poloclub.github.io/#cse6242

CSE6242/CX4242: Data & Visual Analytics

Group project
Heilmeier questions
Using existing libraries/code

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Partly based on materials by Guy Lebanon, Jeffrey Heer, John Stasko, Christos Faloutsos

Forming Teams

You're welcome to look for teammates **NOW**.
See deadline on course schedule.

- **4-6 people** in each team
- We **does not** dictate who teams with whom (since each team decides on their topic)
- Try Ed Discussion's **Search for Teammates** post
- We suggests teaming with students in the **same section**, but OK to mix if really needed. See "Teaming" section on project description:

Challenges in Larger Teams

- Can we form a 7-person team?
  - I highly recommend **not** to. Only with my permission.
  - **Larger groups are harder to run.**
  - **Higher coordination, motivation and intellectual costs**

https://www.cmu.edu/teaching/designteach/design/instructionalstrategies/groupprojects/challenges.html

Tips for Working Successfully in a Group

https://www.cs.cmu.edu/~pausch/Randy/tipoForGroups.html

1. Meet people properly
2. Find things you have in common
3. Make meeting conditions good
4. Let everyone talk
5. Check your egos at the door
6. Praise each other
7. Put it in writing
8. Be open and honest
9. Avoid conflict at all costs
10. Phrase alternatives as questions

Requirements

3 core requirements

1. **Large real** dataset
   (see project description for rule-of-thumb meaning of “large”)
2. **Non-trivial** analysis/algorithms/computation
3. An **interactive user interface** that **interact** with the algorithms

Grading & Schedule

- Proposal: writeup + presentation
- Progress report (mostly as a “checkpoint”)
- Final report: writeup + poster presentation

How to Come Up with Project Ideas?

Polo's recommendations

- Work on something that you are **excited** about (e.g., NetProbe for eBay fraud detection)
    - Is it **interesting**? e.g., computationally? visualization-wise?
    - Is it **impactful**? (e.g., save lives? fight crime? shorten commute? save resources?)
- Work on something **interestingly challenging**, so you will **learn more**
- Browse the list of datasets on course homepage

George Heilmeier

Former Director of DARPA

Heilmeier Questions

Preflight checklist for successful projects

1. What are you trying to do?
   Articulate your objectives using absolutely no jargon.
2. How is it done today; what are the limits of current practice?
3. What's new in your approach; why it will be successful?
4. Who cares?
5. If you're successful, what difference and impact will it make?
   How do you measure them (e.g., via user studies, experiments, groundtruth data, etc.)?
6. What are the risks and payoffs?
7. How much will it cost?
8. How long will it take?
9. What are the midterm and final "exams" to check for success?

http://en.wikipedia.org/wiki/George_H._Heilmeier
http://smlv.cc.gatech.edu/2010/10/17/heilmeiers-questions/

Using Existing Libraries/Code

GPL (General Public License)

In purely private (or internal) use —with no sales and no distribution— the software code may be modified and parts reused without requiring the source code to be released. **For sales or distribution, the entire source code need to be made available to end users**, including any code changes and additions— in that case, **copyleft** is applied to ensure that end users retain the freedoms defined above.

https://en.wikipedia.org/wiki/GNU_General_Public_License

PASSAGE: A Travel Safety Assistant With Safe Path Recommendations For Pedestrians

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Abstract

Atlanta has consistently ranked as one of the most dangerous cities in America with over 2.5 million crime events recorded within the past six years. People who commute by walking are highly susceptible to crime here. To address this probl... has developed a mobile application, PASSAG... crime data to find "safe pat... Atlanta. ... user int...

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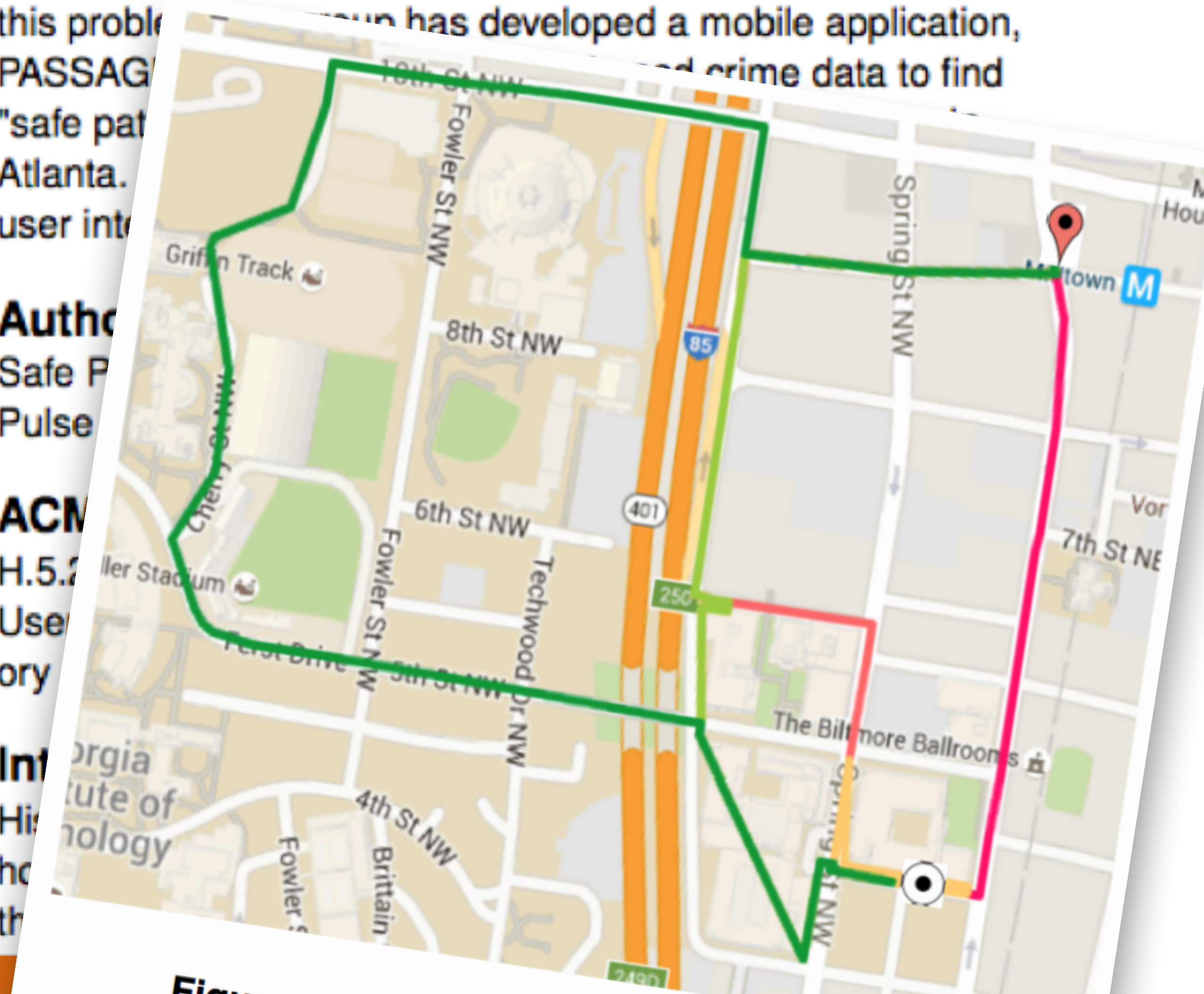

Figure 1: Paths recommended by PASSAGE

Poster paper

Aurigo: An Interactive Tour Planner for Personalized Itineraries

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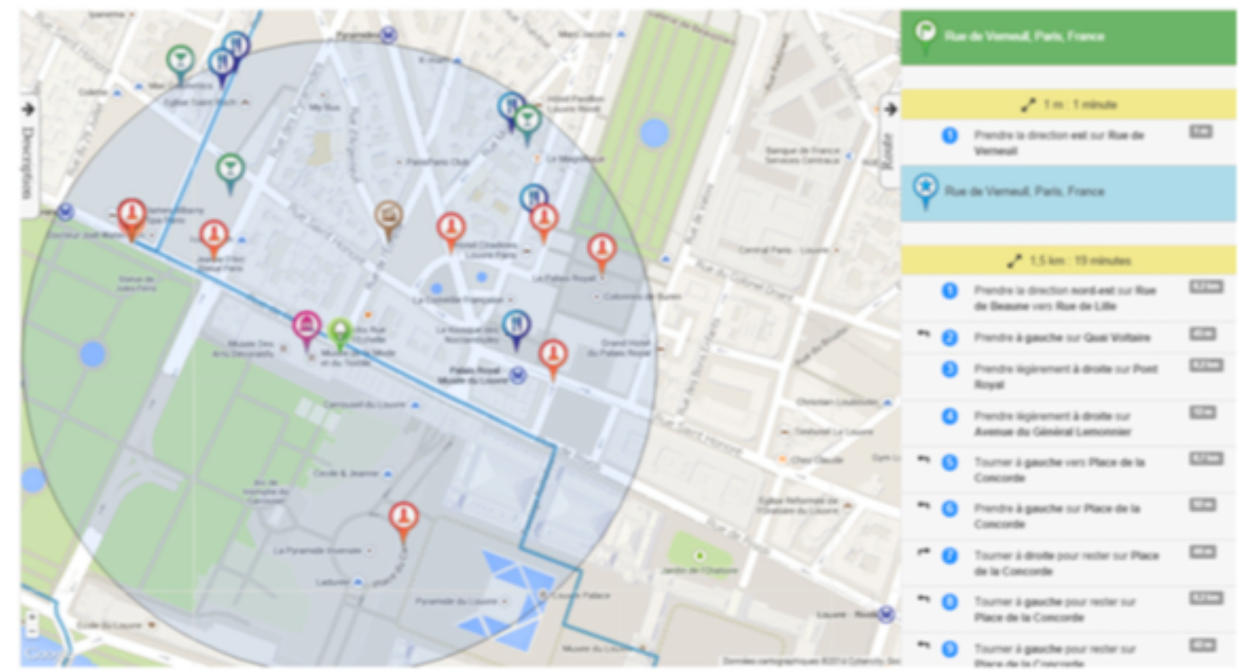
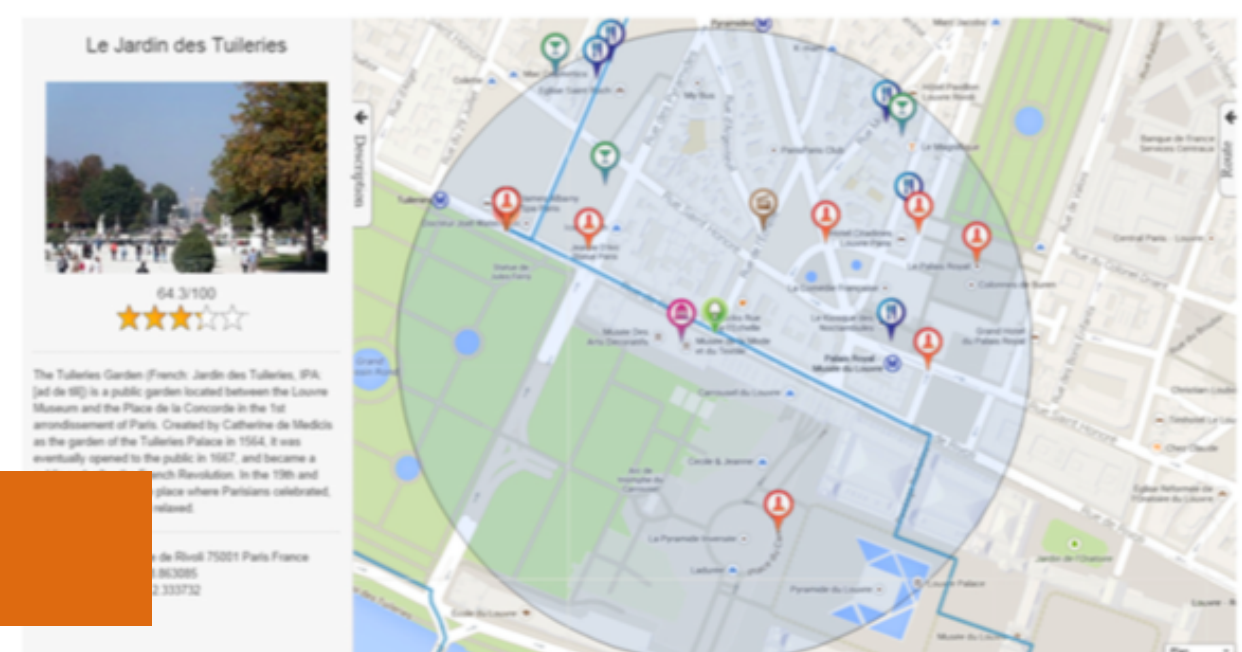


ABSTRACT
Planning personalized tour itineraries is a complex and challenging task for both humans and computers. Doing it manually is time-consuming; approaching it as an optimization problem is computationally NP hard. We present Aurigo, a tour planning system combining a recommendation algorithm with interactive visualization to create personalized itineraries. This hybrid approach enables Aurigo to take into account both quantitative and qualitative preferences of the user. We conducted a within-subject study with 10 participants, which demonstrated that Aurigo helped them find points of interest quickly. Most participants chose Aurigo over Google Maps as their preferred tools to create personalized itineraries. Aurigo may be integrated into review websites or social networks, to leverage their databases of reviews and ratings and provide better itinerary recommendations.



Author Keywords
User Interfaces; Visualization; Recommendation; Tour itinerary planning

ACM Classification Keywords

(e.g. HCI): User interfaces

Full conference paper

ISPARK: Interactive Visual Analytics for Fire Incidents and Station Placement

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ABSTRACT

In support of helping to reduce the response time of firefighters, and thus deaths, injuries, and property loss due to fires, we introduce ISPARK. The ISPARK system determines where fire stations should be located, analyzes the primary causes of fires, the existing infrastructure, and response times, by using visualizations which show the GIS mapping of fire stations on a dashboard. Incidents and response times are shown as additional layers, with clustering of fire incidents to determine predicted fire station locations, forecasting of fire incidents using regression, causal, infrastructure, and personnel analysis, creating an interactive, multi-faceted method for locating fire stations. A comparison of urban and rural fire incident response times is another dimension of this study. We demonstrate ISPARK's usage and benefits using a publicly available dataset describing 300,000 fire incidents in the states of Massachusetts and Maine. ISPARK is generalizable to other geographic areas

Workshop paper

Categories and Subject Descriptors

Figure 1: Screenshot of ISPARK showing actual (pink) and predicted (green) fire station locations n Maine determined by our approach, using coordiates with actual driving distances from fire stations o actual fire incidents. Fire incidents are shown as small yellow dots. ISPARK reduces the average