CS5560 Knowledge Discovery and Management

In-Class-Exercise (ICE-1A)

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We are supposed to build a knowledge graph for the following input (text data).

1. Describe your knowledge about knowledge graph.
2. Why do we want to build such a knowledge graph?
3. What steps are required? Show your own workflow for this task.
4. What are the challenges?
5. Draw a knowledge graph for the given data.

> CHICAGO (AP) — Citing high fuel prices, United Airlines said Friday it has increased fares by $6 per round trip on flights to some cities also served by lower-cost carriers. American Airlines, a unit AMR, immediately matched the move, spokesman Tim Wagner said. United, a unit of UAL, said the increase took effect Thursday night and applies to most routes where it competes against discount carriers, such as Chicago to Dallas and Atlanta and Denver to San Francisco, Los Angeles and New York.

1A) Knowledge in graphical form which captures entities, attributes, and relationships. Nodes are entities, Nodes are labeled with attributes (eg, types). Typed edges between two nodes capture a relationship between entities.

2A) Knowledge graphs are the knowledge ~~graphs~~ available to the machines which in addition to some reasoning capabilities can be used by intelligent application. In principle, a knowledge graph can be depicted as an oracle to whom a computer can as anything like who is US president?. The extent to which the application can answer these questions will depend on the quality of the knowledge graph and the type of information it contains.

3A) The steps required to build a knowledge graph, you must first answer two questions required to build any graph:

1. What are the nodes? In a knowledge graph, they will be related to semantic concepts such as a person, entities, events etc.
2. What are the edges? They will be defined by relationships between nodes based on semantics.

After these two questions are answered, we go to next phase which is data acquisition strategy. In addition to data aquisition, you will need knowledge processing where you come up with algorithms and heuristics to identify and extract the knowledge you are after the data you aquire.

4A)
1) challenges in dealing with information extraction methods.
2) May contain many errors and inconsistencies in graph.
3) Noise in the source of publicly available information.

5A)