Background

People often post messages in social media to express their opinions and ideas concerning various events happening in the world. It is an interesting but challenging task to understand how the opinions vary across people, locations, and times. Our goal is to provide multi-faceted visual analytics approach to investigate people’s reactions to events.

Methodology

We propose TopicWave, an approach combining topic modelling with interactive visual techniques, for exploring the spatial-temporal variation of discussion topics derived from people’s reactions to significant events expressed in geotagged social media. We aggregate social media messages coming from each user and from each location by time intervals for topic modeling. From topic overview to details, we visualize the evolution of discussion topics, which are represented by significant keywords, for groups of people or locations using a river metaphor. Interactive tools allow the analyst to explore how the popularity of each topic and its semantics (i.e., the representative keywords) vary over the sets of people and locations and evolve over time.

Visual Analytics System

Visual analytics interface to social media, including:
(a) topic projection view
(b) topic comparison view
(c) user/location view
(d) temporal view
(e) visualizing dynamic patterns of user/location
(f) raw data table.

Visual analytics pipeline for people’s reactions analysis. TopicWave supports interactive exploration from an overview to details on demand using filtering according to topic, user, location, and keyword.

Case Study

Spatial - Semantic Patterns

Diverse People’s Reactions Exploration

Bursting in March; Dominating locations: Edinburgh, Glasgow; keywords: Scotref, Vote, Scotland

Supporters: “lordbrexit, ukip”

Neutral example: “BrexitOrRemain”

Opponents: “Standup4remains”

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