

Assignment: Graphs in Everyday Life

Summary: Submit by February 14, 11:59 PM PT

Important Information

It is especially important to submit this assignment before the deadline, February 14, 11:59 PM PT, because it must be graded by others. If you submit late, there may not be enough classmates around to review your work. This makes it difficult - and in some cases, impossible - to produce a grade. Submit on time to avoid these risks.

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Instructions

The goal of this course is to give you a new tool in doing Big Data analysis -- that is to understand how mapping data and interactions among data to a graph representation can enable you to ask new kinds of questions of that data. In this assignment, we want to get you looking at data in the world around you as something mappable to a graph.

Learning Goals

- Practice graph design (e.g. identification of nodes and edges) in a real-world problem of interest to you.
- Brainstorm various questions you can ask via graph analytics.

What to Do

These are the steps for working on the project. Below that is details on exactly how to report your results and submit them.

1. **Find something to graph.** Think of a data set that might be amenable to representation as a graph. Remember, the key components you need to identify are objects which you represent as nodes and relationships or interactions which you represent as edges. Woah! How do I possibly think of something? If you have your own idea -- try to see if you can represent it as a graph. **If you are stuck, consider the examples of Twitter or Facebook** -- and pick your own "subject" for a set of interactions. For example, instead of imagining the Twitter network around a specific group of gamers, imagine the Twitter network around the World Cup, or the Paris attacks of December, 2015. Or the Facebook posts around your child's birthday.
2. **Model the system.** That may sound scary, but all you need to do now is identify what the (various kinds of) nodes in your graph would be. What kinds of relationships or interactions would be on the edges? Draw a "made up" example graph labeling nodes and edges to give an idea of how the system might be modeled. Your graph should include 5 different nodes (not all of different types, necessarily) and at least 10 edges.
3. **Brainstorm questions to ask.** Looking at your graph representation, identify 3 or more questions you could ask of your data. Think about how the graph could help you answer those questions and why they are interesting. You might recall some of the types of analysis mentioned in the videos in thinking about questions: Extracting conversation threads, Finding interaction groups, Finding influencers in a community,

Discovering unknown relationships, Finding good matches, Topical influencer analysis, Situation detection/assessment.

What to Submit

You will submit 2 things.

1. **Submit a file (PDF or image) of your graph.** Note: you can draw in a tool like Powerpoint and save as PDF, or you can draw on paper and take a picture. Besides the graph itself (with labeled nodes and edges) include a descriptive title of your topic and a listing (say in a box) of all the node types and edge types -- providing a short explanation for each if needed.
2. **Submit text of your questions.** In the submission textbox, use the numbered list formatting to list three questions. After each question, Write 2-5 sentences talking a bit more about the question, how you think you could do the analysis (e.g. find a best path from X to Y where the edges contain Z), and why it is interesting.

Review criterialess

See below for information on what you will be reviewed on for each submission part.

Graph Image

Completeness:

- Did you submit a graph of a real-world problem with an explanatory title?
- Did the graph have at least 5 nodes and 10 edges all with labels?
- Did you include an area listing all the node and edge labels?

Clarity:

- Were the labels of nodes and edges clear, or well explained in the listing?
- Did the data and interactions depicted on the graph depict a reasonable set of objects and relationship?

Analysis Questions

Completeness:

- Were 3 or more analysis questions submitted?

Quality:

- Were the explanations for each analysis question clear?
- Were the questions asked interesting/meaningful?
- Did the explanation include a clear description of how the analysis would be performed on the graph?