PKUVIS Visual Analytics Suites: Solution for VAST Challenge 2014 Mini Challenge 1,2,3

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Text and Social Network

We propose StoryExplorer to support news overview and interesting events/people identifying: News Timline helps users to extract timeline of a certain event by performing operations on news articles, and Resume Reader supports suspects identifying through highlighting conflicts. Together they enables user to have an overview of the data and continue analyzing details using extracted interested events and people.

Spatial Temporal Visual Analysis

we propose MovementFinder, a multi-filter system to support data investigations from various aspects: location, time, people and event. Our system first combines related information from different datasets, including map, GPS tracks and transactions records. Then it visualizes above information with various views. Each view acts both as a visualization and a filter. Together they are able to support complex exploratory tasks.

Streaming Tweet Analysis

We proposed a collaborative tool for analyzing streaming messages in real time. We enabled emergency responsiveness through a keyword monitor, and built flexible filters to categorize the messages. We tagged the messages on a map automatically or manually if possible. We also had message inspectors for our teammates to cooperate simultaneously where we could focus on different tasks and share findings.

MC1: Story Explorer: A Visual Analysis Tool for Heterogeneous Text Data

### Exploration Pipeline
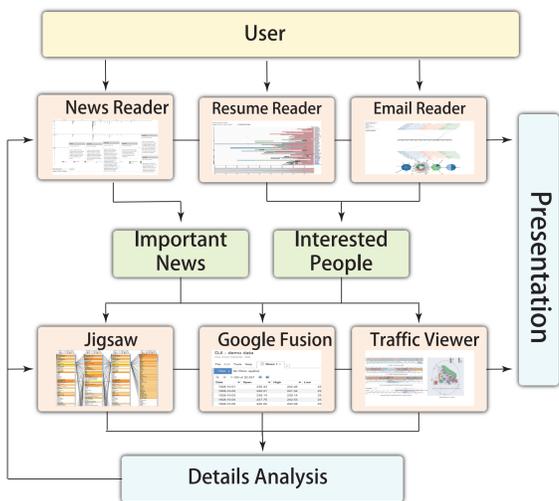
News Reader
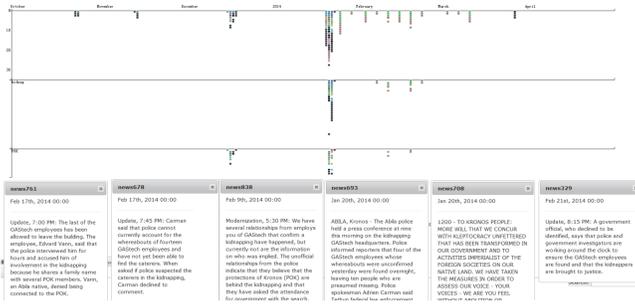
News Reader: Provide news overview
 * Filterable: Highlight news with keywords.
 * Zoomable: Stacking news in longer time period.
 * Operational: Support visual operaitons on timeline.

Resume Reader

Resume Reader: Identify suspects using conflicts
 * Conflicts exposable: Display time conflicts directly.
 * Auto-highlighting: Automatically highlight the relevent people sharing with attributes
 * Ranking based analysis: Multiple creteria can be applied for the ranking
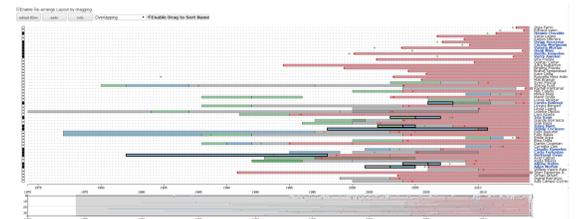

MC2: MovementFinder: Multiple filters for spatial temporal visual analytics

System Overview
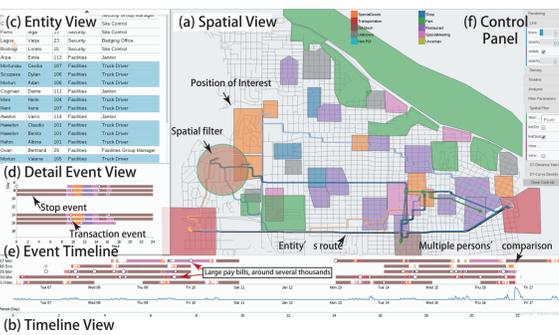
(a) Spatial view: shows the positions of POIs and GPS tracks. Spatial filters are supported.
(b) Timeline view: support time and periodical selection.
(c) Entity view: shows employee records for selection.
(d) Detail event view: shows the event sequence.
(f) Event timeline: shows the event of multiple employees.

General Pattern Detection

During 7:30-9:00, he went to have breakfast, and went to GAStech

During 12:00-14:00, he went to have lunch, and went back to GAStech

During 17:00-20:00, he went back home and seek for supper

Ring mapping to 24-hour time

Link connecting the spatial point and temporal point

Red indicating 'STOP'
Green indicating 'START'
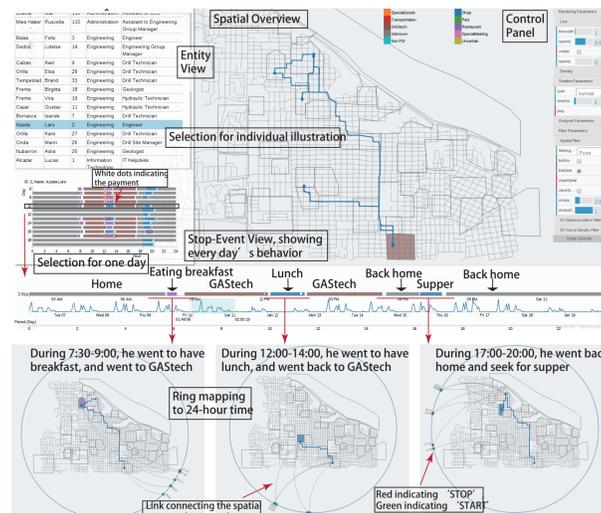
Outlier Detection
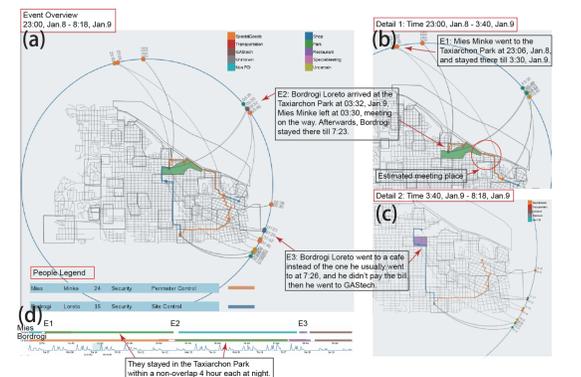
We support multiple filtering exploration, including the spatial filtering, temporal filtering, event filtering for exploration. Event correlation and comparison is supported in the event timeline view and detail circular view.

MC3: A Platform For Collaborative Visual Analysis on Streaming Messages

KeywordMonitor-Responsiveness
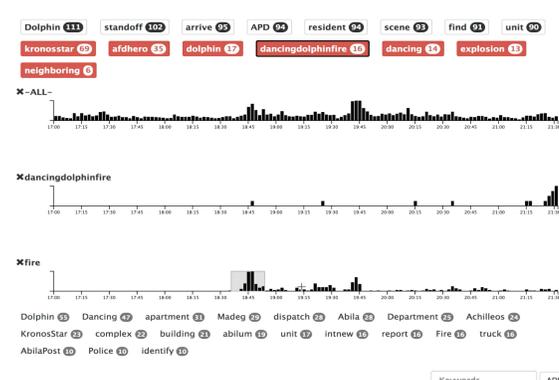
Keywords are extracted from message texts, counted and updated in real-time in a monitor page. Latest words with high occurrences are shown in red to notify users. Users can drill down to one word for its occurrence trending, where the start and end time of anevent are easily seen. Co-occur words are also listed.

StreamingFilter - Flexibility

A substream is the result of a filter. A glyph on the left represents one message, which users can flag, locate, show and hide.

Rule panel. Users write javscript to specify filters.
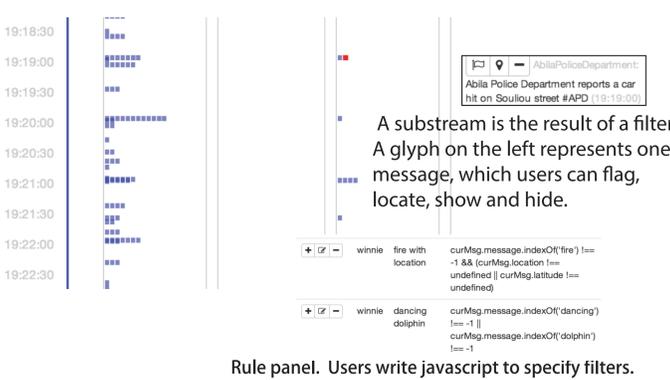
We created filters to organize all messages. We used javascript to specify a filter: incoming messages are evaluated by each rule, and if pass, they enter the corresponding substreams. There is a rule panel for managing rules and map panel inspecting locations.

Collaboration

We enabled collocated, synchronized collaboration within our team. Each member was in charge of different tasks: one for managing rules and designating sub tasks to others; one for monitoring keywords and reporting emergencies; one for scanning filtered messages; one for locating messages, etc.

The important operations made by one user were broadcasted to others immediately to support findings awareness, while others kept privately to avoid interference.
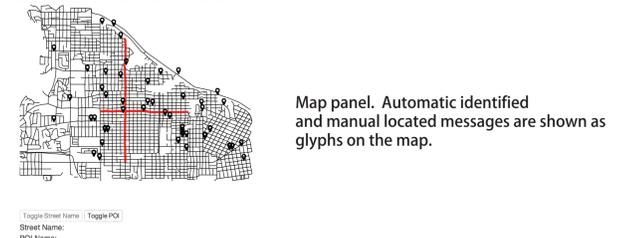
Map panel. Automatic identified and manual located messages are shown as glyphs on the map.

Acknowledgements

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