Visualizing Twitter Data Using Time-Varying Graphs

Work in Progress

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Time-Varying Graphs

- adding or removing vertices and edges
- changing different attributes associated to vertices or edges

Drawing Time-Varying Graphs

- Methods
  - Animation
  - Flipboard
  - Side-by-side
- Issues
  - Cluster stability
  - Layout stability
  - Preserving “mental map”

Twitter Visualizations

- Streamed data source
- Twitter
  - 400 million tweets sent per day
  - 4,000 per second during 2011 Super Bowl
  - Record is 33,000 tweets per second

Why Visualize Twitter?

- Twitter can tell us how information is being spread
  - Travel patterns
  - Flu outbreaks
  - Emergency response to disasters
  - Marketing
  - Current events
  - Public opinion

Twitterscope

Newsmap

- http://newsmap.jp

What's happening?

- Find out what is trending on Twitter currently
  - How much is it trending?
  - Why is it trending?
  - People's moods and reactions
- Shifts in sentiment over time
  - location

Our Goal

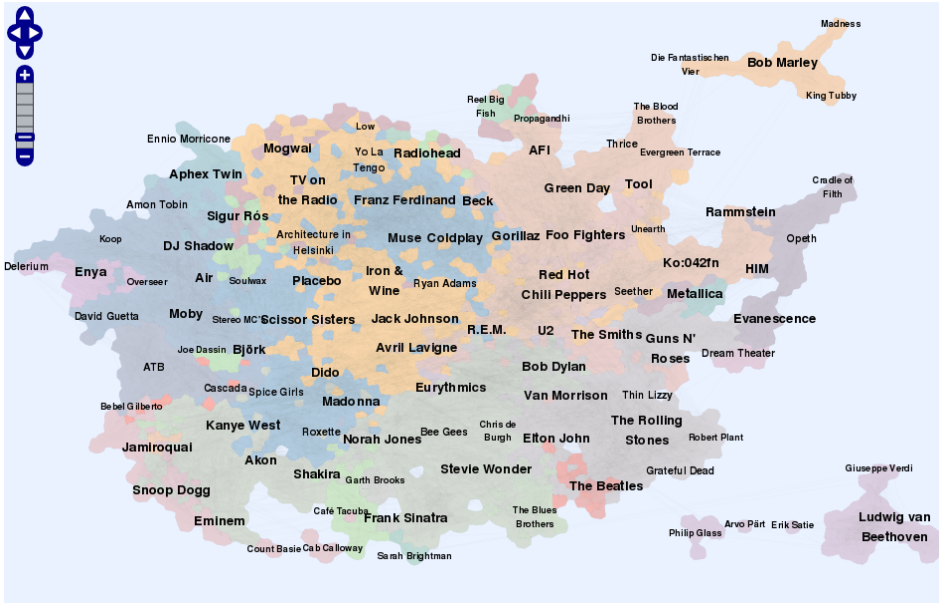
1. Twitter data -> graphs
2. Analyze the graphs
3. Present findings in an appealing way

Twitter -> Graph

- Adam Feldman's code
  - Parses tweets and connects words occurring close together
  - builds graph showing co-occurrences within tweets
  - can quickly see most common clusters of words

Visualization

- Take the most talked-about topics and display them graphically in clusters
- Have the graph vary over time, with topics moving in and dropping out
- The size of the clusters will be representative of the number of people discussing that topic



References

- Abello J, Ham FV, Krishnan N, "AskGraphView: A Large Graph Visualization System", IEEE Transactions in Visualization and Computer Graphics, 12(5) (2006), 669-676.
- Gansner E, Hu Y, and North S, "Visualizing Streaming Text Data with Dynamic Maps, to appear in Proceedings of the 20th International Symposium on Graph Drawing" (best paper award), (2012), TwitterScope website.
- Turney P, "Thumbs Up or Thumbs Down? Semantic Orientation Applied to Unsupervised Classification of Reviews," Proceedings of the Association for Computational Linguistics (2002), pp. 417-424.

- Thanks to Adam Feldman