'PATH FINDER' Application for android

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The population growth and technology development has increased traffic congestion in urban areas. If people can get traffic information before starting their journey, they can use alternative routes to avoid traffic instead of sticking in the traffic congestion. And also when it comes to long trips, it is better if the driver can roughly get an idea about how much of money will be needed to be spent on fuel.

Our intention was to develop an android application which is able to find the best route between source and the destination, considering the traffic jam and the minimum distance. Additionally the proposed system will facilitate users to reach the nearest fuel filling station when fuel is running low by providing information about the fuel condition of the vehicle while they are driving.

The traffic information forecasting has been done with the use of previous traffic count of selected route. Generally, prior data pattern labels have been used to train the Artificial Neural Network (ANN) to identify the traffic conditions. The shortest path is generated with the use of 'Dijkstra's Algorithm'.

The challenge that we had to face was gathering data regarding traffic count in Sri Lankan roads at a given time because there is no proper way to collect traffic data. So we had to observe daily traffic count (vehicle count) in a selected route. We collected vehicle count during 10 days of period. According to the observation results we created simulated data set. Our total number of records was 388. In this case 70% of the data was used to train the network, 15% was used to validate and rest was used to testing purpose.

The accuracy of the traffic prediction was 99.5% according to the results of data trained using ANN.

Another challenge that we had to face was creating communication between neural network and the android application. To transfer data between JAVA program and the MATLAB neural network we had to use transferring medium. So to overcome this challenge we used TCP/IP socket communication which has the ability to call Java directly from within MATLAB. This application follows client server architecture where MATLAB environment is the server and android application is the client.

Key words: GPS, Android application, Traffic forecasting, Artificial Neural Networks, Vehicle routing, TCP/IP socket communication

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