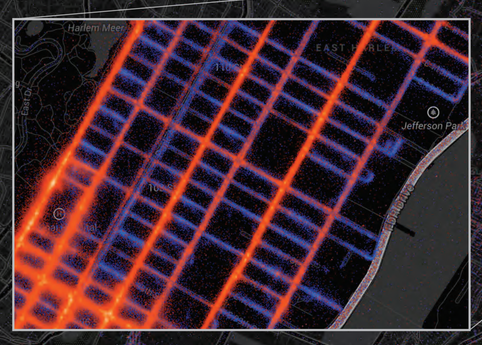
Global to Local Pattern of Life Analysis

with Tile-Based Visual Analytics

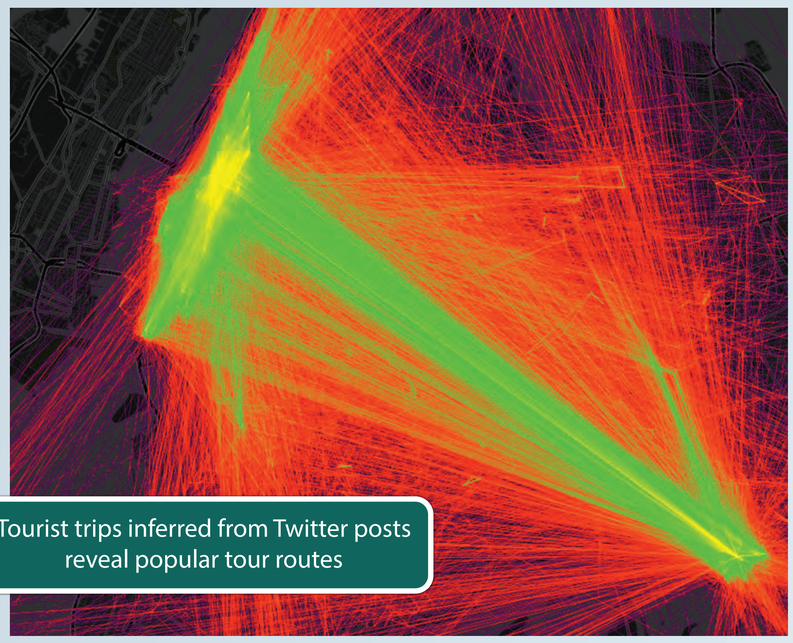
apertureTiles



Discovery of patterns and anomalies in space and time through map-style navigation of billions of data points in any modern web browser.

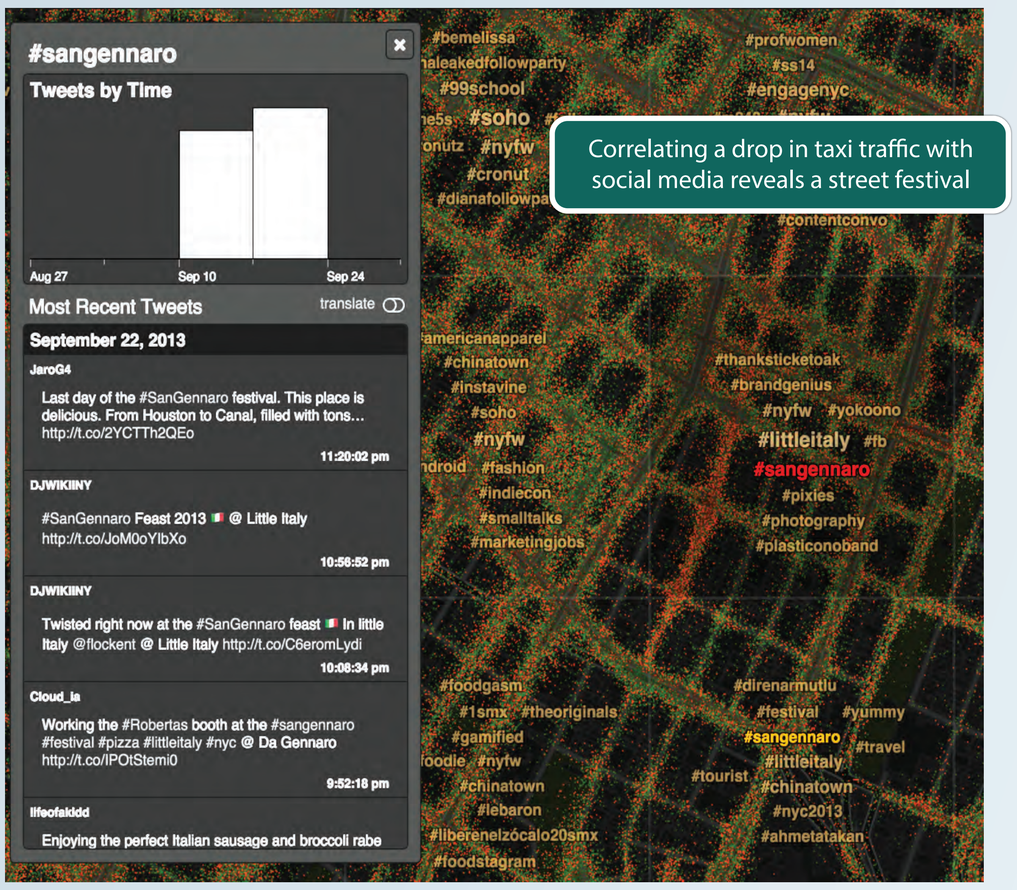
Scalable Analytic Layered Tiles (Salt) enables high-fidelity analysis of data at massive scales, revealing phenomena that would otherwise be lost through sampling or coarse aggregation. Using techniques similar to online geographic map services, tailored analytic results are served at each zoom level. Unlike raster tile systems, Salt enables interactive analysis by binning *data* rather than graphics.

New York taxi pick-ups and drop-offs reveal movement patterns at city-wide and street-level scales



Tourist trips inferred from Twitter posts reveal popular tour routes

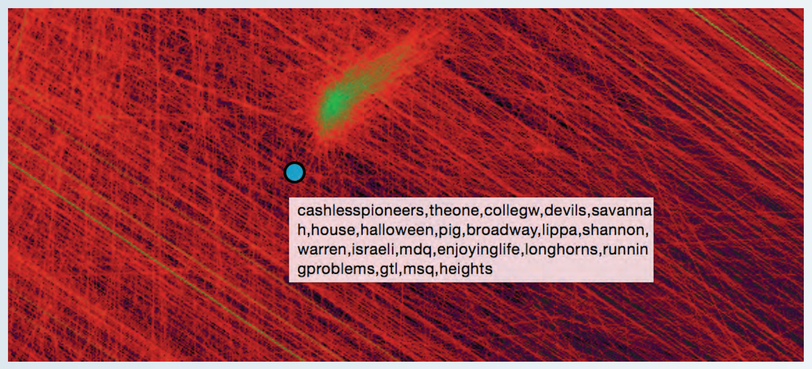
Combining correlated social media, traffic and weather layers with computational analytics including *Event Detection*, *Traffic Analysis*, *Topic Analysis*, and *Event Query by Example* provides insight into population movement and activity on global to local scales. Cluster computing is used to produce the resulting tile-based visual analytics, which enable monitoring of trends over time and discovery of unusual geotemporal events.



Correlating a drop in taxi traffic with social media reveals a street festival

Event Detection

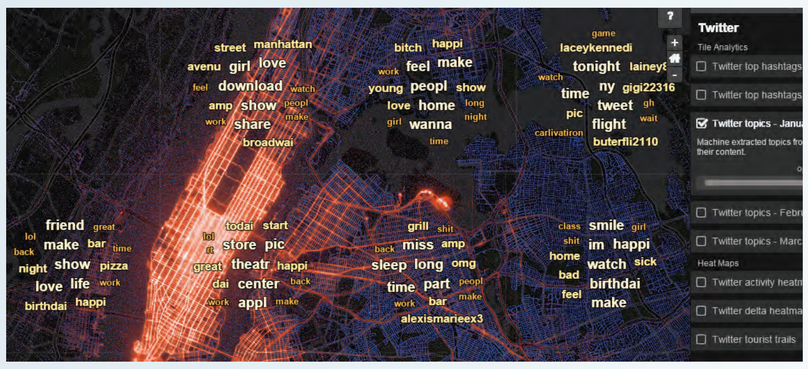
with analytics from Stanford



Events of potential interest are discovered computationally using geotemporal anomaly detection and event modeling. By marking spikes and lulls in activity in space and time, analytic event detection complements visual methods by further enabling rapid discovery. Conversely, visualization complements analytic results by fully expressing anomalies in context. A luminance ordered color spectrum is used to maximize perception.

Topic Analysis

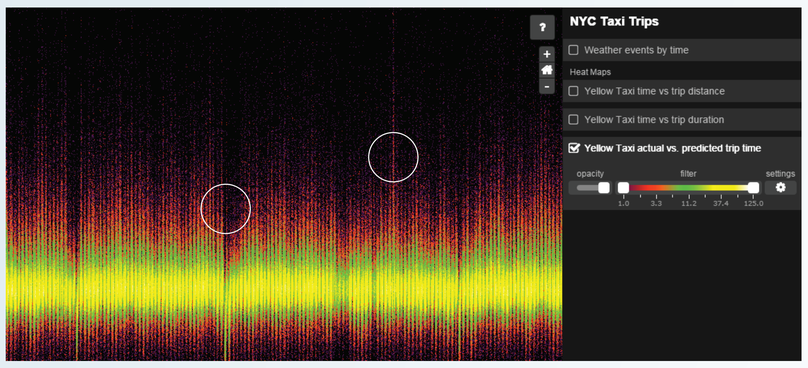
with analytics from Georgia Tech



Tile-based topic modeling and summarization characterize the landscape of social media chatter at multiple levels of detail. Global and local trends point to unfolding events on the ground. When superimposed with movement trends, topic analysis can reveal correlations between tweets and traffic, forming a more detailed portrait of local life.

Traffic Analysis

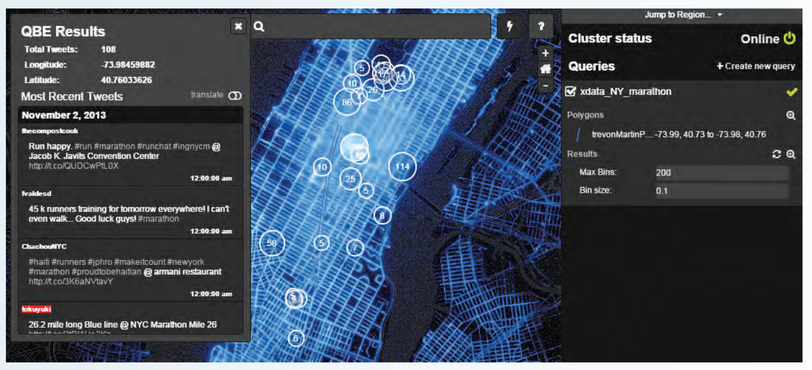
with analytics from IBM Research



Anomalies in day-to-day patterns of population movement are revealed by plotting the results of traffic modeling. Weather and social media layers can be superimposed on the same time scale to investigate possible correlations with events such as storms and street closures.

Event Query by Example

with analytics from Sotera



Selecting local social media phenomena and invoking a query for similar posts in other geographic areas provides an effective means of finding events, such as marathons, and locales, such as parks and hospitals. Zooming in on events and browsing constituent posts provides a method of confirming analytic results.

http://uncharted.software/salt

uncharted

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