

MediaMeter: A Global Monitor for Online News Coverage

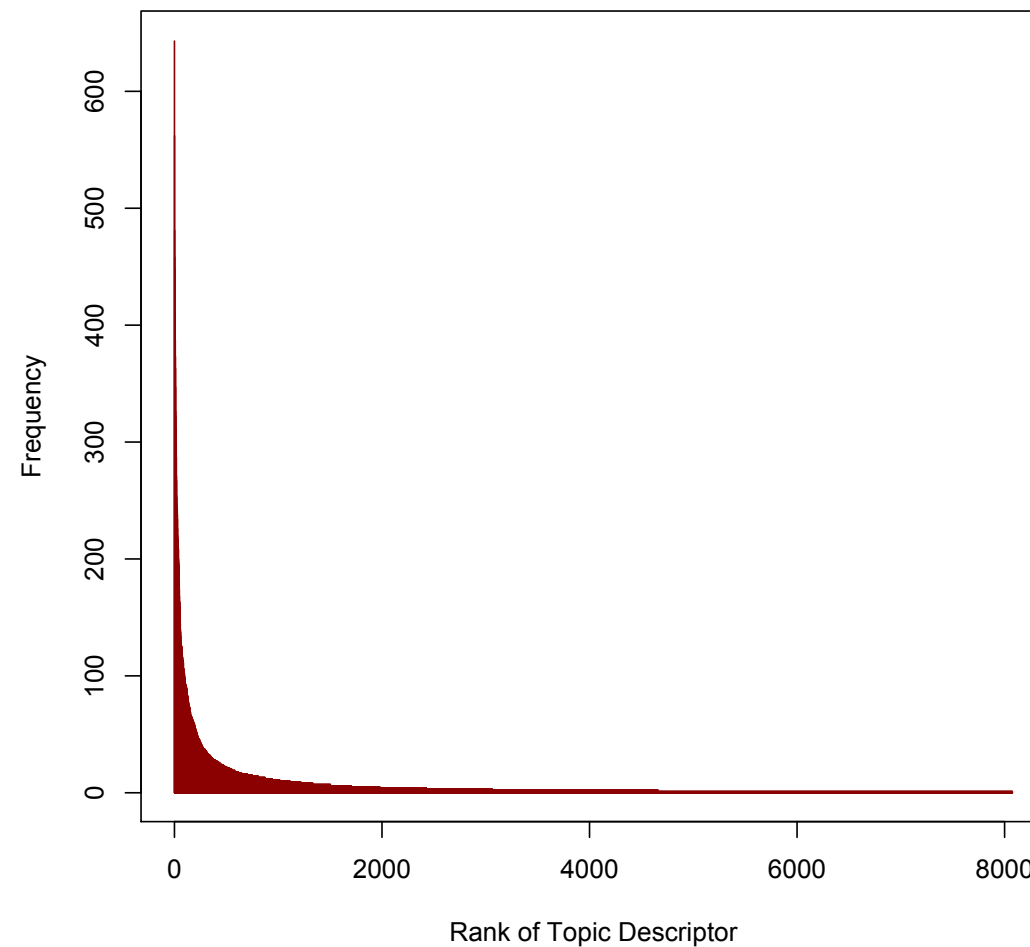
Tadashi Nomoto
National Institute of Japanese Literature

What we are aiming at

Finding novel topics in news streams

So far not much success in the literature
(extraction, machine learning)

Frequencies of (manually assigned) topic descriptors that appeared in the New York Times from June to December, 2013.



1	≤ 2	≤ 5	≤ 10
42.3%	62.0%	78.9%	87.4%

Frequency > 10 : 12.6%

SVM cannot handle a huge taxonomy (Liu, 2005)

The number of unique topics in NYT over 6 months exceeds 8,000.

Memory Based Topic Label
Generation

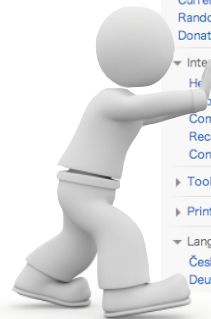
WikiLabel

1. Look up Wikipedia to find pages most relevant to a news story
2. Generate label candidates from page titles
3. Pick those that are deemed most fit to represent the content

WikiLabel: Concept Generation with Wikipedia



WikiLabel: Concept Generation with Wikipedia



WIKIPEDIA The Free Encyclopedia

Article Discussion Read Edit View history Search

European Financial Stability Facility

From Wikipedia, the free encyclopedia

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WIKIPEDIA The Free Encyclopedia

Article Discussion Read Edit View history Search

Greek government debt crisis

From Wikipedia, the free encyclopedia (Redirected from Greek debt crisis)

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WIKIPEDIA The Free Encyclopedia

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European sovereign debt crisis

From Wikipedia, the free encyclopedia

It has been suggested that *PIGS (economics)* be merged into this article or section. (Discuss) Proposed since November 2011.

From late 2009, fears of a sovereign debt crisis developed among investors

WIKIPEDIA The Free Encyclopedia

Article Discussion Read Edit View history Search

Financial crisis

From Wikipedia, the free encyclopedia

For the 2008–2010 crisis, see *Subprime mortgage crisis*, *Late-2000s financial crisis* and *Late-2000s recession*.

The term **financial crisis** is applied broadly to a variety of situations in which some financial institutions or assets suddenly lose a large part of their value. In the 19th and early 20th centuries, many financial crises were associated with banking panics, and many recessions coincided with these panics. Other situations that are often called financial crises include stock market crashes and the bursting of other financial bubbles, currency crises, and sovereign defaults.^{[1][2]} Financial crises directly result in a loss of paper wealth; they do not directly result in changes in the real economy unless a recession or depression follows. Many economists have offered theories about how financial crises develop and how they could be prevented. There is little consensus, however, and financial crises are still a regular occurrence

Log in / create account

WIKIPEDIA The Free Encyclopedia

Article Discussion Read Edit View history Search

European Central Bank

From Wikipedia, the free encyclopedia

The **European Central Bank** is the institution of the European Union (EU) that administers the monetary policy of the 17 EU Eurozone member states. It is thus one of the world's most important central banks. The bank was established by the Treaty of Amsterdam in 1998, and is headquartered in Frankfurt, Germany. The current President of the ECB is Mario Draghi, former governor of the Bank of Italy.

The primary objective of the European Central Bank is to maintain price stability within the Eurozone, which is the same as keeping inflation low. The Governing Council defined price stability as inflation of around 2%. (Harmonised Index of Consumer Prices) Unlike, for example, the United States Federal Reserve Bank, the ECB has only one primary objective with other objectives subordinate to it.

The key tasks of the ECB are to define and implement the monetary policy for the Eurozone, to conduct foreign exchange operations, to take care of the foreign reserves of the European System of Central Banks and promote smooth operation of the financial market infrastructure under the Target payments system and being currently developed technical platform for settlement of securities in Europe (TARGET2 Securities). Furthermore, it has the exclusive right to authorise the issuance of euro banknotes. Member states can issue euro coins but the amount must be authorised by the ECB beforehand (upon the introduction of the euro, the ECB also had exclusive right to issue coins).

On 9 May 2010, the 27 member states of the European Union agreed to incorporate the European Financial Stability Facility. The EFSF's mandate is to safeguard financial stability in Europe by providing financial assistance to Eurozone Member States.

The bank must also co-operate within the EU and internationally with third bodies and entities. Finally it contributes to maintaining a stable financial system and monitoring the banking sector. The latter can be seen, for example, in the bank's intervention during the 2007 credit crisis when it loaned billions of euros to banks to stabilise the financial system.

Although the ECB is governed by European law directly and thus not by corporate law applying to private law companies, its set-up resembles that of a corporation in the sense that the ECB has shareholders and stock capital. Its capital is five billion euro which is held by the national central banks of the member states as shareholders. The initial capital allocation key was determined in 1998 on the basis of the states' population and GDP, but the key is adjustable. Shares in the ECB are not transferable and cannot be

Logo of the European Central Bank

European Central Bank headquarters

Headquarters	Frankfurt am Main, Hesse, Germany
Coordinates	50.1095°N 8.6740°E﻿ / ﻿50.1095°N 8.6740°E﻿ / 50.1095; 8.6740
Established	1 June 1998
President	Mario Draghi
Central bank of	Eurozone [show]
Currency	Euro
ISO 4217 Code	EUR
Reserves	526 billion euro in total [show]
Base borrowing rate	1.25%
Base deposit rate	0.50%
Website	www.ecb.int [i]
Preceded by	17 national banks [show]

Economics

Economies by region [show]

General categories

- Microeconomics · Macroeconomics
- History of economic thought
- Methodology · Mainstream & heterodox

Technical methods

- Mathematical economics
- Game theory · Optimization
- Computational · Econometrics
- Experimental · National accounting

Fields and subfields

- Behavioral · Cultural · Evolutionary
- Growth · Development · History
- International · Economic systems
- Monetary and Financial economics
- Public and Welfare economics
- Health · Education · Welfare
- Population · Labour · Managerial
- Business · Information
- Industrial organization · Law
- Agricultural · Natural resource
- Environmental · Ecological
- Urban · Rural · Regional · Geography

Lists

- Journals · Publications
- Categories · Topics · Economists

Economy: concept and history

Business and Economics Portal

WikiLabel: Concept Generation with Wikipedia



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$$l_{\vec{\theta}}^* = \arg \max_{l: p[l] \in \mathcal{U}} \text{Prox}(p[l], \vec{\theta}|_N),$$

news story
Concept Dictionary

$$\text{Prox}(p[l], \vec{\theta}|_N) = \lambda \text{Sr}(p[l], \vec{\theta}|_N) + (1 - \lambda) \text{Lo}(l, \vec{\theta})$$

content similarity

relevance of label

$$Sr(\mathbf{r}, \mathbf{q}) = \left(1 + \sum_t^N (\mathbf{q}(t) - \mathbf{r}(t))^2 \right)^{-1}$$

$$Lo(l, \mathbf{v}) = \frac{\sum_i^{|l|} I(l[i], \mathbf{v})}{|l|} - 1$$

$$I(w, v) = \begin{cases} 1 & \text{if } w \in v \\ 0 & \text{otherwise.} \end{cases}$$

What if Wikipedia does not know the event

Use sentence compression to generalize

2009 detention of American hikers by Iran

detention

detention by Iran

detention of hikers

detention of hikers by Iran

detention of American hikers by Iran

2009 detention

2009 detention by Iran

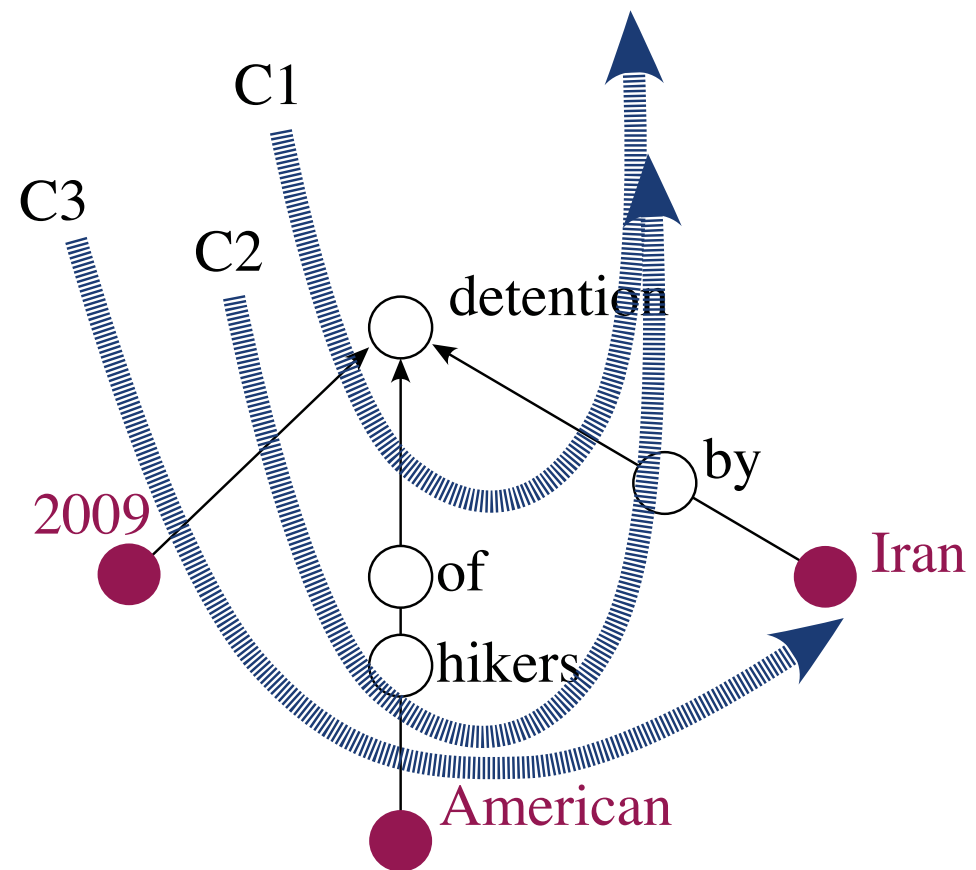
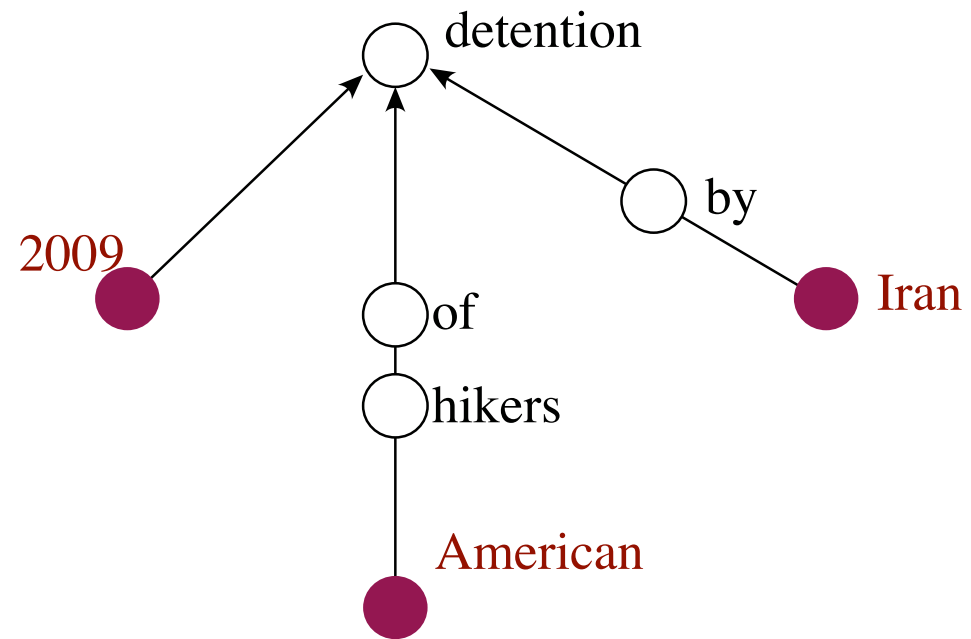
2009 detention of hikers

2009 detention of hikers by Iran

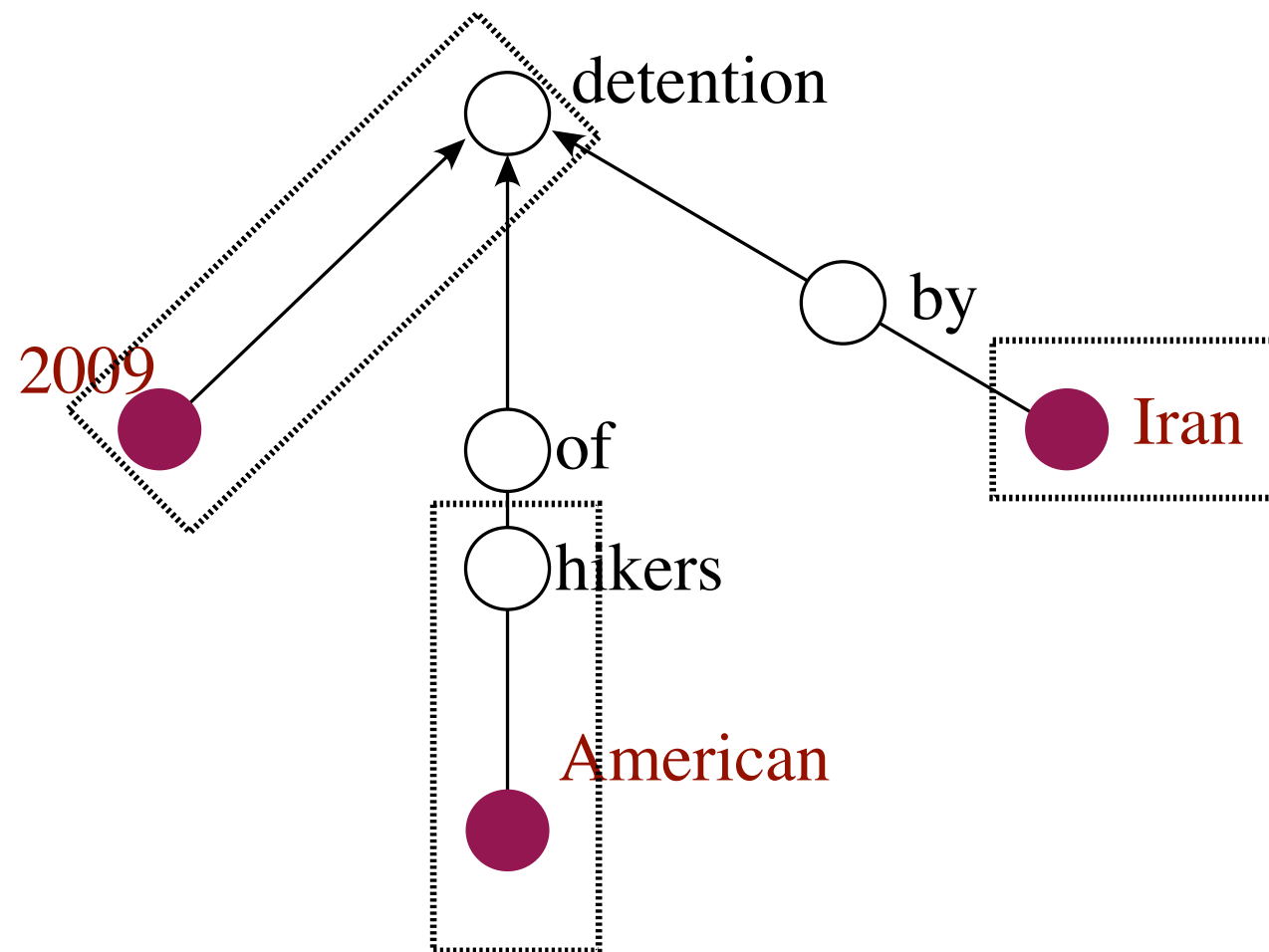
2009 detention of American hikers by Iran

Making it shorter makes it more general

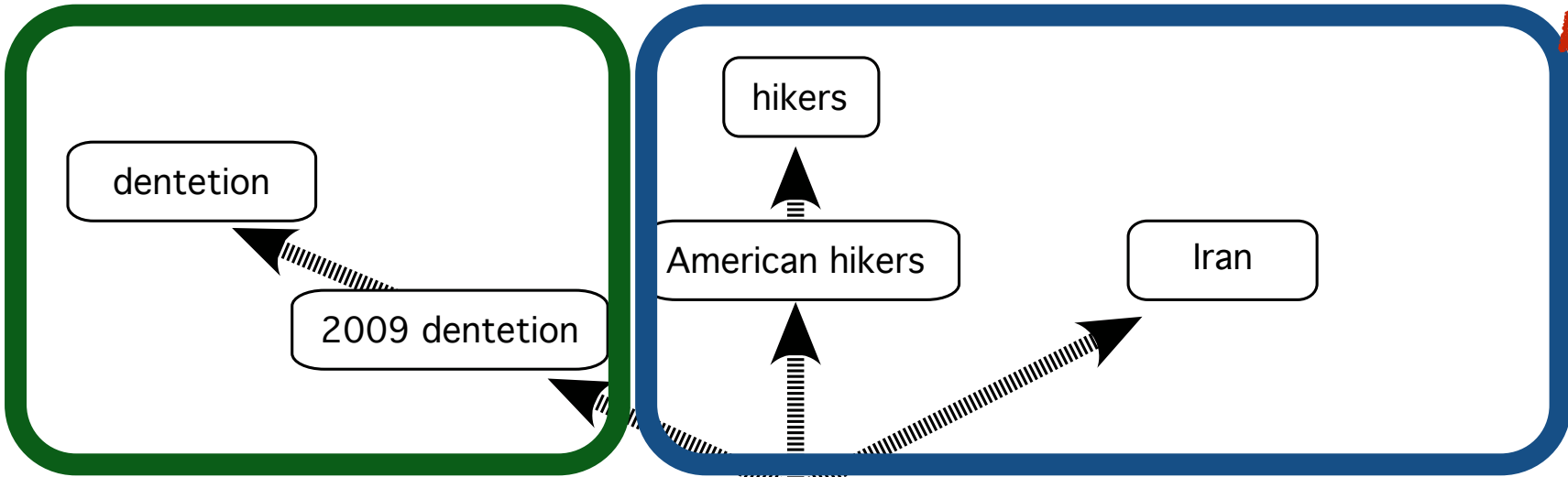
Dependency pruning



Use every NP in the title as a resource



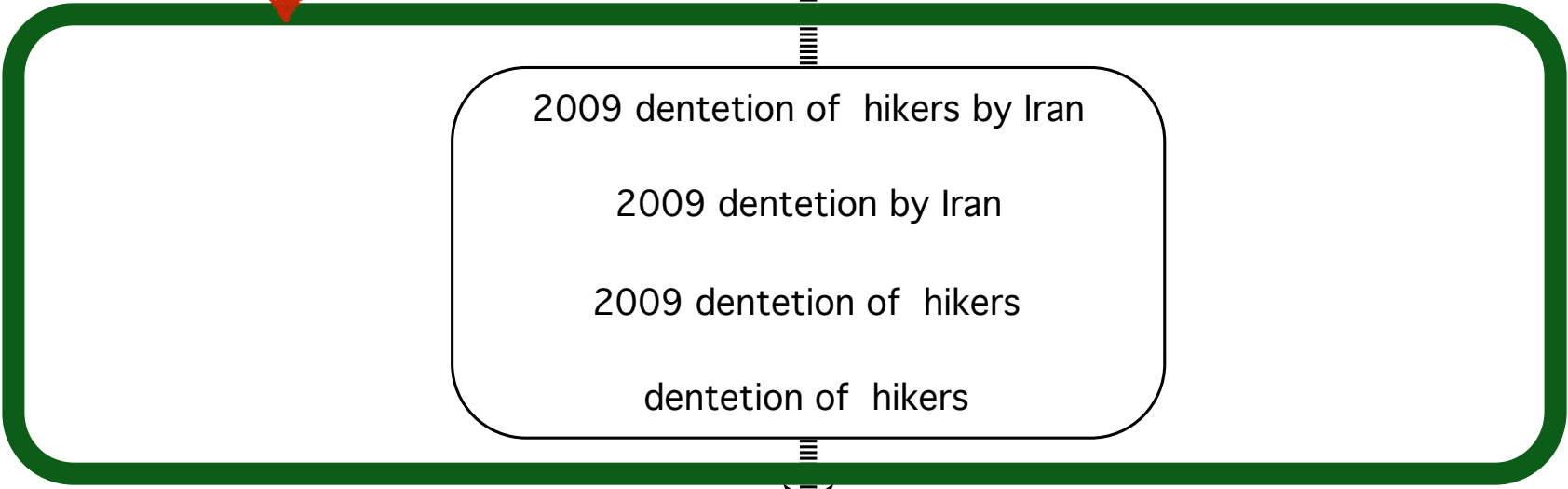
What you get with extension



Original approach

2009 dentetion of American hikers by Iran

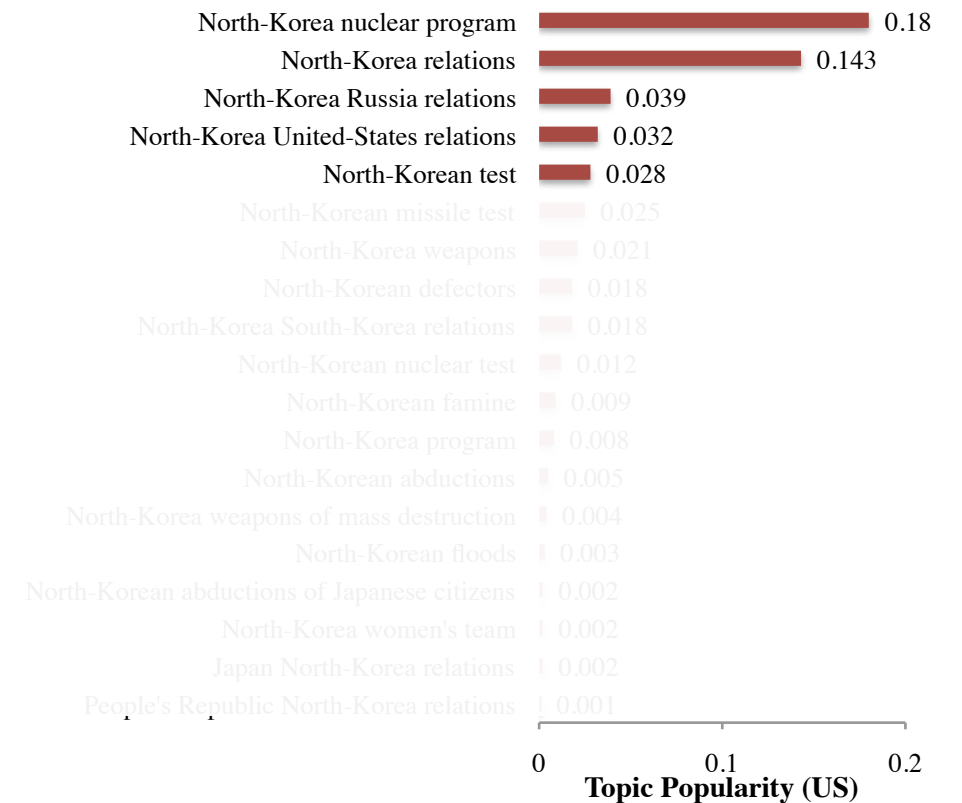
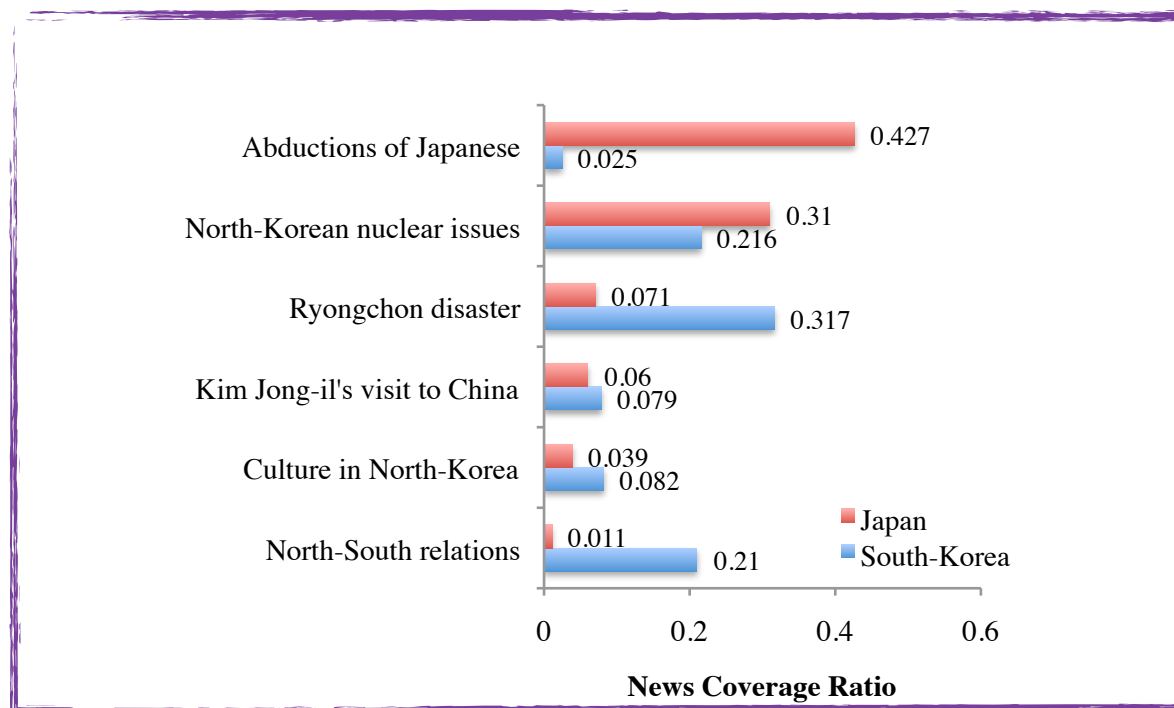
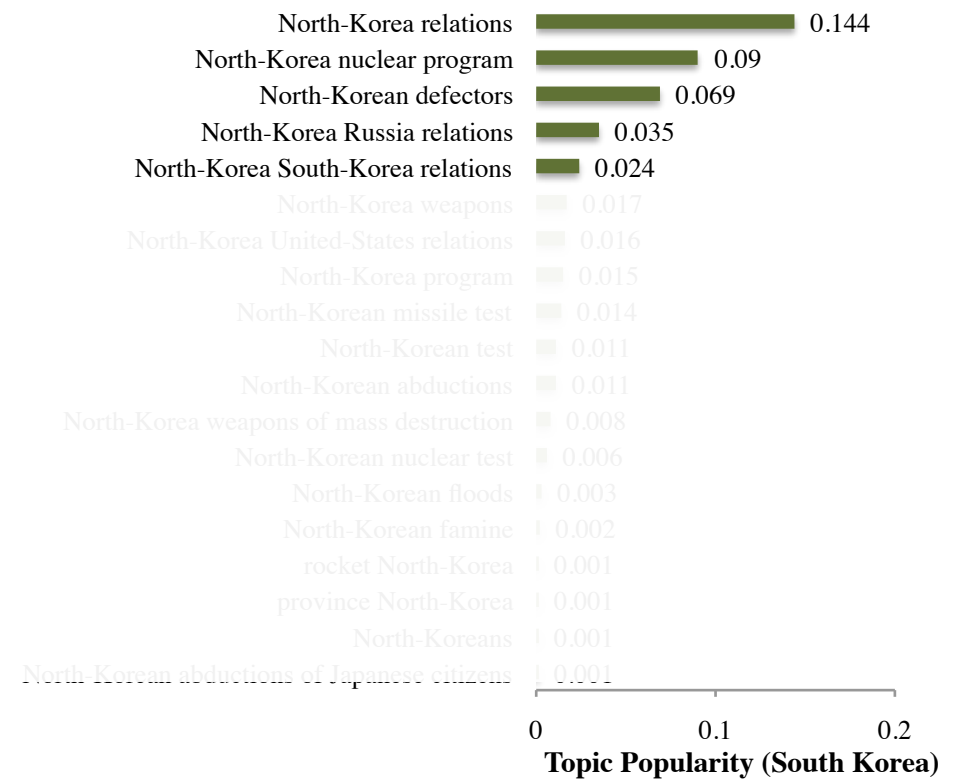
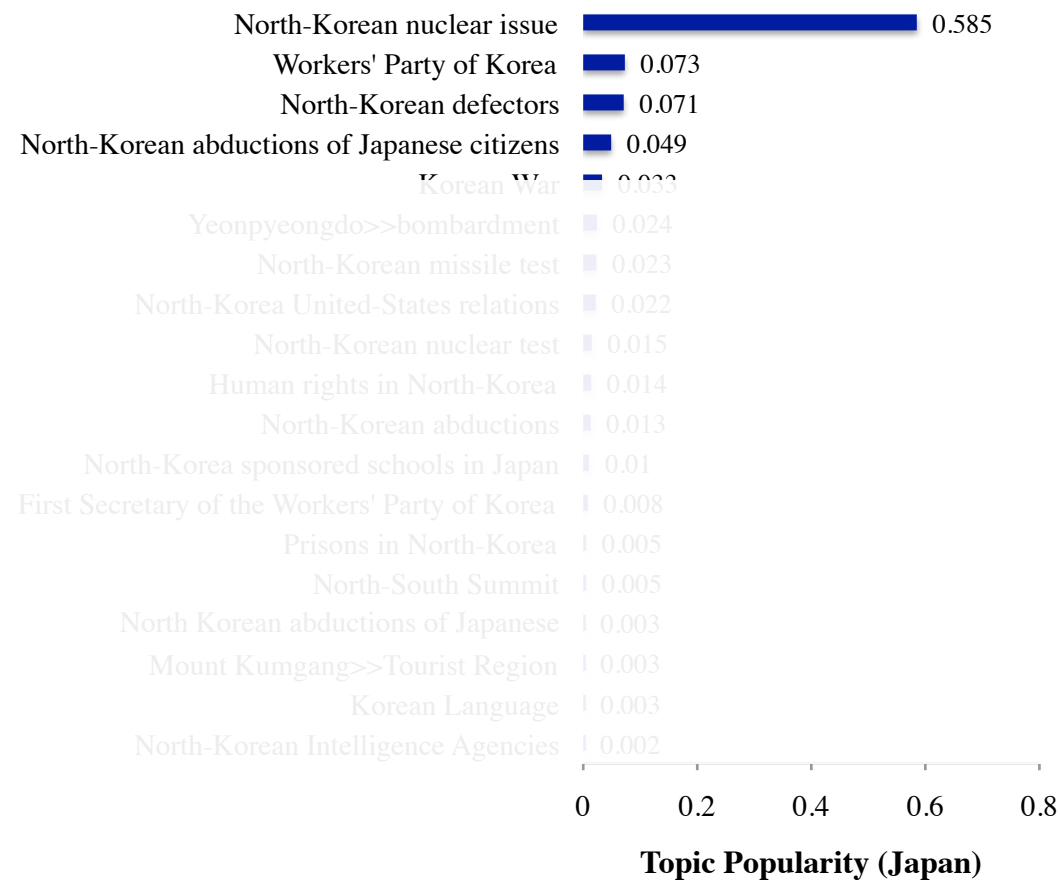
you start here



Testing it out in the field

COUNTRY	MEDIA OUTLETS	#outlets	#stories
US/UK	THE NEW YORK TIMES, YAHOO, CNN, MSNBC, FOX, WASHINGTON POST, ABC, BBC, REUTERS	9	2,230 (239,844)
SOUTH-KOREA	JOONGANG ILBO (English edition), CHOSUN ILBO (English edition)	2	2,271(19,008)
JAPAN	ASAHI, JCAST, JIJI.COM, MAINICHI, NHK, NIKKEI, SANKEI, TBS, TOKYO, TV-ASAHI, YOMIURI	11	2,815 (259,364)

North-Korean Agenda

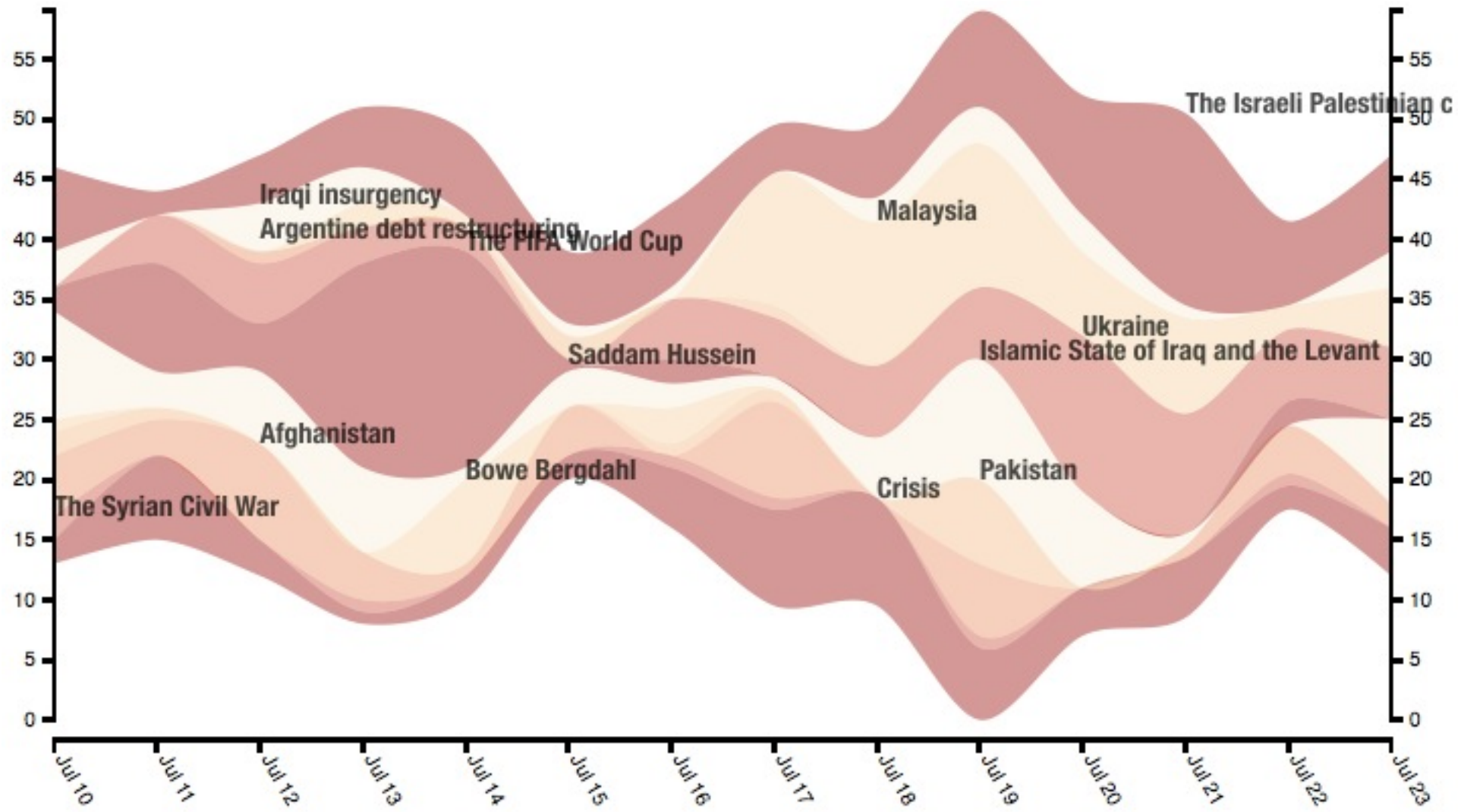


Human Evaluation

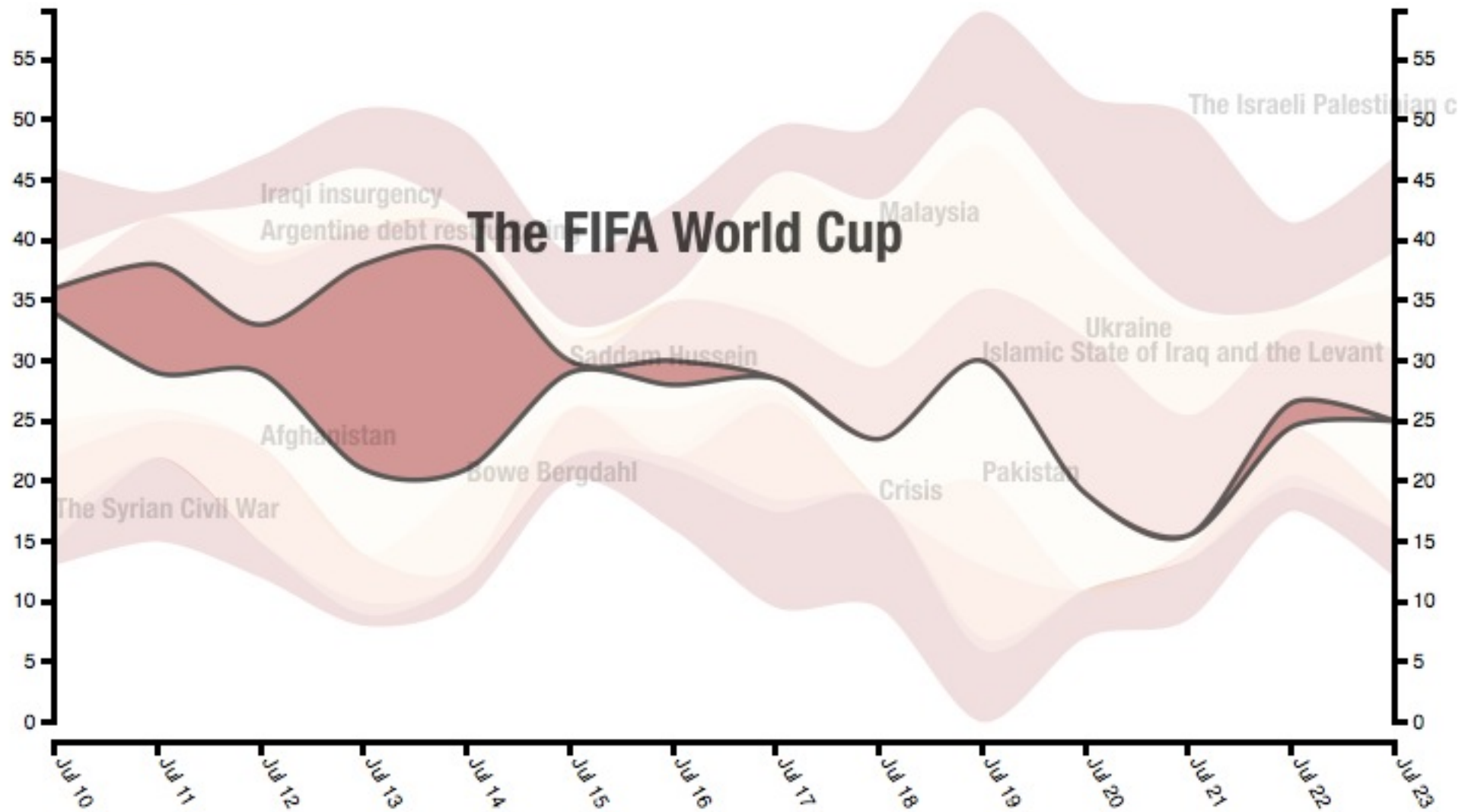
RATING	EXPLANATION
5	Title is one of major topics in Article. Article gives a particular attention to Title.
4	Part of Article deals with Title. Article makes a clear reference to Title.
3	Part of Title has some relevance to a dominant theme of Article. Example: Title 'European Tax System' is partially relevant to an article discussing US Tax System.
2	Article makes a reference to part of Title.
1	Title has no relevance to Article, in whatever way.

LANGUAGE	RATING	#instances
ENGLISH	4.63	97
JAPANESE	4.41	92

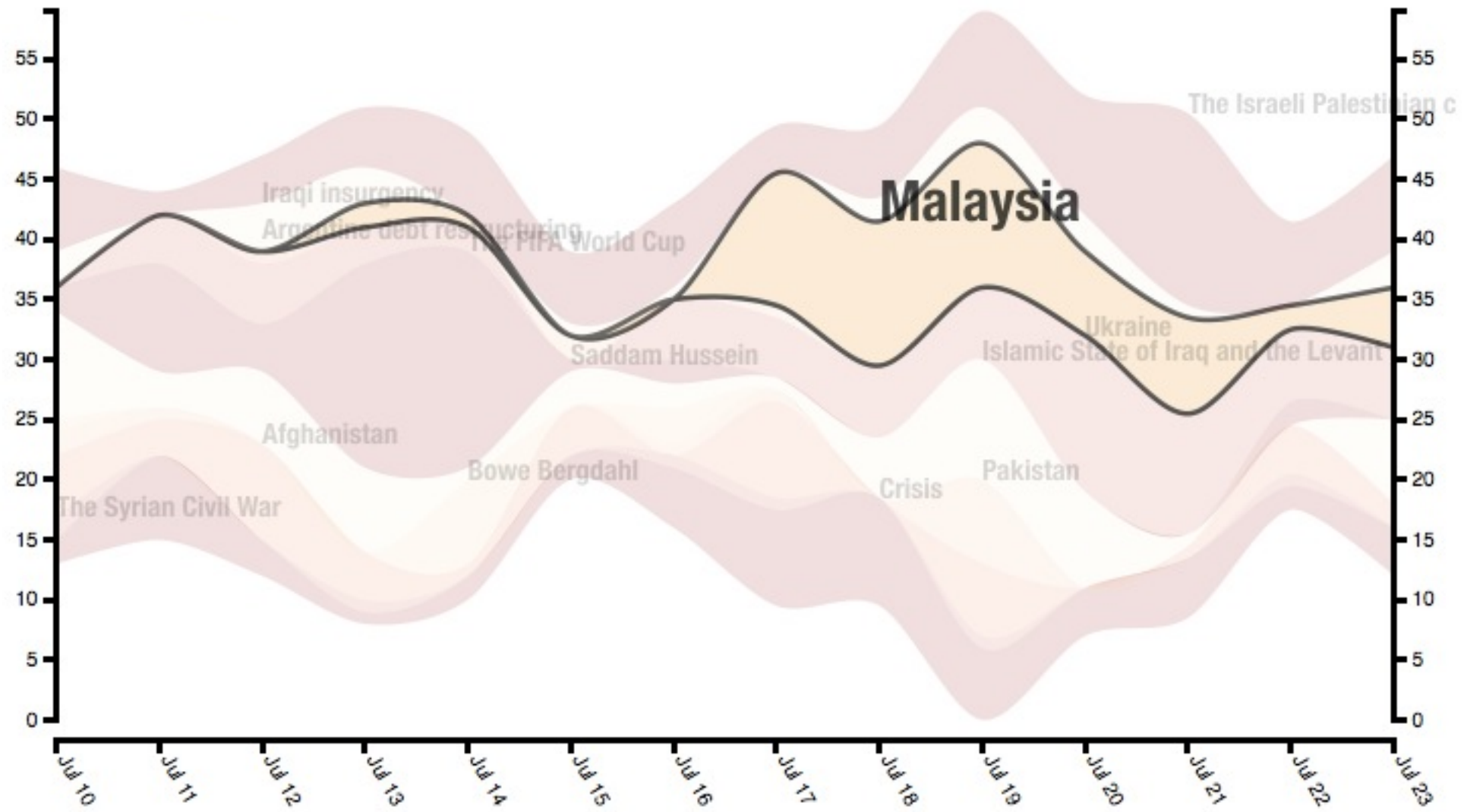
Trending Topics in the US Online News Media



Trending Topics in the US Online News Media



Trending Topics in the US Online News Media



Evaluation Metric: ROUGE-W

s_1	s_2	ROUGE-W
The United States of America	The United States of America	1
The United States	The United States of America	0.529
States	The United States of America	0.077

$$\mathcal{S}(\mathcal{C}|_k, l) = \frac{1}{k} \sum_{c \in \mathcal{C}|_k} \text{ROUGE-W}(c, l)$$

Text Rank vs. WikiLabel

	TRANK	RM ₀	RM ₁	RM ₁ /X
NYT	0.000	0.056	0.056	0.069
TDT	0.030	0.042	0.048	0.051
FOX*	0.231	0.264	0.264	0.298

New York Times (2013) : 19,952

TDT (1994) : 15,863

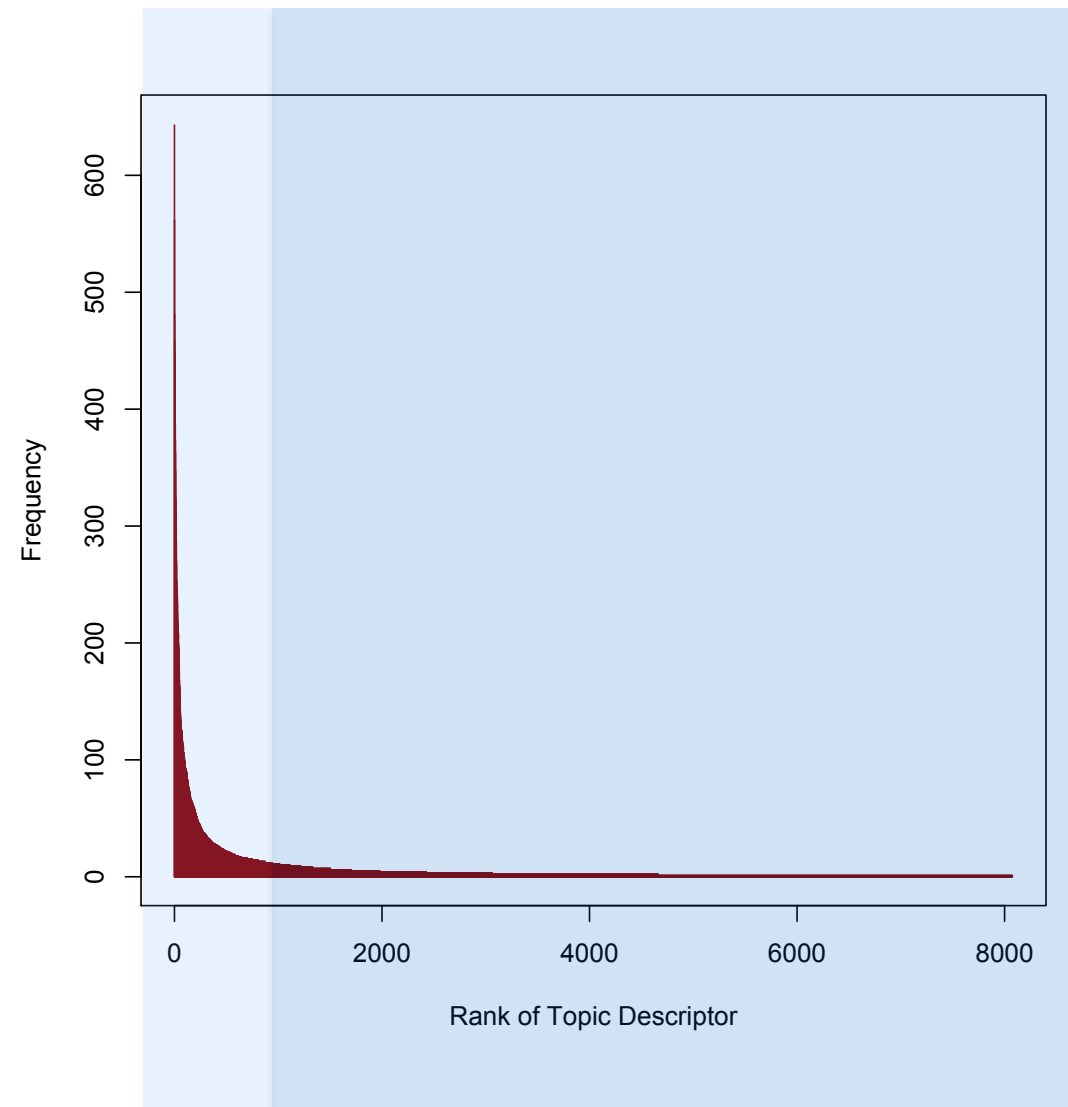
FOX (2015) : 11,014

Wikipedia (2012)

Summary

- Talked about topic detection using WikiLabel
- Leveraging Wikipedia
- Generalizing concept with sentence compression
- Use of sentence compression led to a huge improvement, producing performance twice as good as that of TextRank
- Online topic learning seems promising

Frequencies of (manually assigned) topic descriptors that appeared in the New York Times from June to December, 2013.



WikiLabel  (Online) Learning 