

Interactive Visualization for Earthquake Analytics from Social Media Data

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Introduction

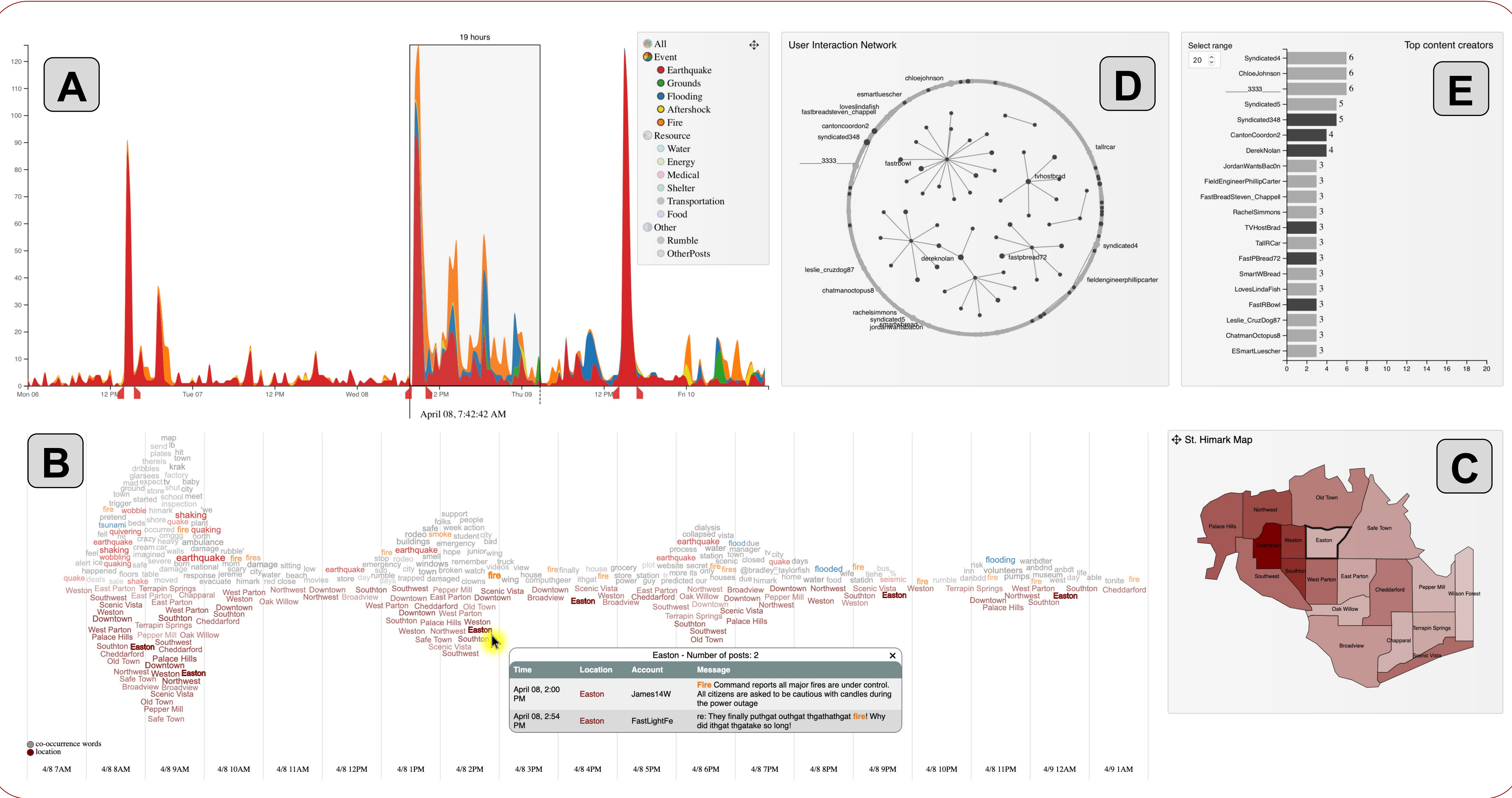
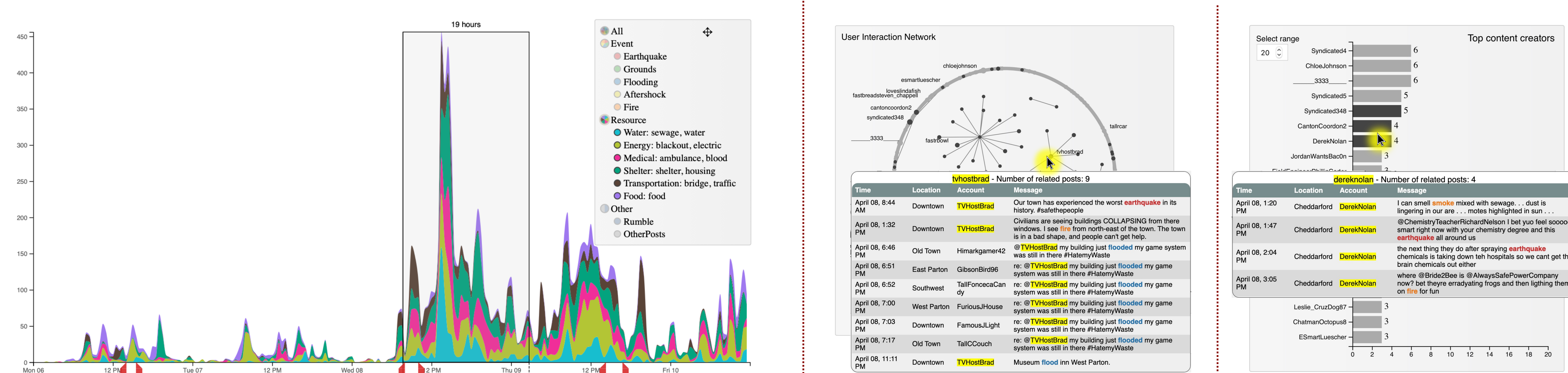
Recent years have witnessed an increasing use of social media as a digital backchannel for leveraging the voice of the people in the community as reactions and responses to natural disasters. The evolving online conversations contain valuable information that can be used to analyze the situations across the affected area, where survey data may fall short in terms of immediacy and the lack of direct reflection on a rapidly changing environment.

To explore such a data stream during a seismic event, this work presents an interactive visual analysis dashboard that integrates linked views of visualizations representing time, topics, emerging problems, and people within the community. The tool assists users in characterizing the conditions across the earthquake zone: determining occurring and post-earthquake events, identifying hot spots that demand emergency resources, and warranting facility re-allocations in the severely affected neighborhoods. We discuss exploratory tasks and visual situational analysis using the social media dataset provided by VAST Challenge 2019.

System Model

The main control panel (A) is built as a stacked area chart, showing the volume of messages according to chosen categories from the selection panel. For the chosen time frame and the chosen categories: Panel (B) presents WordStream for topic evolution, panel (C) is a map in which each neighborhood's color indicates the number of posts, panel (D) is a network user interaction, and panel (E) is a chart for ranking content creators. Detail-on-demand and interactive features are also included to support the analysis, such as the sliding window with adjustable window size for updating the system and specific messages on mouse-over events.

System View



References

- [1] Dörk, M., Gruen, D., Williamson, C., & Carpendale, S. (2010). A visual backchannel for large-scale events. IEEE transactions on visualization and computer graphics, 16(6), 1129-1138.
- [2] Dang, T., Nguyen, H. N., Pham, V., Johansson, J., Sadlo, F., & Marai, G. E. (2019, July). WordStream: Interactive Visualization for Topic Evolution. In EuroVis (Short Papers) (pp. 103-107).
- [3] Nguyen, H. N., & Dang, T. (2019, October). EQSA: Earthquake situational analytics from social media. In 2019 IEEE Conference on Visual Analytics Science and Technology (VAST) (pp. 142-143). IEEE.



Demo link: <https://idatavisualizationlab.github.io/VAST2019mc3/>