

# RICH INTERFACES FOR READING NEWS ON THE WEB

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INTELLIGENT INFORMATION LABORATORY AND  
QUALITATIVE REASONING GROUP

NORTHWESTERN UNIVERSITY

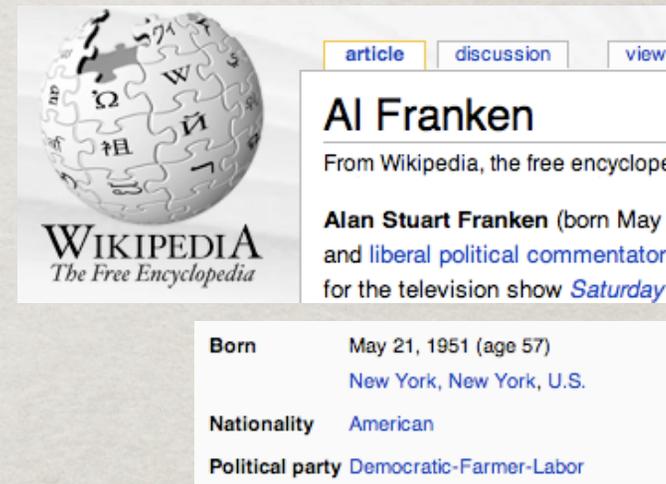
IUI 2009

## RESULTS OF 2007 AP STUDY OF YOUNG-ADULT NEWS READERS

- ✿ **Looking for Back Story:** News is “here and now. If you want background, it's up to you.”
- ✿ **Want to See the Big Picture:** "Breaking news ...is kind of annoying sometimes. I don't like to get bits and pieces of information."
  - ✿ Another reader “does not want to be fed bits. I want to know all the details at once”
- ✿ **Experience NEWS FATIGUE:** “debilitated by information overload”
  - ✿ They “try to ascertain whole news stories but they regularly and repeatedly were left unsatisfied”
- ✿ **Want Story Resolution:** sports and entertainment news preferred because they offer “a beginning, middle and end, or clear next steps”

# MEETING INFORMATION NEEDS THROUGH STRUCTURE

- ❁ **Wikipedia Infoboxes:**  
essential facts for people,  
organizations, products
- ❁ **IMDb:** artists' film and  
television projects
- ❁ **DBLP, ACM DL,  
CiteSeer:** publications
- ❁ **ZoomInfo.com:** resumes



The screenshot shows the Wikipedia article for Al Franken. On the left is the Wikipedia logo, a globe with letters. To the right are tabs for 'article', 'discussion', and 'view'. The article title is 'Al Franken'. Below the title is a summary: 'From Wikipedia, the free encyclopedia'. The main text reads: 'Alan Stuart Franken (born May and liberal political commentator. for the television show *Saturday*'. Below the text is a biographical infobox with the following details:

<b>Born</b>	May 21, 1951 (age 57) New York, New York, U.S.
<b>Nationality</b>	American
<b>Political party</b>	Democratic-Farmer-Labor



The screenshot shows the IMDb page for Al Franken. At the top is the IMDb logo and the tagline 'The Internet Movie Database'. There are navigation links for 'NOW PLAYING' and 'MOVIE / TV NEWS'. Below that are links for 'Home | T' and a search box. The main heading is 'IMDb > Al Franken'. On the left is a large photo of Al Franken smiling. To the right is the title 'Al Franken' and a link for 'Photos (see all 16 | slideshow)'. Below the title are three smaller photos of Al Franken in different settings.

## WHAT DO STRUCTURED VIEWS OFFER?

- ✿ Genres of conventional information presentations
  - ✿ (+) **Organize knowledge** in familiar views
  - ✿ (+) **Support easy navigation** among views and to content elements
  - ✿ (-) Constructed manually - scalability?
  - ✿ (-) Reader has to go to them
- ✿ Easy to read about actor, then film, then director
  - ✿ Similar flow through the news?

# OVERVIEW

- ✱ **NEWS SITUATIONS:** limited and well-known sequences of causally related events commonly reported in the news
- ✱ **Demonstration** of Brussell functionality and user experience
- ✱ **How it works**
  - ✱ Uses models to automatically extract and aggregate information from articles on many news sites
- ✱ **Empirical questions**

Colombia rescues hostage Ingrid Betancourt - International Herald Tribune - Mozilla Firefox

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ih http://www.ih.com/articles/reuters/2008/07/02/new

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## Colombia rescues hostage Ingrid Betancourt

Reuters Published: July 2, 2008

**BOGOTA:** French-Colombian politician Ingrid Betancourt, three Americans and 11 other hostages were rescued from leftist guerrillas by Colombian troops on Wednesday after years in captivity, the government said.

All of the former captives were in reasonably good health after being held in secret jungle camps, Defence Minister Juan Manuel Santos said.

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Kidnapping of Ingrid Betancourt person by FARC

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### Video



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What happened in this kidnapping?  
About the victim, Ingrid Betancourt person  
About the kidnapper, FARC

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Back Looking at **Kidnapping** of **Ingrid Betancourt person** by **FARC** [X]

Date	<b>Feb 23 2002</b>	<b>Nov 29 2007</b>	<b>Dec 5 2007</b>	<b>Jul 2 2008</b>
Event	<b>Abduction</b>	<b>Videotape</b>	<b>Appeal For Release</b>	<b>Release</b>

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BBC NEWS | Americas | Sarkozy urges Betancourt release - Mozilla Firefox

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http://news.bbc.co.uk/2/hi/americas/7130076.stm#b

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Back Looking at **Kidnapping** of **Ingrid Betancourt person** by **FARC** > **Appeal For Release** [X]

Appeal For Release Event Facts **date Dec 5 2007**

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**BBC NEWS** Watch One-Minute World News

Last Updated: Thursday, 6 December 2007, 02:23 GMT

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### Sarkozy urges Betancourt release

**French President Nicolas Sarkozy has made a direct appeal to Colombian rebels to release Ingrid Betancourt, a long-held French-Colombian hostage.**

"I have a dream: to see Ingrid among her family this Christmas," Mr Sarkozy said in the televised message.

Last week, Ms Betancourt was shown looking thin and haggard in a video seized by Colombian authorities.

After seeing it, Mr Sarkozy vowed to redouble his efforts to free her after a regional mediation effort failed.



Ms Betancourt says she has been "living like the dead"

#### COLOMBIA CONFLICT

KEY STORIES

- Film shows Farc hostage's release
- US court jails Colombia militants

FEATURES AND ANALYSIS

- Political impact**  
The likely effect of the rescue of Ingrid Betancourt and other hostages
- How the rescue unfolded
- Colombia seeks rebels' surrender
- US weighs costs of Plan Colombia

VIDEO AND AUDIO

- The moment Ingrid Betancourt was rescued

Watch

Done

BBC NEWS | Americas | Sarkozy urges Betancourt release - Mozilla Firefox

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http://news.bbc.co.uk/2/hi/americas/7130076.stm#b

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Done

Brussell Participant View - FARC - Mozilla Firefox

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Back | Looking at **FARC** [X]

Date All Events **Sep 2001 Abduction** **Feb 23 2002 Abduction** **Feb 2003 Abduction** **Feb 2003 Abduction** **Feb 2003 Abduction** **Dec 13 2004 Abduction** Au

## Organization FARC

Collected by Brussell

<b>Initials</b>	Farc (1573)
<b>Name</b>	Revolutionary Armed Forces Of Colombia (2689)
<b>Kind</b>	Terrorist Group (0)
<b>Specific Kind</b>	Faction (1)
<b>Military Status</b>	Militant (74)
<b>Political Culture</b>	Leftist (29)
<b>Nationality</b>	Colombian (18)
<b>Home</b>	Colombia (18)
<b>Leader</b>	Ivan Rios (1)



Revolutionary Armed Forces of Colombia (Farc) fighters

[Revolutionary Armed Forces of Colombia \(Farc\) fighters](#)

[An aerial view of the former Revolutionary Forces of Colombia, or FARC camp in Angostura, on the Ecuadorean border with Colombia](#)

[FARC guerillas.](#)

[FARC](#)

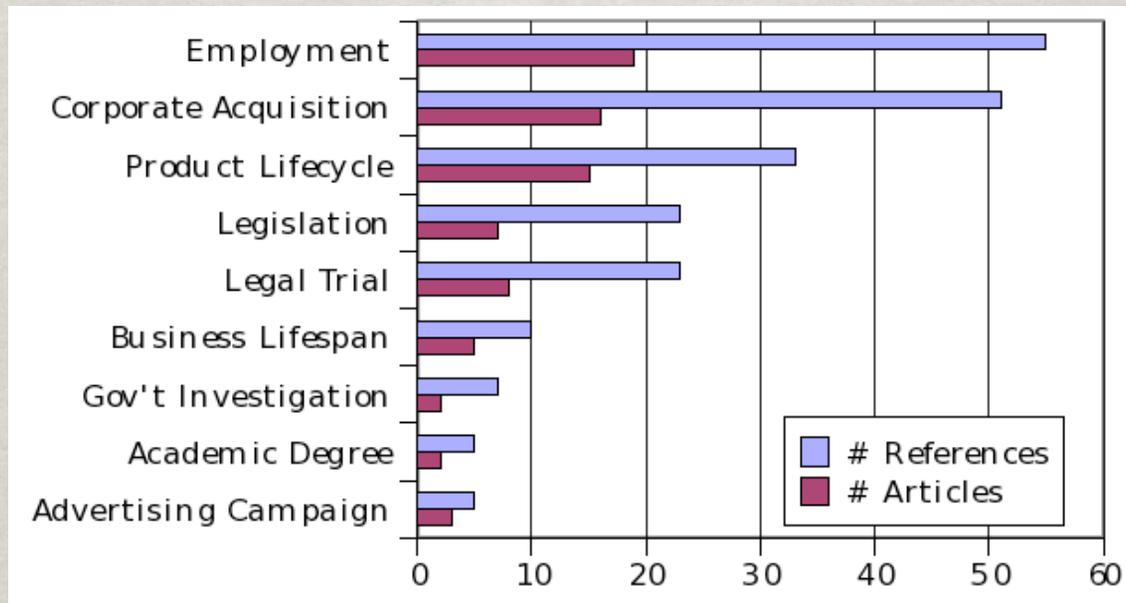
Done

# HOW IT WORKS

- ✱ **Retrieves** news articles via RSS feeds
- ✱ **Selects** articles with situation-specific keywords
- ✱ **Extracts** events and facts from text: “X kidnapped Y on Z”
  - ✱ **Records** textual source
  - ✱ **Creates** situation instance for event
  - ✱ **Merges** into set of all situations and participants
- ✱ **Links** with user’s news reading context

# PREVALENCE OF COMMON SITUATIONS IN NEWS

- ✿ 58% of 100 business articles had at least 1 common situation reference (entity and event verb)



# MODELS DRIVE ANALYSIS

- ✱ Instantiate situations and participants from models
- ✱ Constraints associated with models drive analysis at 3 levels
  - ✱ **IR:** document keywords: “kidnap\*”
  - ✱ **IE:** text patterns: “X kidnapped Y on Z”
  - ✱ **Semantic:** RELEASED XOR KILLED
- ✱ Support for kidnappings, corporate acquisitions, legal trials

# MERGING SITUATIONS AND PARTICIPANTS

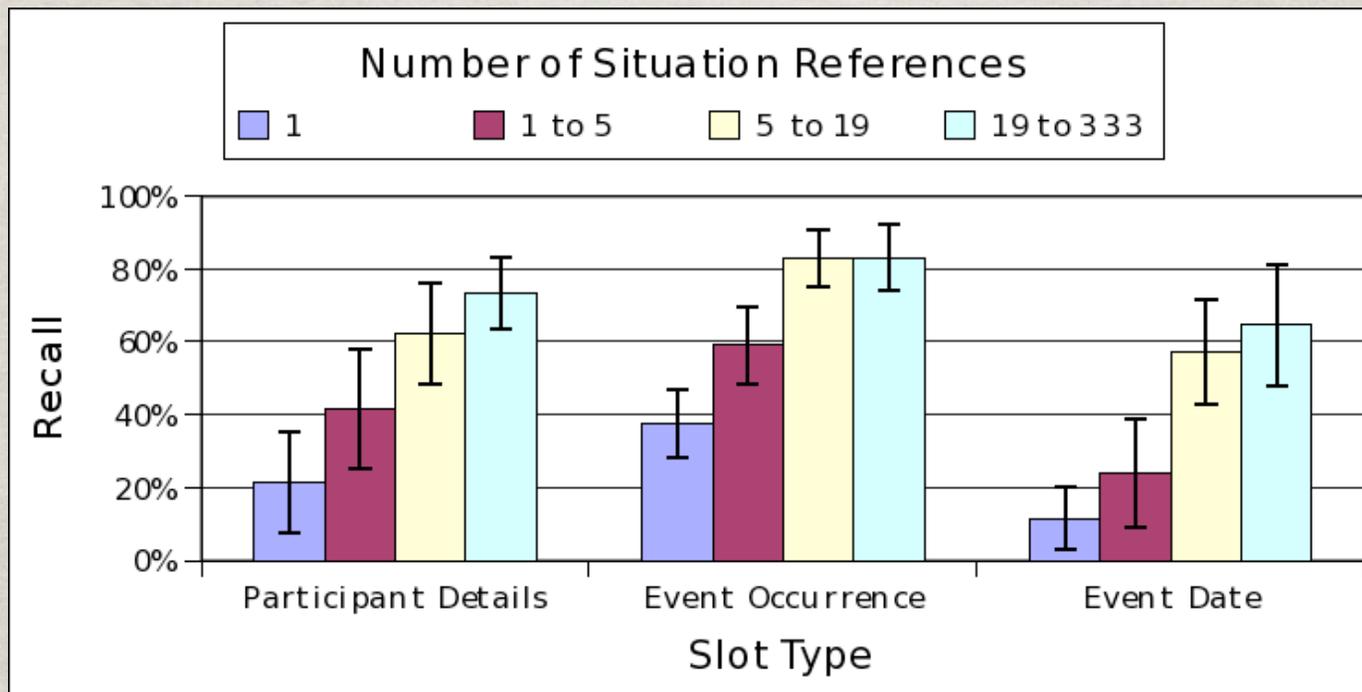
- ✿ **Aggregates results** from multiple articles
- ✿ **Indexes situations** by profile: “kidnapping of X”, “A vs. B”
- ✿ **Problem:** Need to reconcile conflicting information
  - ✿ Conflicts when incorrect information reported and errors in extraction
  - ✿ Impediment to scaling model-based systems
  - ✿ Heuristic: correct information most often stated
- ✿ **Resolves conflicts by voting** on alternate values for slot
  - ✿ Model specifies what is voted on, and what counts as a vote

# SCALABILITY OF SITUATION EXTRACTION

- ✿ Wikipedia page: “Foreign Hostages in Iraq”  
August 2008
  - ✿ Minimal descriptions - focus on recall
  - ✿ 164 cases with named individuals
  - ✿ 135 mentioned in corpus of 1M articles
  - ✿ 101 found, recall of 74.8%

# EVALUATION RESULTS

- ☼ Recall improves with more articles:  
5+ references significantly better than just 1



# FUTURE WORK

- ✿ Support rapid authoring of situation models
  - ✿ Machine learning of templates and text patterns
  - ✿ Model author supplies semantic constraints
    - ✿ ...or just confirms if suggested by pattern of occurrence

# BACKGROUND WORK

## NEWS IN MULTIPLE DOCUMENTS

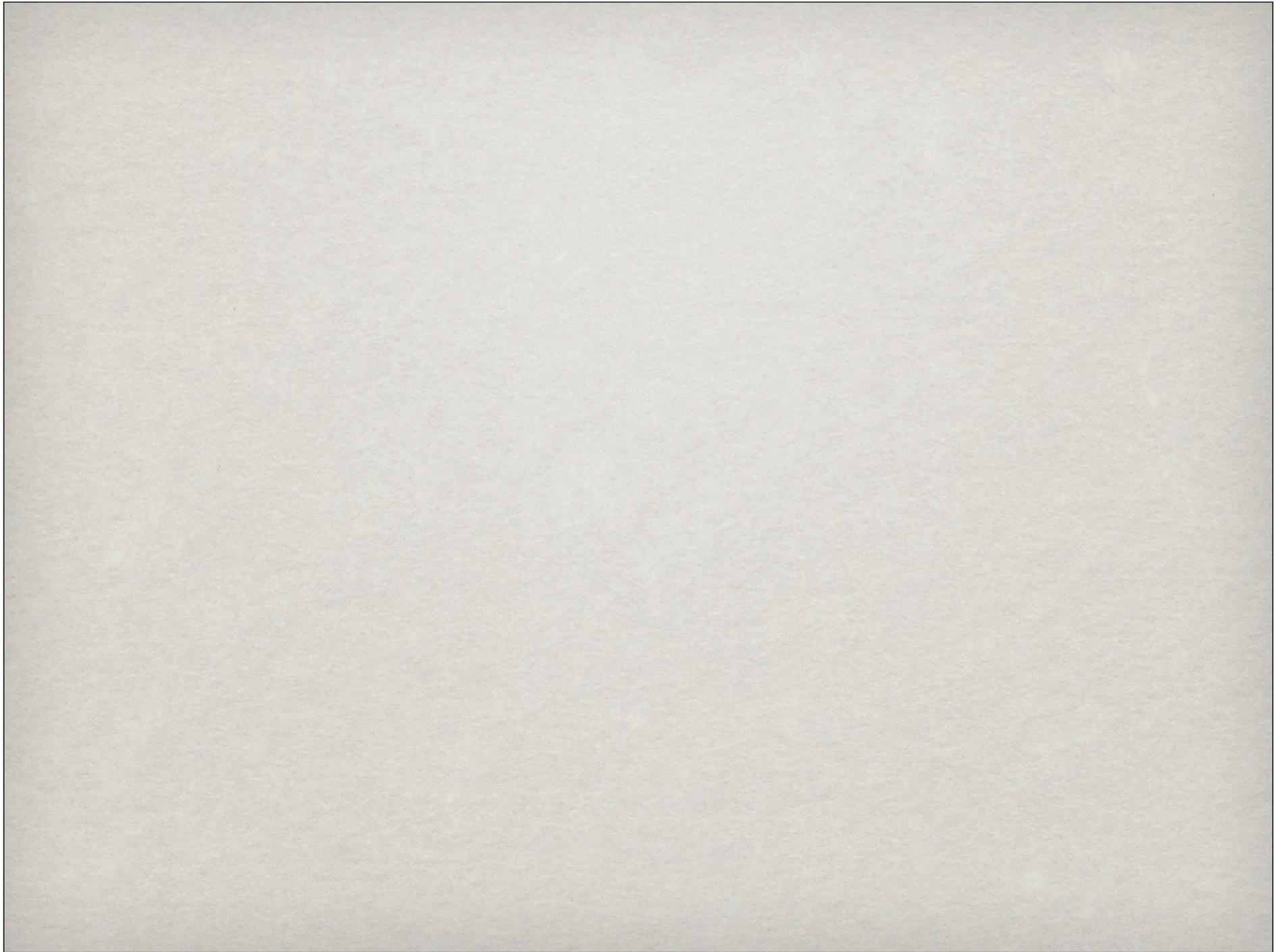
- ✱ **News Summarization:** NewsBlaster, NewsInEssence
  - ✱ Differences in details: NewsJunkie
- ✱ **News Timelines:** Topic Detection and Tracking (TDT)
  - ✱ Google News Archive
- ✱ **Question Answering:** KnowItAll

# BACKGROUND WORK MODELS AND INTERFACE

- ✱ **Semantic Models of Situations: Scripts**
- ✱ **Event Extraction: Message Understanding Conference (MUC)**
- ✱ **Rich Interfaces for Viewing Context on Web**
  - ✱ Get similar pages with Watson
  - ✱ View further links with Letizia
  - ✱ Browse Semantic Web views with Magpie

# CONCLUSION

- ✿ AP ethnography concludes: The news "audience is looking to be transported to relevant information no matter its source. Where online consumers once surfed and bookmarked news sites, users now wonder why a logical trail through the news can't simply unfold, link by link, across a multitude of sources."
- ✿ Brussell presents **big-picture views** of situations and participants:  
**EXPLANATORY STRUCTURES**
  - ✿ **Organize knowledge** of situation storylines and participant facts
  - ✿ **Support navigation** among news articles about milestone events
  - ✿ **Created automatically** from models by reading articles retrieved from multiple news sites
  - ✿ **Links within browser** to user's news reading context



# WIKIPEDIA DATA TABLE

Participant Detail			Event Occurrence			Event Dates		
Quartile	Mean	Std Dev	Quartile	Mean	Std Dev	Quartile	Mean	Std Dev
1 (A)	0.21604	0.34483	1 (A)	0.37496	0.23364	1 (A)	0.11539	0.21483
2 (AB)	0.41532	0.39324	2 (B)	0.58996	0.25458	2 (A)	0.24	0.35707
3 (BC)	0.62272	0.33386	3 (C)	0.8268	0.18918	3 (B)	0.57332	0.34722
4 (C)	0.73468	0.23512	4 (C)	0.83004	0.22108	4 (B)	0.64668	0.4006

Comparisons for all pairs using Tukey-Kramer HSD ( $q=2.61413$ ,  $\alpha=0.05$ )  
 Letters not connected by the same letter are significantly different.

# RELATED NEWS ARTICLES

## Related

[Colombia Seizes Videos of Hostages \(December 1, 2007\)](#)

[Betancourt Viewed as Symbol of Colombia's Lost Hostages \(July 2, 2008\)](#)

[Hostage Rescue Is Happy Coincidence for McCain in Colombia \(July 3, 2008\)](#)

[Times Topics: Ingrid Betancourt](#)

[Times Topics: Revolutionary Armed Forces of Colombia \(FARC\)](#)

## Past Coverage

- [Betancourt Viewed as Symbol of Colombia's Lost Hostages \(July 2, 2008\)](#)
- [Chávez Urges Colombian Rebels to End Their Struggle \(June 9, 2008\)](#)
- [Chávez Suffers Military and Policy Setbacks \(June 8, 2008\)](#)
- [Rebel Death Raises Hope For Hostages In Colombia \(May 26, 2008\)](#)

## Related Searches

- [Colombia](#)
- [Revolutionary Armed Forces of Colombia](#)
- [Betancourt, Ingrid](#)
- [Uribe, Alvaro](#)

-  [Add Alert](#)
-  [Add Alert](#)
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✿ [The New York Times "Hostages Freed in Colombia Return Home", July 2 2008](#)

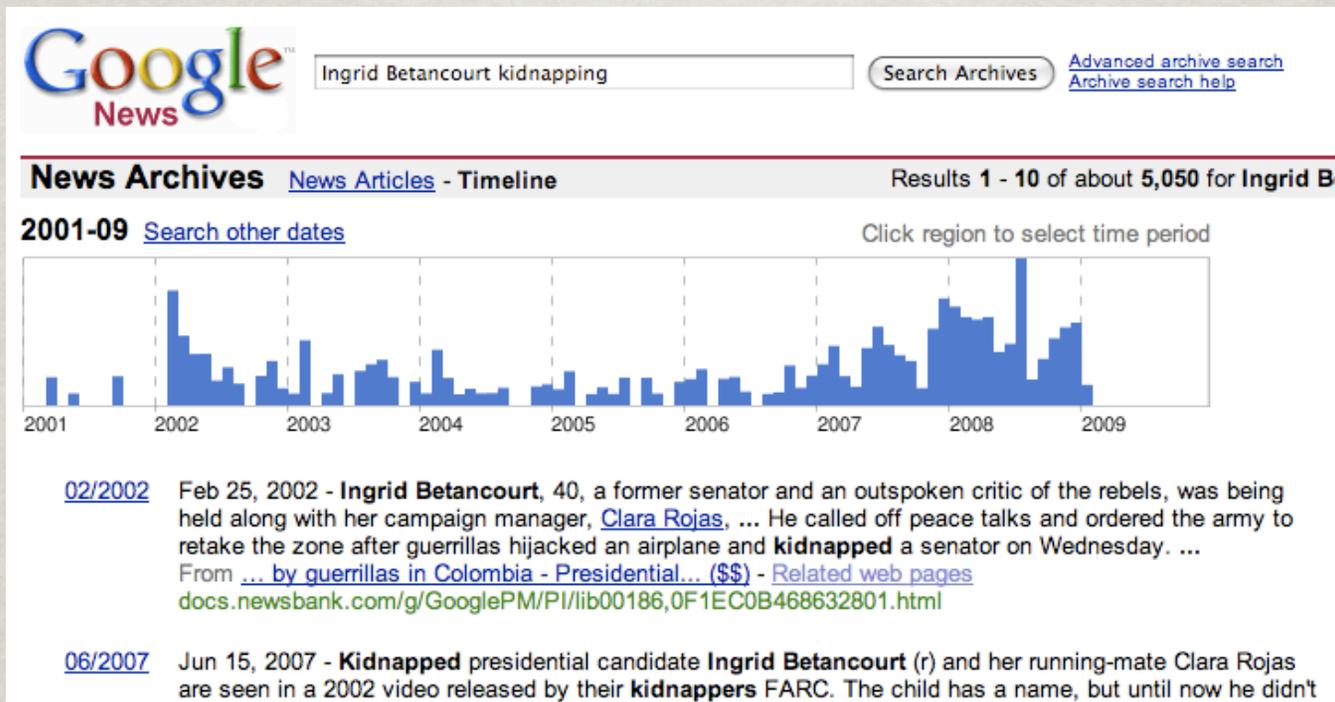
✿ <http://www.nytimes.com/2008/07/02/world/americas/04Colombia.html>

# NEWS SITE SEARCHES

The screenshot shows a Google News search interface. At the top, the Google News logo is on the left, followed by a search bar containing the text "Ingrid Betancourt kidnapping". To the right of the search bar are buttons for "Search Archives" and "Advanced archive search". Below the search bar, the page is titled "News Archives" and shows "Results 1 - 10 of about 3,750". On the left side, there is a navigation menu with options like "Browse Top Stories", "Recent" (with sub-links for "Last hour", "Last day", "Past week", "Past month"), "Archives" (with sub-links for "All dates", "2008", "2007", "2003-05", "2002", "Before 2002", "Other dates"), and "News Alerts". The main content area displays several search results. The first result is titled "UK cocaine users 'helped fund Betancourt kidnapping' claims..." from Times Online, dated Nov 18, 2008. The second result is "... by guerrillas in Colombia - Presidential contender Ingrid..." from Philadelphia Inquirer, dated Feb 25, 2002. The third result is "Key dates in the kidnappings of Ingrid Betancourt and 3 Americans" from International Herald Tribune, dated Nov 30, 2007.

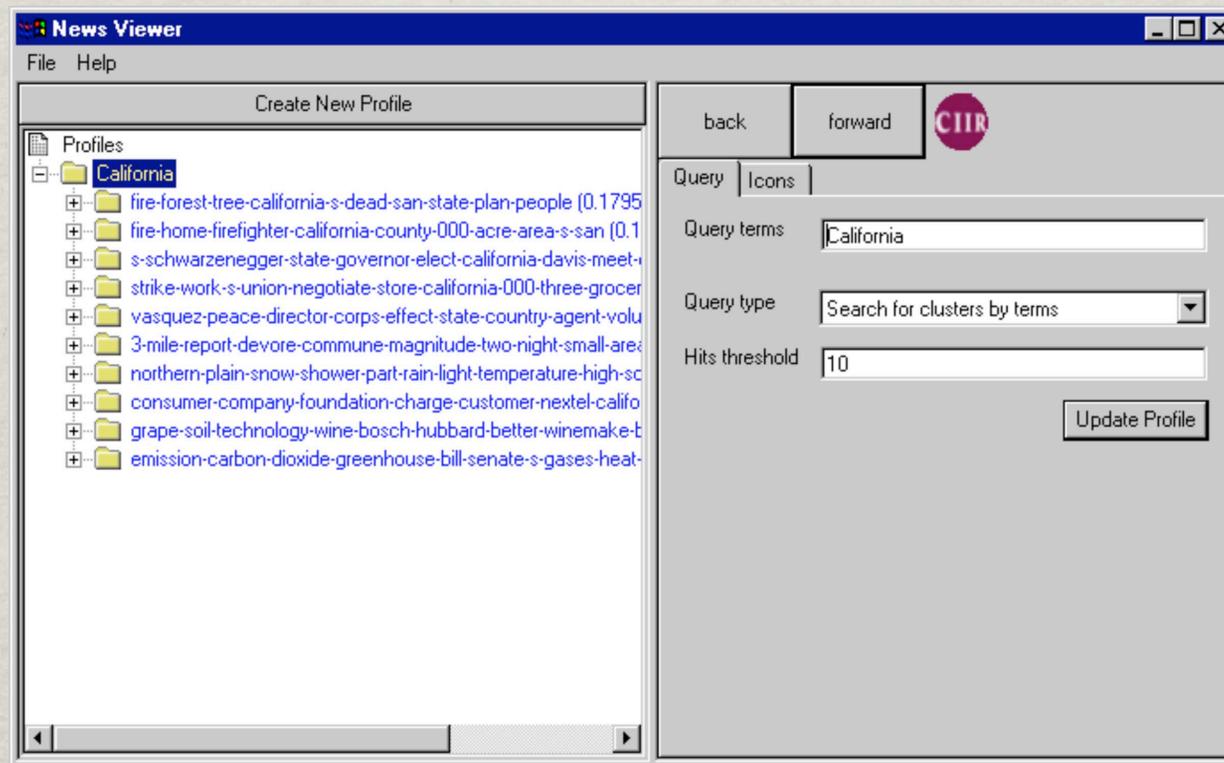
✿ About 3750 article results for “Ingrid Betancourt kidnapping” in clusters

# GOOGLE NEWS ARCHIVE TIMELINES



- ✿ About 5050 dated article results for “Ingrid Betancourt kidnapping”
- ✿ Top ten includes date of abduction and appeal for release among other results in non-chronological order

# TDT EVENT CLUSTERS



- ✻ “Taking Topic Detection From Evaluation to Practice”, Allan et al. HICSS'05

# SITUATION MODEL COMPARISON

Situation Model	Kidnapping	Corporate Acquisition
Participants (Focal)	Victim, Kidnapper Rescuer, Finder	Acquiree, Acquirer Regulator
Events	Abduction Threat Videotape Appeal for Release Release Escape Killing	Talks Offer Announce Gov't Approval Shareholder Approval Close
Semantic Constraints	First: Abduction, Release XOR Killing	Gov't Approval BEFORE Close