Traffic Monitoring Project

Software Engineering 14:332:452

Group #13

https://sites.google.com/site/452trafficmonitoring/home

Team Profile

Xuan Li:
I am familiar with C++/Matlab. I am in the process of learning Java. Since I have experience on C++, java should not be hard for me. I am a hard worker and fast learner. I am good at researching and analyzing, and I am willing to do anything related to the project that our team leader assigns me to do.

Chih-Ting Cho:
I am familiar with C++/C, Matlab and basic Html. I am good at thinking critically, and I am willing to provide some good ideas and opinions that could help our project meet requirements or even better as a NY-NJ driver. Besides, I am willing to try my best and do what I can do for our team such like coding or finding resources.

Ting-Chieh Huang:
I am familiar with C++, HTML and basic PHP. I am currently in the process of learning Asp and deeper PHP. Hopefully, these skills can help our group. I am good at finding resources and thinking critically. Also, I am willing to do whatever I am capable of. My position in this group might be finding useful resources, providing several ideas and seeking problems.

Jonathan Hong:
I am familiar with C++, Java, and basic SQL. I am currently in the process of learning C. I can also help with UML diagrams. I am good at organizing and keeping track of project documents and documentation.

Jan Racoma:
I have experience coding in C/C++, Java, HTML, CSS, PHP, and mySQL. Along with the ability to write code in these languages, I can also do some work with UML diagrams, XML, and Linux server management. I am in the process of learning Python to be of further help to the group.

Kevin Cundey:
Moderately skilled at programming in C/C++ and Java. Little knowledge of much else but I am confident in my ability to research new topics and solve project-related problems. I have decent documentation skills and am a hard worker.

Project Domain/Description

The purpose of this project is to provide real-time feedback on traffic conditions using historical traffic data, current weather conditions, and time of day. Most traffic information services only provide current information about traffic conditions in a given area. Although current information is valuable, the main caveat is that these services provide incomplete reports. For example, if a route is notoriously known for traffic congestion or accidents, drivers would know not to take that route. However, with live traffic monitoring systems, incidents are only reported as they occur; thus, they are unable to show how traffic may develop as the day goes on. In some cases, traffic conditions at a certain location may even go unreported. As a result, a driver cannot make an assumption that traffic is minimal on his or her intended route.

Proposed Solution

In addition to providing users with the current traffic conditions, historical data on traffic incidents will be collected. By analyzing this data, predictions on future traffic conditions can be made and suggestions on a new route when necessary will be systematically provided to users. The data will highlight known problem areas during certain time periods of the day and weather conditions and show specifically what the problems might be. In addition to displaying historical information, construction schedules will also be shown on the intended routes. Using the collection of data and suggestions, users can make decisions on the route to take in order to minimize the time of travel and decrease the probability to encounter traffic by displaying a percentage chance of traffic occurring.

As proposed by the previous group, expanding the service outside of New Jersey is essential. We intend to focus on the New York Metropolitan Area, which includes New York, New Jersey, Connecticut, and Pennsylvania. Residents in this area often commute interstate, whether to work, school, etc. Even people from other states may also need to know the traffic information in order to have a more enjoyable trip. In general, the primary users of this service will be commuters. Since commuters often take the same daily route throughout the week, having the ability to predict how long the travel will take the next day is beneficial. The user can track his or her daily route. This travel log history can then be subsequently used to predict future travel times. Users with routine travel arrangements will have the luxury of having the system send an alert of current or probable delays and notifying the user to leave by a certain time in order to arrive at their destination in time (departure alerts). By receiving this notification, users can plan an alternative route to their destination in the event that the usual route is congested or closed due to traffic and/or scheduled construction. Alternative route suggestions and expected route times will be provided using the Google Maps API. Individual users will be crucial in the collection of traffic data. Traffic sites are not always up to date on current conditions, but a user in traffic will have the information and the ability to share the information will help in keeping reports current.

If time permits, some additional features we may entertain include: information on gas prices and public transportation recommendations. Gas prices across the Metropolitan area can be easily accessed online. As a software primarily intended for commuters, having access to the gas prices at nearby stations or along a desired route is helpful. Public transportation information provides an alternative form of transportation. If congestion is excessive, travelling on public transportation may allow the user to arrive at his or her destination in time.

Plan of Work

There are six people in our group and due to the limited time constraints and the demanding task of data collection and analysis, any fewer than the allotted six members would prove difficult. Even though the project workload will be divided evenly among the six members, specifics groups of two will focus on certain aspects due to strengths and abilities as follows:

Jan & Jonathan: Focus on database management and coding implementation due to experience with databases and coding.
Chih-Ting & Ting-Chieh: Focus on website design/implementation and data analysis due to knowledge of HTML and critical thinking.
Kevin & Xuan: Focus on resource gathering, research and testing due to careful diligence and attention to detail. Will also focus on ensuring clean GUI and Google Maps API integration.