

# Spatio-Temporal Event Detection

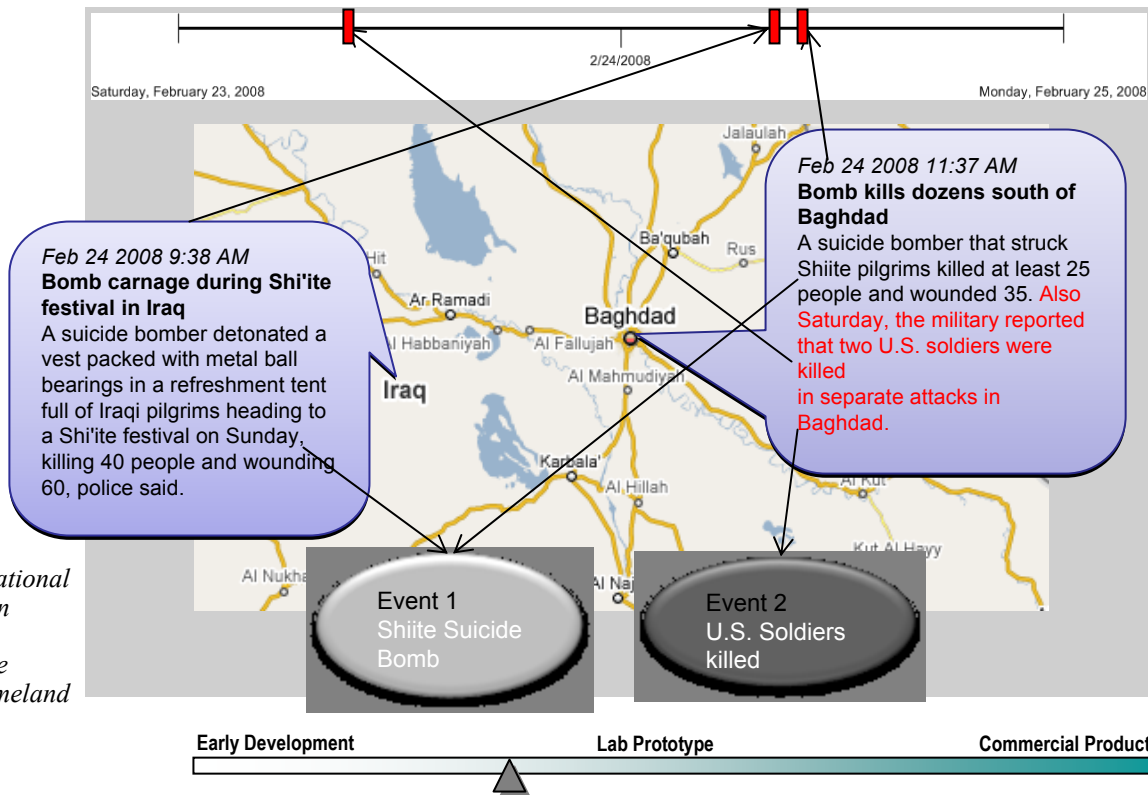
*Benefit: Event detection from textual data is critical for homeland security. Our work combines Text Mining and Geographic Information Retrieval (GIR) methods to address the challenge of retrieving documents that are relevant to an event in terms of both document content and spatio-temporal attributes.*

## Automated event detection based on document content, spatial, and temporal attributes

An overwhelming volume of text documents makes extracting information automatically a challenge. While a variety of topic detection techniques aim at organizing information in an automated fashion, most of topic detection approaches focus on finding topics in a document collection. While finding topics is useful, the number of documents in each topic could be quite large giving a huge document collection.

For example, an user may define “*The U.S. Presidential Elections, 2008*” as an event and classify every article that is related to the elections under that category. Other users may define “*Obama Rally in Miami*” as a separate event on its own right. Such differences come from different ways in which people may want to organize their information.

In our recent work, we developed a system to automatically extract events from news articles. Specifically, we focus on retrospective event detection. We model a distinct event as having a distinct topic, location, and time. Our event detection algorithm treats topic content, location, and time equally as first-class objects. Unlike other models that treat location and time as two dimensions and each word describing an event as a single content dimension, our model would not diminish the importance of the location and time dimensions. Hence, events having the same topic but different location and time would be separated instead of being identified as a single event.



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