

# Jigsaw: Supporting Investigative Analysis through Interactive Visualization

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# Jigsaw

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Pieces of puzzles = different entities and facts in a report collection



# Outline

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- ▶ Introduction
- ▶ Analysis
- ▶ System Description
- ▶ Architecture
- ▶ Views
  - ▶ List View
  - ▶ Graph View
  - ▶ Scatterplot View
  - ▶ Text View
- ▶ Example
- ▶ Related Work
- ▶ Conclusion



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# Introduction

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- ▶ What is Jigsaw as a visual analytics system?
- ▶ What is its goal?
- ▶ How does it help analysts?



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# Analysis

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- ▶ Target – textual report
- ▶ How to get a report?
- ▶ Sample Report: Sample I

John2 Alexander (17) was born between 1770 and 1780. He lived between 1790 and 1831 at Leesburg, Washington County, Tennessee. He married Martha Ferguson (18), daughter of John Ferguson (19). He served in the War of 1812 in the East Tennessee Militia.



# Steps to analyze

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- ▶ A report
- ▶ Extract entities
- ▶ Create an XML





# Sample1 Report to XML document

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- ▶ <report>
- ▶ <reportId>Sample1</reportId>
- ▶ <reportDescription>
- ▶ John2 Alexander (17) was born between 1770 and 1780. He lived between 1790 and 1831 at Leesburg, Washington County, Tennessee. He married Martha Ferguson (18), daughter of John Ferguson (19). He served in the War of 1812 in the East Tennessee Militia.
- ▶ </reportDescription>
- ▶ <person> John2 Alexander </person>
- ▶ .
- ▶ .
- ▶ <Date>
- ▶ <month>0</month> <day>0</day> <year>1770</year>
- ▶ </Date>
- ▶ .
- ▶ .
- ▶ <place> Washington</place>
- ▶ .
- ▶ .
- ▶ </report>



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# System Description

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- ▶ Views
- ▶ Event listening
- ▶ Query interface
- ▶ Screen real estate



# System Architecture

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- ▶ Java
- ▶ XML document



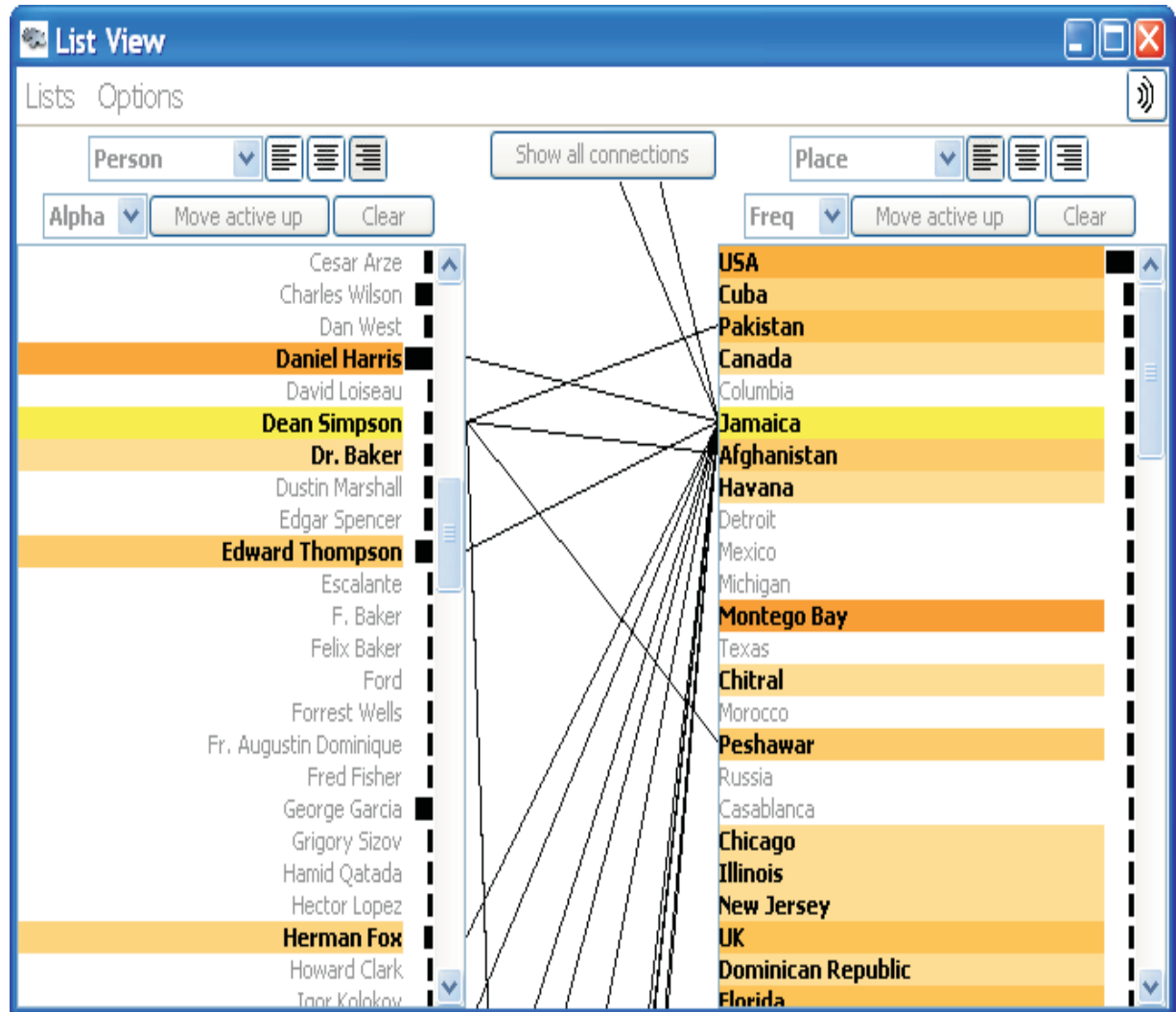
- ▶ Controller class
- ▶ Types of events

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# List View

The List View.  
Selected entities  
are shown in  
yellow and  
connected entities  
are indicated by  
the joining diagonal  
lines and the  
orange shading.  
Darker shading  
represents  
stronger  
connections to  
the selected  
entities.

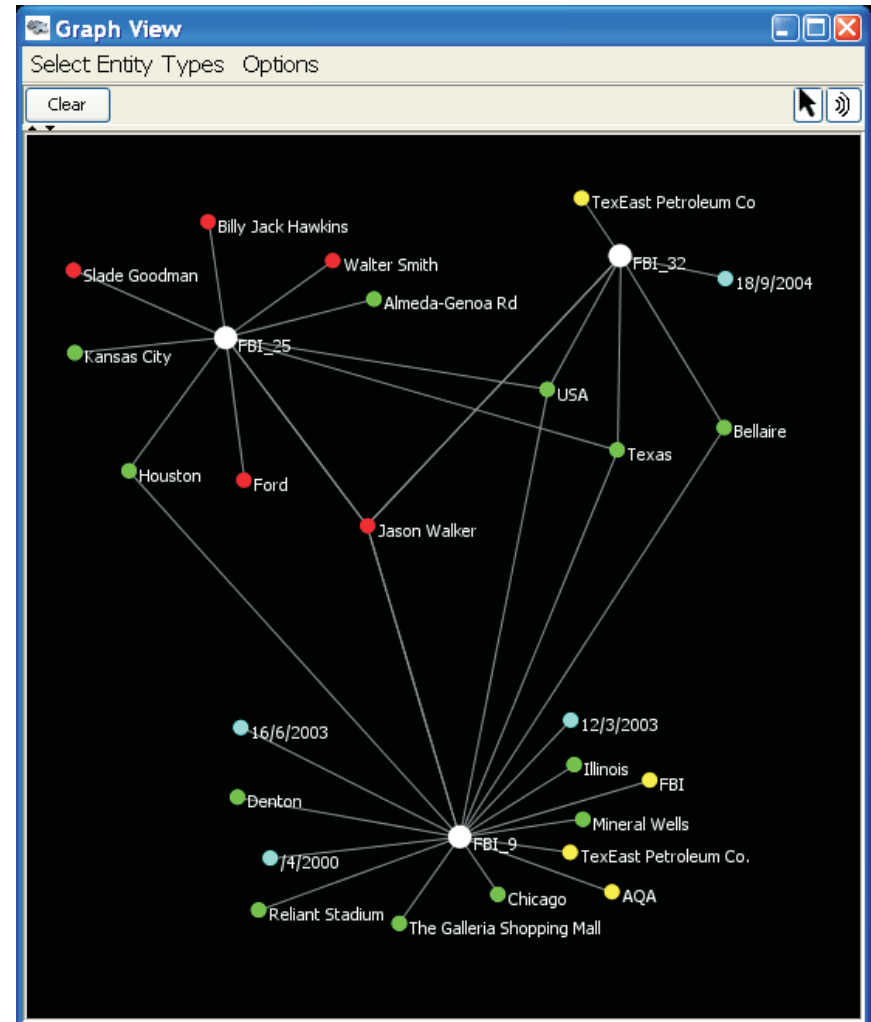


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# Graph View

The Graph View.  
Reports are larger  
white circles and  
entities are smaller  
circles colored by  
type. Edges connect  
reports to the  
entities they contain.



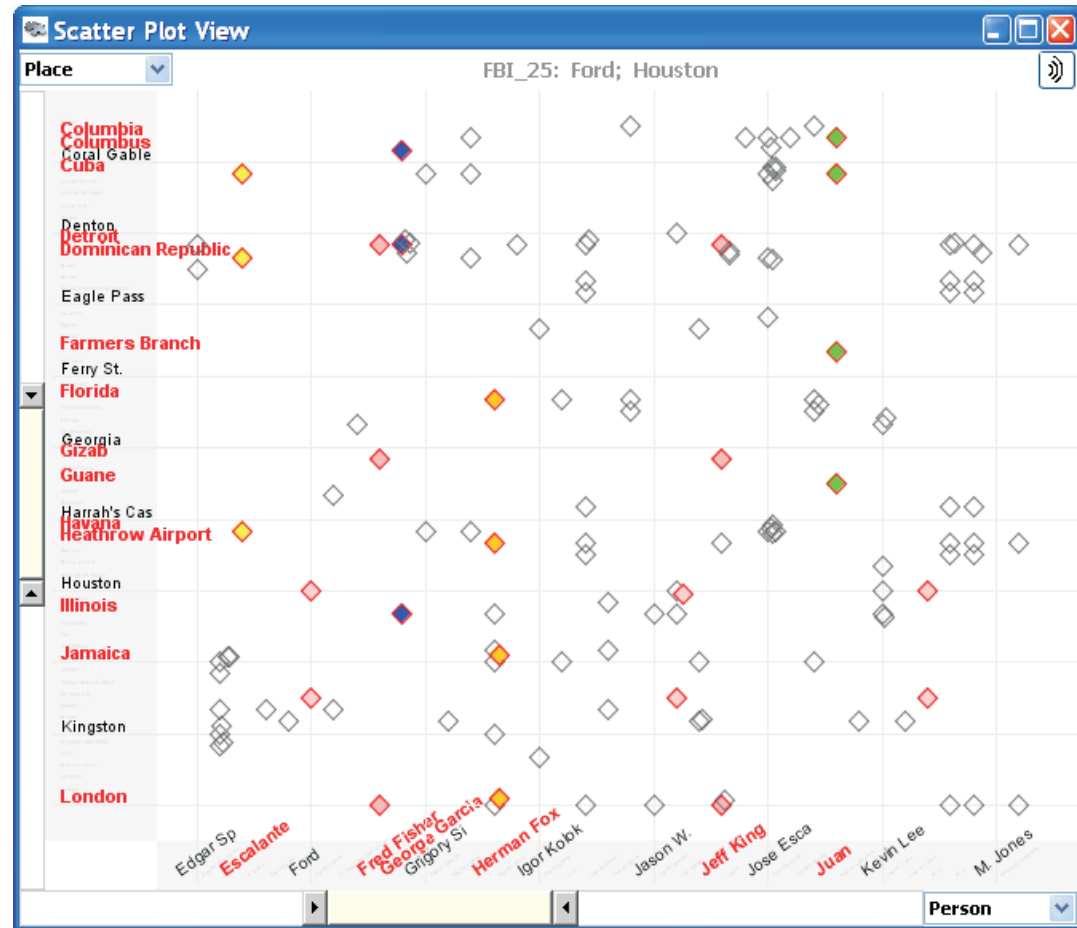


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# Scatterplot View

The Scatterplot View. Each axis enumerates a list of entities. Diamonds in the center indicate reports containing particular pairs of entities, one from each axis at the relative x,y position.

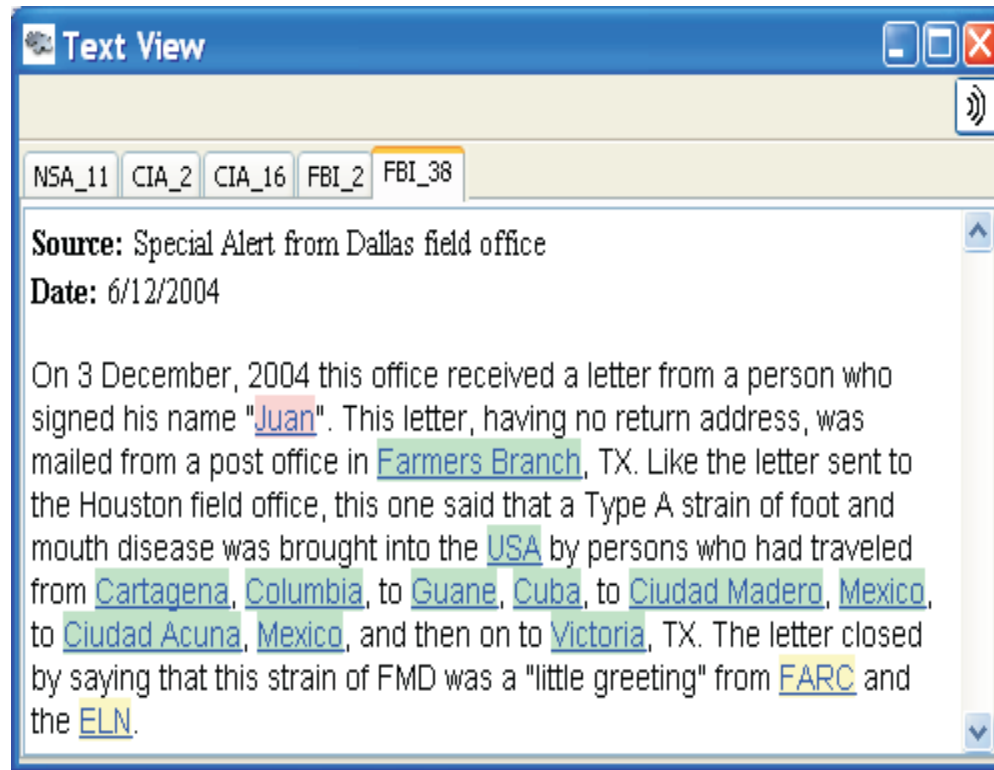


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# Text View

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The Text View. Tabs indicate particular reports and the selected tab's report text appears below with entities highlighted and colored by type.

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# Analyzing using an Example

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## **Video**

- ▶ <http://www.cc.gatech.edu/gvu/ii/jigsaw/Jigsaw.wmv>
- ▶ <http://www.cc.gatech.edu/gvu/ii/jigsaw/Jigsaw.mov>
- ▶ [http://www.youtube.com/watch?v=2CMw4i9DiaM&feature=player\\_embedded#at=22](http://www.youtube.com/watch?v=2CMw4i9DiaM&feature=player_embedded#at=22)
- ▶ **Figure**
- ▶ <http://www.elementsofparametricdesign.com/files/Sandbox/victor/jigsaw-VAST07.pdf>



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# Related Work

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## ▶ IN-SPIRE FOR

Tool collection for exploring textual document.

Goal: identify and communicate diff topics and themes.

## ▶ SANDBOX

Analytical sense making environment that helps sort, organize and analyze data.

Goal: provide more authoring and organizational infrastructure.

## ▶ ENTITY WORKSPACE

Keeps track of facts





# Related Work

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- ▶ Jigsaw :

Focus: Representing connections and relationships between entities in document collection

KANI is a closer system to Jigsaw.



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# Conclusion

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- ▶ System designed to assist analysts with sense making activities across collection of reports.
- ▶ Presents suite of views that highlights connections between entities.
- ▶ Contribution:
  - ▶ Set of entity/report visualizations
  - ▶ Interactive capabilities of views



# Comments

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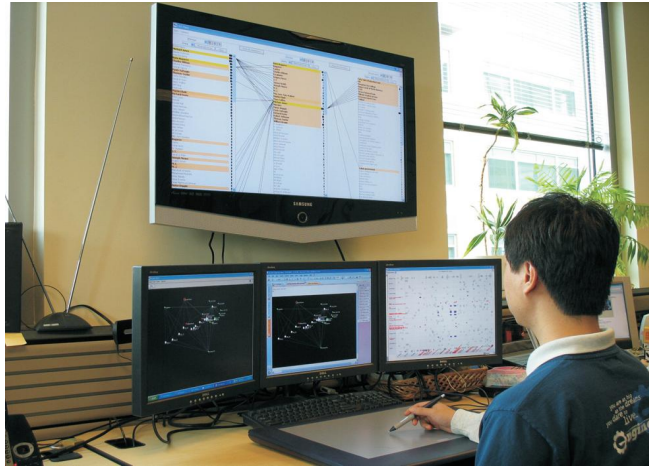
- ▶ Scatterplot was not very clear.
- ▶ Very well explained about the system.
- ▶ Software was not available to analyze.



# Discussion

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- ▶ Can we minimize the number of monitors?



- ▶ Are the views defined by the authors sufficient to analyze the documents?
- ▶ Ideas to add any more enhancements to the views for analysts to better analyze the reports?

