time wastage and irregularity of bus service and make people more attracted to public bus transportation.

Keywords: Arduino-based device, GSM Module, GPS, Real-time bus tracking