Tim's review, group 4

Csci 5980 Fall 2012 Final Critique Form

Group 4 Crowed Path: Inferring Shortest, Fastest, and Safest Path From VGI

By Group 1(Micheal Moore & Jinfei Yin)

Please use the following questions to critique each group:

Problem Motivation: Did the speaker motivate this problem? Why is the problem interesting? What applications can this problem be applied to? List at least two applications this problem can be applied to other than what was presented. Briefly justify your answer. (50 word limit)

Yes. The mapping applications nowadays are not perfect due to the inaccuracy, but fortunately, a vast amount of volunteered geographic information can be used to help people make routing decisions. In addition, combining the crime history data with the road situation data will make the decision more meaningful. The project provides an approach to compute the shortest and safest path for the user as well as guarantee the low cost of system resources. Some other tasks that can be applied to are:
1. The routing information generated for each user can be integrated into a database that supports the analysis of crimes in certain regions.
2. Similar scenarios like make routing decision for vehicles considering the current traffic conditions.

Problem Statement: What problem did the presenter attempt to solve? If applicable, what were the input, output, objective, and constraints for this problem? Briefly justify your answer. (50 word limit)

The objective of the project is to provide the route from original point to the destination, and the route should
(1)minimize distance, time, or risk
(2)minimize storage and processing costs

Input: Volunteered GPS tracks and Accidents and crimes statistics and locations
Output: Shortest, Fastest, or Safest Path from a source to a destination

Some constraints are: the VGI data has lots of noises and potential errors because much information is not routing related; the current edition dose not involve with the real time traffic conditions, so the routing result may be useless in some specific situations.

Hardness: What is the main challenge in this work? Classify these challenges into computational, spatial, other, etc. Briefly justify your answer. (50 word limit)

In the computational perspective, some data structure and query algorithms are needed to perform the routing based on large amount of VGI data.
In the spatial perspective, new definitions and operations on the points and poly-lines are also needed to improve the routing accuracy.
Proposed Solution: How did the presenter solve the problem that was described? What were the key ideas behind the proposed solution? What was innovative about their solution? List at least three suggestions on how their proposed solution may be improved. Briefly justify your answer. (50 word limit)

First, the presenter chose the data structure named 'time series graph', the 'time aggregated graph' and the 'attributed time aggregated graph' to represent the points and poly-lines with factors including time, distance and risk rate.

Then, they parse the GPX file and extract the useful tracks. The google distance Matrix API is also introduced to figure out the tracks between origins and destinations.

Finally, the proposed route can be generated from comparison between the results of VGI data extraction and the results of distance Matrix. It would be shown as a poly-line which consists of many sub-segments.

Our suggestions are:
(1) Interact with the real time traffic information system to help routing.
(2) Compare the routing result with other applications' performance beside Google's.
(3) Support the storage and sharing of the routing results (various transportation means).

Related Work: Did the speaker provide a sufficient survey of related work? What were the main limitations in the related work? Do you feel that either the problem or proposed approach is novel? Briefly justify your answer. (50 word limit)

Related work addresses the extraction of shortest path from Taxi data not from ad hoc GPS tracks. So it is novel to use VGI data to produce more reasonable routing decisions than Google.

Validation: What were the validation methodologies used in this work? Was the proposed approach compared with any state-of-the-art or naive approaches? Were there any surprises in the validation results relative to your expectations? Briefly justify your answer. (50 word limit)

They compare their results with the Google's results and use a diagram showing that some paths they figured out are shorter and as to the same result, their procedure cost less time to compute. So their tracks are more convincing than what we can get from the Google distance matrix.

Presentation Critique:
Do you think the speaker did a good job motivating and defining the problem clearly for someone like you who may be a "non-expert" on the topic? Why or why not? (50 word limit)

The idea of the project is novel and the presenters conveyed the information clearly. They use many diagrams and pictures to illustrate their data structure (ATAG, etc) and how the google distance matrix works, which is a straightforward way.

Did the speaker emphasize the central message (e.g. did they follow: "Tell the audience what you're going to say, say it; then tell them what you've said.")? (50 word limit)

Yes. The whole speech is focus on how to generate a path which is shortest and safest, from motivation, system design, to demo presentation, and result analysis, the audience can understand the project deeply.

Did the speaker relate to the audience? What did the speaker do to establish a rapport with the audience?
before delivering the key message? (50 word limit)

Yes. They referred to some examples and some graphs on the inadequacy of the current mapping applications, which helped us to know the reason of using volunteered GPS track data in their project and get a more profound understanding.

What did the speaker do to engage the audience? e.g. Did the speaker ask short questions to either motivate the upcoming topic or assess the background/thinking of the audience? (50 word limit)

The sample routes in their demo are near Minneapolis, so the their explanation on the comparison result can be accepted by the audience quickly. They also briefly introduced the background information of the google direction API, which is used to draw the poly-lines.

Did you understand most of the talk (or 75%, 50%, 25%, 5%, 0%)? Did the speaker inspire you to want to learn more about what he/she is doing? If you had to rate the presentation check-, check or check+, what score would you give? Briefly justify your answer. (50 word limit)

I can understand 90% of talk. The project is promising since the VGI data and OpenStreet Maps are both hot topics recently. I will rate the presentation check+ for their brilliant ideas and concise but impressive narration.
Michael's review, group 4

Please use the following questions to critique each group:

**Problem Motivation**: Did the speaker motivate this problem? Why is the problem interesting? What applications can this problem be applied to? List at least two applications this problem can be applied to other than what was presented. Briefly justify your answer. (50 word limit)

Yes, the problem is interesting because shortest road route isn't always best and their approach to gathering alternative routes was interesting.

**Problem Statement**: What problem did the presenter attempt to solve? If applicable, what were the input, output, objective, and constraints for this problem? Briefly justify your answer. (50 word limit)

They tried to introduce new routing factors including safety and time of day. Input was data from Open Street Maps.

**Hardness**: What is the main challenge in this work? Classify these challenges into computational, spatial, other, etc. Briefly justify your answer. (50 word limit)

Gathering enough data, data storage and computation time. Comparing results to Google results is difficult as best path is subjective.

**Proposed Solution**: How did the presenter solve the problem that was described? What were the key ideas behind the proposed solution? What was innovative about their solution? List at least three suggestions on how their proposed solution may be improved. Briefly justify your answer. (50 word limit)

By using an attributed time aggregated graph to store data more efficiently and crowd sourcing data collection.

**Related Work**: Did the speaker provide a sufficient survey of related work? What were the main limitations in the related work? Do you feel that either the problem or proposed approach is novel? Briefly justify your answer. (50 word limit)

They missed a recent (~3 months ago) Microsoft patent on avoiding dangerous neighborhoods when driving or walking. Still, this is an active area of research.

**Validation**: What were the validation methodologies used in this work? Was the proposed approach compared with any state-of-the-art or naive approaches? Were there any surprises in the validation results relative to your expectations? Briefly justify your answer. (50 word limit)
They did testing against Google's routing and confirmed that their routing method was faster.

**Presentation Critique:**

Do you think the speaker did a good job motivating and defining the problem clearly for someone like you who may be a "non-expert" on the topic? Why or why not? (50 word limit)

They were very convincing and spoke clearly about the interest in the the project.

Did the speaker emphasize the central message (e.g. did they follow: "Tell the audience what you're going to say, say it; then tell them what you've said.") (50 word limit)

They did leave the final results as a surprise, but did it in a good way that kept us interested.

Did the speaker relate to the audience? What did the speaker do to establish a rapport with the audience before delivering the key message? (50 word limit)

They did a good job explaining why it would be of interest to us.

What did the speaker do to engage the audience? e.g. Did the speaker ask short questions to either motivate the upcoming topic or assess the background/thinking of the audience? (50 word limit)

They were very clear in answering questions and examples provided.

Did you understand most of the talk (or 75%, 50%, 25%, 5%, 0%)? Did the speaker inspire you to want to learn more about what he/she is doing? If you had to rate the presentation check-, check or check+, what score would you give? Briefly justify your answer. (50 word limit)

Check+

100% and I found it interesting. I would like to learn more about their routing optimizations and maybe work on a similar project.