Bridging the Gap between Visual Analytics and Storytelling: General Framework and Application to Social Media Data

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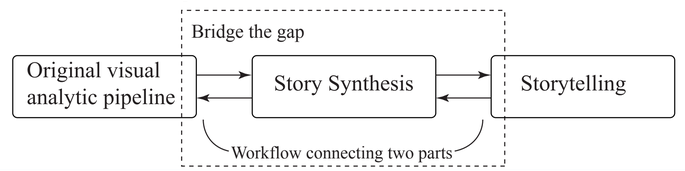
Problem Definition

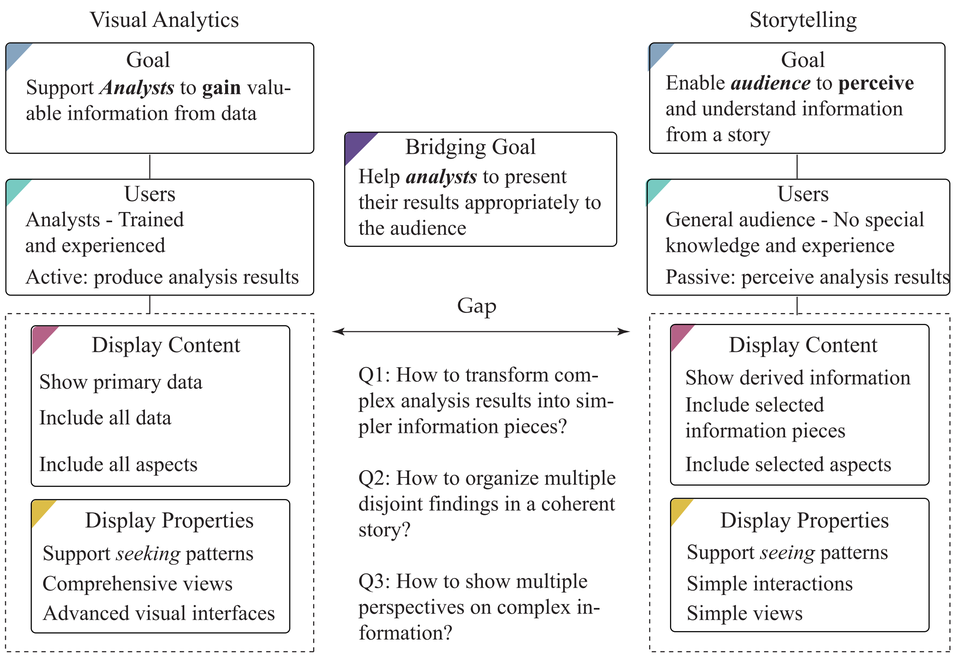
Visual analytics usually deals with complex data and uses sophisticated algorithmic, visual, and interactive techniques supporting the analysis. Findings and results of the analysis often need to be communicated to the audience that lacks visual analytics knowledge and skills. This requires analysis outcomes to be presented in simpler ways than that are typically used in visual analytics systems. However, not only analytical visualizations may be too complex for target audience but also the information that needs to be presented.

Methodology

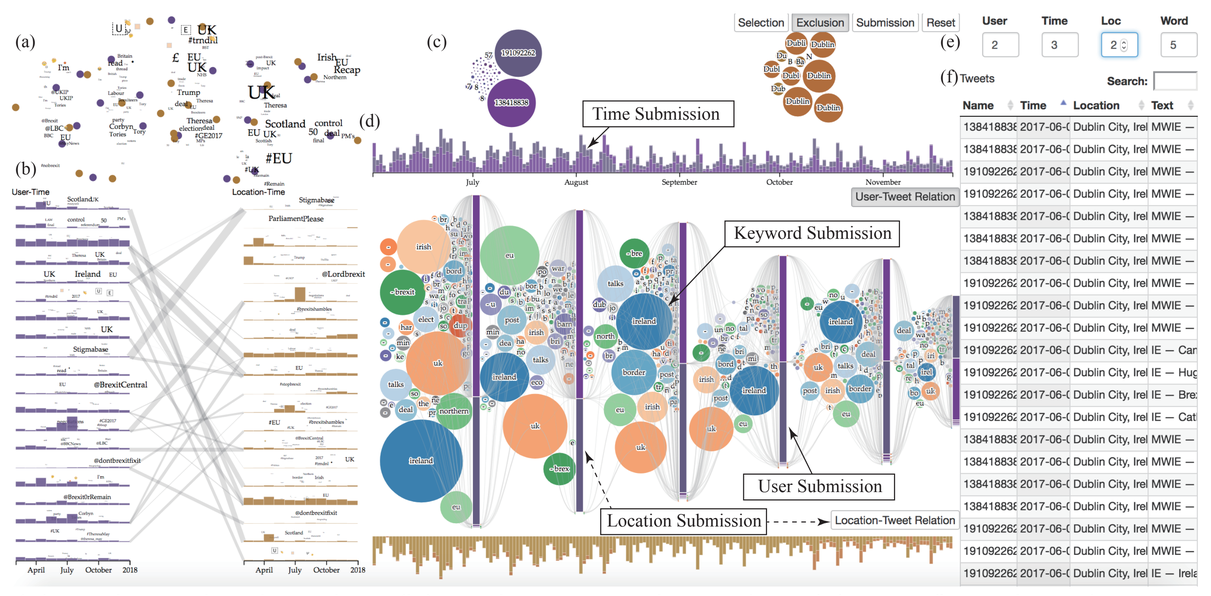
There exists a gap on the path from obtaining analysis results to communicating them, which involves two aspects: information complexity and display complexity. We address this problem by proposing a general framework in which the analyst employs story synthesis tools to assemble analytical findings and arrange them in various ways based on the information structure, i.e., according to the facets it involves. An essential difference of our work from the previous research is in its focus on assembling, organizing, and communicating finding, i.e., data constructs, rather than display states or analysis bookmarks. We demonstrate an implementation of our framework in application to social media data analysis, specifically, exploration of people's reactions to occurring events expressed in messages that are posted in geolocated social media.



Conceptualizing the Gap



Application to Social Media Data - Visual Analytics



(a) topic projection view (b) topic comparison view (c) user/location view (d) temporal view (e) exploring parameters (f) raw data table.

Story Synthesis Process Illustration

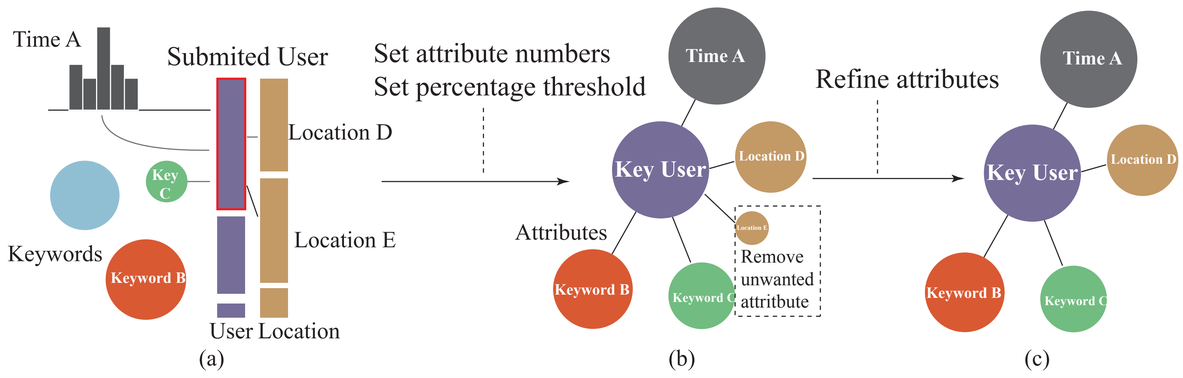
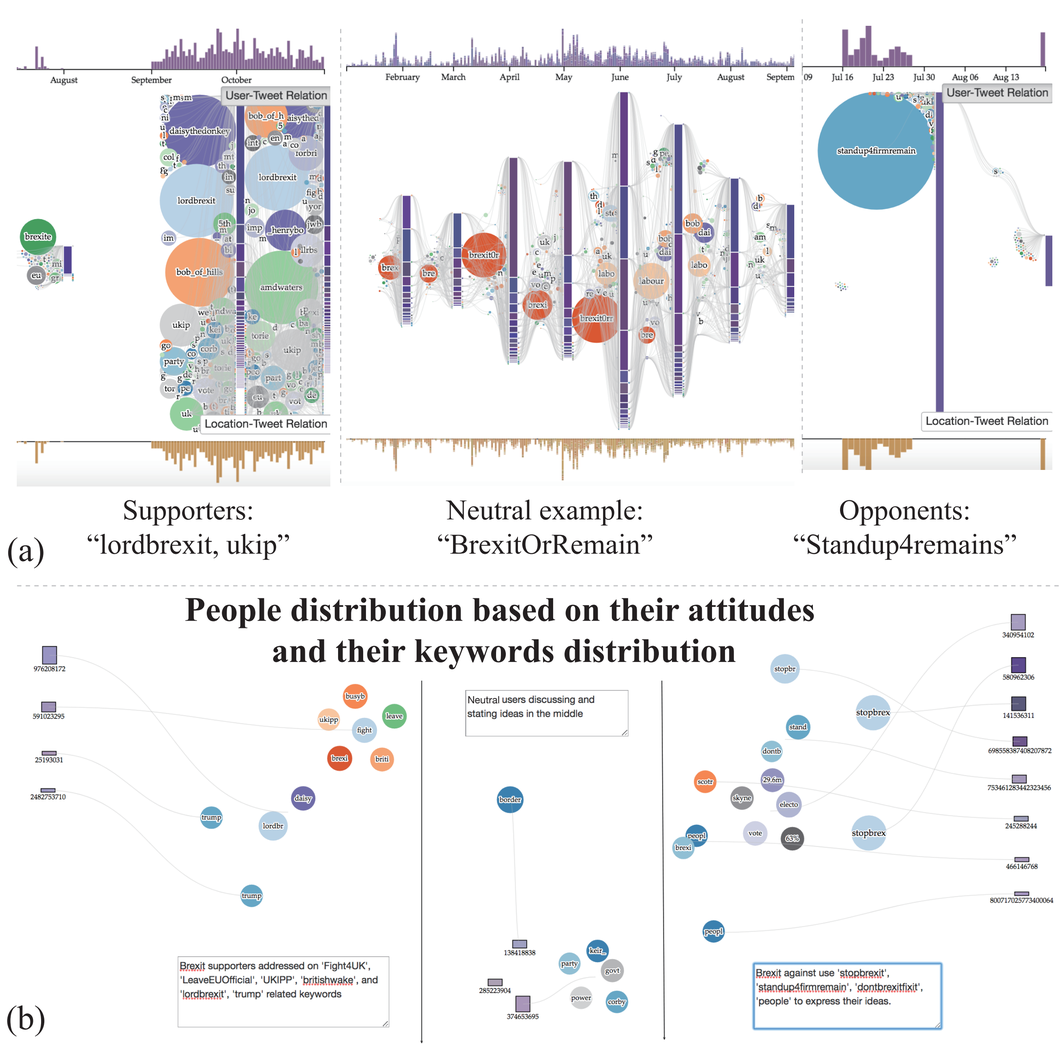


Illustration: the analyst selects an interesting user. The user's tweets were mostly posted at time A with keywords B and C from locations D and E (a). A story slice is created (b). It can be refined by removing unwanted attributes (c). The visual representation of the story slice depends on the chosen layout (d, e).

Case Study - Twitter Analysis and Storytelling about Brexit



The goal was to understand how people with different attitudes in respect to Brexit react in social media. A sociology researcher analyzed different types of people's reactions (a), and synthesized the analysis results into a story from perspectives of user (b), location (c) and time (d).

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