Design of Traffic Counting Android Application with Database Management System and Its Comparative Analysis with Traditional Counting Methods

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Abstract : Traffic congestion has been increasing significantly in major metropolitan areas as a result of increased motorization, urbanization, population growth and changes in the urban density. Traffic congestion compromises efficiency of transport infrastructure and causes multiple traffic concerns; including but not limited to increase of travel time, safety hazards, air pollution, and fuel consumption. Traffic management has become a serious challenge for federal and provincial governments, as well as exasperated commuters. Effective, flexible, efficient and user-friendly traffic information/database management systems characterize traffic conditions by making use of traffic counts for storage, processing, and visualization. While, the emerging data collection technologies continue to proliferate, its accuracy can be guaranteed through the comparison of observed data with the manual handheld counters. This paper presents the design of tablet based manual traffic counting application and framework for development of traffic database management system for Pakistan. The database management system comprises of three components including traffic counting android application; establishing online database and its visualization using Google maps. Oracle relational database was chosen to develop the data structure whereas structured query language (SQL) was adopted to program the system architecture. The GIS application links the data from the database and projects it onto a dynamic map for traffic conditions visualization. The traffic counting device and example of a database application in the real-world problem provided a creative outlet to visualize the uses and advantages of a database management system in real time. Also, traffic data counts by means of handheld tablet/ mobile application can be used for transportation planning and forecasting.

Keywords : manual count, emerging data sources, traffic information quality, traffic surveillance, traffic counting device, android; data visualization, traffic management

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