Interactive Exploration of Asynchronous Conversations: Applying a User-centered Approach to Design a Visual Text Analytic System

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The Problem
Asynchronous conversations such as a blog can generate a long and complex thread as comments are added by the participants.

Information overload:
- The readers skip comments
- Generate short response
- Leave the discussion prematurely

Applying User Centered Design

Why and how people read blogs?
- Variety seeking behaviour
- Skimming behaviour
- Information and guidance seeking
- Keep track of arguments and evidences
- Have fun and enjoyment

Comment
Sample Tasks
- What this conversation is about?
- What do people say about topic X?
- Why are people supporting an opinion?

Topic Model
Segmentation: Use graph-based clustering model that considers lexical cohesion and conversational structure.
Labeling: Generate k keyphrases for each segment using graph-based co-ranking method.

Opinion extraction
- Apply Semantic Orientation CALculator
- Compute polarity distribution for each comment

Interactive Topic model to Support User Tasks

Why?
Given an initial model:
- Topic model might be noisy
- Users may be different (e.g., in expertise)
- Task may require to change the topic granularity

Example: A system generated topic is “Military security". It consists of sub-topics: “advance hacking”, "defence facility" and "security lapses".

Task: What opinions are expressed about “security lapses"?
The user needs to split “Military security” into further sub-topics.

How?
Underlying Topic Model
updates
User feedback

Visual Interface
- Supports user feedback interactions
- Visualizes the changes in the results

Future Directions
- Couple advanced NLP Methods with Interactive Visualizations
- Run a summative evaluation

For live demo and related papers: http://www.cs.ubc.ca/~enamul/convis/