



**OLD DOMINION**  
UNIVERSITY

# **Tools for Managing Seed URIs (Detecting Off-Topic Pages)**

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**Web Archiving Collaboration: New Tools and Models**  
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# Archive-It - Curated Web Collections

Archive-It - Web Archiving

https://archive-it.org

Apps LaTeX Line and Pag... Save to Mendeley WordCounter إداطة القرآن الكريم من ا... إداطة القرآن الكريم من ا... First look - Tableau ...

ARCHIVE-IT HOME EXPLORE LEARN MORE CONTACT US

A web archiving service  
to harvest and preserve digital collections  
a service of the Internet Archive

Welcome to Archive-It!  
Attend a live informational webinar and demo  
to learn more about the service

Contact Us to sign up for an upcoming session:  
Jan 07 2014, 11:30 AM PST  
Jan 21 2014, 11:30 AM PST

Explore Collections Find a Collection by Name Search Show All Collections

**Climate change and environmental policy**  
By Stanford University, Social Sciences Resource Group  
Stanford University's Social Science Resource Group's collection on Intergovernmental and Non-governmental Organizations that focus on the environmental policy of...

**Columbia University Human Rights Web Archive**  
By Columbia University Libraries  
This collection is dedicated to preserving web-based information of importance to the global community of human rights researchers, students, policymakers and advocates

**Government in Alaska Web Archive**  
By Alaska State Library  
Curated by the Alaska State Library is this rich collection of state and regional government agency websites.

> 3,000  
collections

~340  
institutions

> 10B archived  
pages

# Archive-It Interface - Curator's View

The screenshot shows the Archive-It Curator's View interface for the 'Egyptian Revolution (The beginning)' collection. The browser address bar shows the URL: <https://partner.archive-it.org/archiveit/partner/collection/home.html?collectionId=4316&acc>. The page features a blue header with the Archive-It logo and navigation links: Home, Collections, Crawls, Reports, Access, Help Documentation, and Submit a Question. The main content area is divided into several sections:

- Egyptian Revolution (The beginning) Edit**: Includes a 'Publicly visible?' checkbox (checked), creation and update dates (Jan 26, 2014 7:09:25 PM), and 'Collection Management' options: [Activate], [Deactivate], [Mark Dormant], and an XML button.
- Collection Management**: A sidebar menu with links: Add Seeds, Modify Crawl Scope, Edit Collection Metadata, Edit Document Metadata, View Reports, and View Missing URLs from Wayback QA.
- Seed Management**: A table showing seed states and crawl frequencies.
- Crawling Activity**: A table showing the last completed crawl and the next scheduled crawl.
- Help**: A section explaining the Collection Management page and providing links to learn more about managing collections and starting crawls on demand.
- Frequently Asked Questions**: A list of common questions and their answers.

At the bottom, the footer includes the text 'Internet Archive - Archive-It Web UI 4.8-SNAPSHOT-prod-20131105-1851' and a search bar with links for Help, Settings, Archive This!, and Submit a Support Question.

by seed state:	by crawl frequency:	
All (5)	Twice Daily (0)	Quarterly (0)
Active (5)	Daily (5)	Semiannual (0)
Inactive (0)	Weekly (0)	Annual (0)
	Monthly (0)	One-Time (0)
	Bi-monthly (0)	

Frequency	Last Completed Crawl	Next Scheduled Crawl	
Daily	<a href="#">January 26, 2014 7:15:13 PM EST</a>	<a href="#">January 27, 2014 7:11:57 PM EST</a>	<a href="#">Start Crawl Now</a>

# The collection curator specifies seed URIs

Archive-It: Add Seeds

https://partner.archive-it.org/archiveit/partner/createCollection/addSeeds.html?acc...

Welcome yasmin | Help Documentation | Admin | Settings | Archive This! | Log Out | Reset Password | English | Español

## Add Seeds

Previous Next Cancel

Please enter one seed URL per line. Seeds are the starting point urls which the crawler (Heritrix) uses to start archiving content. Please read our [help documentation](#) for more information on seed selection guidelines and scoping (how much of the site will be crawled).

Note:

- You do not need to prefix your urls with http:// although it's fine if you do
- You usually should include a / at the end of your seed URL, unless your seed is the address to a specific page/file (meaning it ends with a file extension such as .html or .pdf)
- If a url contains a # sign, the part of the url after the # will be ignored by the crawler, which can significantly change how much of your seed url is crawled.
- You usually will want to use the 'Default' seed type, but read further about [Seed Types](#) to learn about the other options.

Specify seed type:  Default  News/RSS feed  Crawl one page only

Adding Seeds

Please enter one seed URL per line. Seeds are the starting point urls which the crawler (Heritrix) uses to start archiving content. Please read our [help documentation](#) for more information on seed selection guidelines and scoping (how much of the site will be crawled).

- [Learn more about selecting Archive-It seeds and crawl scope](#)
- [Learn more about Seed Types](#)

# Curators specify the breadth and depth of the crawl

The image displays two screenshots from the Archive-It interface, illustrating how curators specify the breadth and depth of a crawl.

**Left Screenshot: Specify Frequency**

The URL is <https://partner.archive-it.org/archiveit/partner/createCollection/schedule.html?acc...>

The page title is "Specify Frequency".

Instructions: "Specify the initial crawl frequency for your seeds by choosing one of the options below. Once your collection has been created, you can go to the collection management page to change the crawl frequency for some or all of your seeds."

Options (radio buttons):

- One-Time
- Twice Daily
- Daily
- Weekly
- Monthly
- Bi-monthly
- Quarterly
- Semiannual
- Annual

Buttons: Previous, Next, Cancel

Additional text: "Once the collection has been created, you will have the option to run a test crawl."

**Right Screenshot: Egyptian Revolt**

The URL is <https://partner.archive-it.org/archiveit/partner/collection/seed/settings.html?seedId...>

The page title is "Egyptian Revolt".

URLs listed: [http://www.huffingtonpost.com/2010/02/19/mohamed-elbaradei-egypt-r\\_n\\_468970.html](http://www.huffingtonpost.com/2010/02/19/mohamed-elbaradei-egypt-r_n_468970.html)

Updated: Jan 26, 2014 7:09 PM by yasmin

Settings tab is active.

Frequency: Daily

Activation Status: Active (Deactivate button)

Status On Live Web: Unchecked (Verify Now button)

Public Site:  Show on public site

Seed Type: Default (Dropdown menu open showing: Default, News/RSS feed, Crawl one page only, Create New Group)

Group: [Empty]

# Current tools measure HTTP events, not “aboutness”

The screenshot shows a web browser window displaying the Archive-It Crawl Report for 'Egyptian Revolution (The beginning)'. The report is titled 'Daily (ID #20140127001203292)' and was started on January 26, 2014, at 7:12:03 PM, and completed at 7:15:13 PM. The interface includes a navigation menu with options like Home, Collections, Crawls, Reports, Access, Help Documentation, and Submit a Question. A 'File Types' tab is selected, showing a table of file types and their corresponding URLs and data sizes. A 'Help on Reports' sidebar on the right provides additional information and links to learn more about reports, host reports, robots.txt, and QA reports.

**Egyptian Revolution (The beginning)** **Crawl Report**  
Daily (ID #20140127001203292)  
Started: January 26, 2014 7:12:03 PM  
Completed: January 26, 2014 7:15:13 PM

[<< Back to Reports](#) [Scope-It Crawl Explorer](#)

Summary Hosts Seed Status Seed Source **File Types** PDFs Videos QA

**File Types** [Download](#)

The File Types report shows how many URLs were captured for each specified file type as well as the total amount of data for the archived documents.

Click on the linked numbers in the URLs column to see what URLs were crawled for that file type. Please note that the file types were provided by the web designer.

File Type	URLs	Data
text/html	<a href="#">392</a>	7.0 MB
text/dns	<a href="#">63</a>	9.1 KB
text/plain	<a href="#">48</a>	63 KB
image/jpeg	<a href="#">38</a>	1.0 MB
application/x-javascript	<a href="#">28</a>	2.2 MB
image/gif	<a href="#">23</a>	53 KB
unknown	<a href="#">17</a>	1.0 KB
image/png	<a href="#">14</a>	61 KB
text/css	<a href="#">13</a>	1.2 MB
application/javascript	<a href="#">11</a>	816 KB
image/x-icon	<a href="#">11</a>	18 KB
application/xml	<a href="#">8</a>	4.2 KB
text/xml	<a href="#">6</a>	297 KB
text/javascript	<a href="#">5</a>	97 KB
application/ison	<a href="#">4</a>	2.1 KB

**Help on Reports**

Archive-It provides eight post crawl downloadable reports to assist partners in analyzing and understanding the data that has been archived. The reports can be downloaded as CSV files so they can be easily opened in Excel.

- [Learn more about reports](#)
- [Learn more about the host report](#)
- [Learn more about robots.txt](#)
- [Learn more about the QA Report](#)

# Pages can go off-topic through time

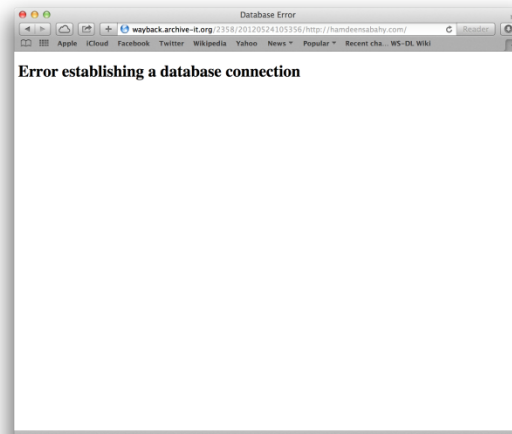


May 13, 2012: The page started as on-topic.

# Pages can go off-topic through time



May 13, 2012: The page started as on-topic.



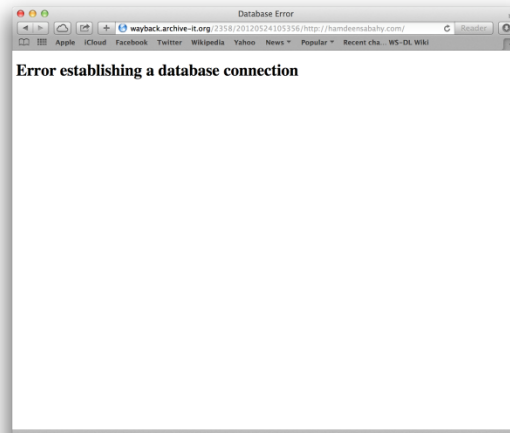
May 24, 2012: Off-topic due to a database error.



# Pages can go off-topic through time



May 13, 2012: The page started as on-topic.



May 24, 2012: Off-topic due to a database error.

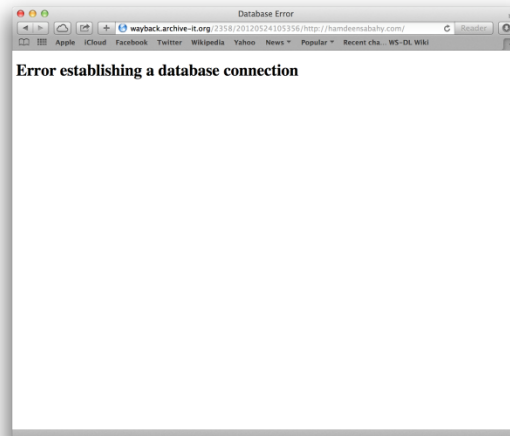


Mar. 21, 2013: Not working because of financial problems.

# Pages can go off-topic through time



May 13, 2012: The page started as on-topic.



May 24, 2012: Off-topic due to a database error.



Mar. 21, 2013: Not working because of financial problems.



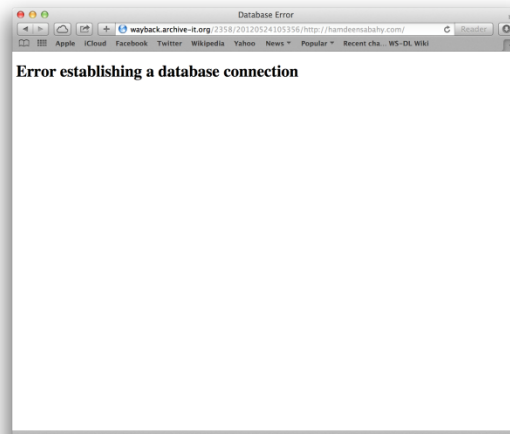
May 21, 2013: On-topic again

[http://wayback.archive-it.org/2358/\\*/http://hamdeensabahy.com](http://wayback.archive-it.org/2358/*/http://hamdeensabahy.com)

# Pages can go off-topic through time



May 13, 2012: The page started as on-topic.



May 24, 2012: Off-topic due to a database error.



Mar. 21, 2013: Not working because of financial problems.



May 21, 2013: On-topic again



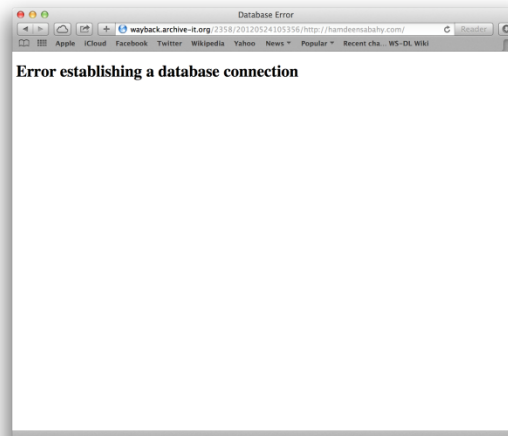
June 5, 2014: The site has been hacked

[http://wayback.archive-it.org/2358/\\*](http://wayback.archive-it.org/2358/*)/<http://hamdeensabahy.com>

# Over 60% of hamdeensabahy.com archived versions (266) are off-topic



May 13, 2012: The page started as on-topic.



May 24, 2012: Off-topic due to a database error.



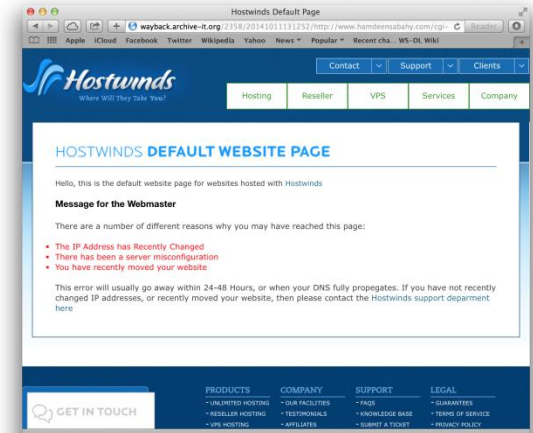
Mar. 21, 2013: Not working because of financial problems.



May 21, 2013: On-topic again



June 5, 2014: The site has been hacked



Oct. 10, 2014: The domain has expired.

[http://wayback.archive-it.org/2358/\\*](http://wayback.archive-it.org/2358/*)/<http://hamdeensabahy.com>

# Social media pages can go off-topic

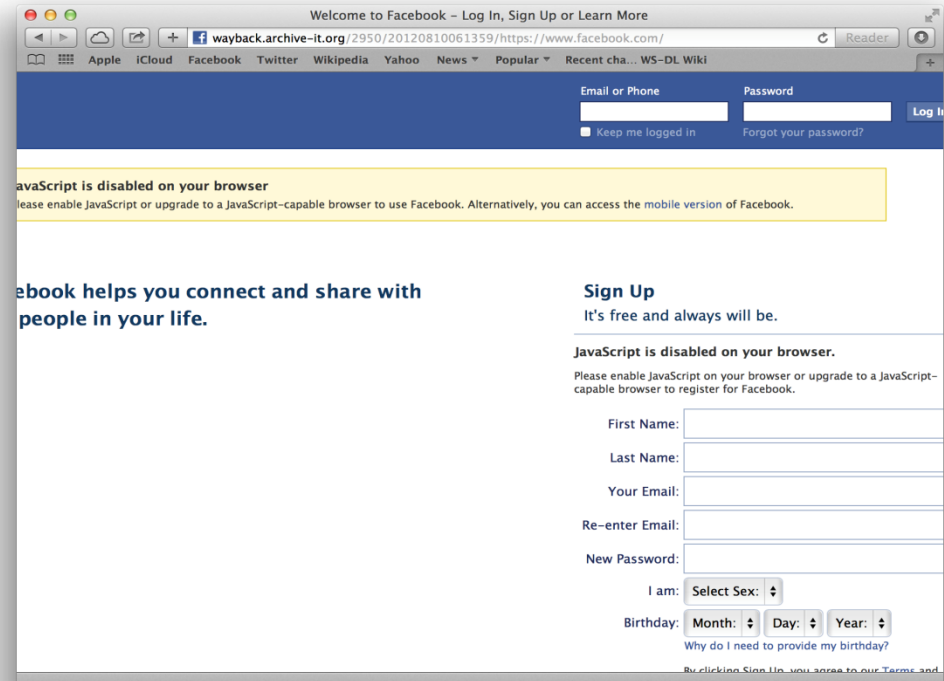


**Dec. 22, 2011: Facebook page was relevant to the Occupy collection**

# Social media pages can go off-topic



**Dec. 22, 2011: Facebook page was relevant to the Occupy collection**



**Aug. 10, 2012: URI redirects to www.facebook.com**

# Classifying web page behavior over time

# A TimeMap is the list of a URI-R's mementos

wayback.archive-it.org/2358/\*http://hamdeensabahy.com

**Egypt Revolution and Politics Web Archive (American University in Cairo)**

INTERNET ARCHIVE  
**WayBackMachine**

Enter Web Address:  All

Searched for <http://hamdeensabahy.com> 226 Results [RSS](#)  
[Look up URL](#) in general Internet Archive web collection [Proxy Mode Help](#)

\* denotes when page was updated

Found 226 Captures between May 13, 2012 - Oct 11, 2014		
2012	2013	2014
35 pages	50 pages	141 pages
<a href="#">May 13, 2012</a> *	<a href="#">Jan 3, 2013</a>	<a href="#">May 21, 2014</a> *
<a href="#">May 20, 2012</a> *	<a href="#">Jan 10, 2013</a>	<a href="#">May 22, 2014</a> *
<a href="#">May 22, 2012</a> *	<a href="#">Jan 17, 2013</a>	<a href="#">May 23, 2014</a> *
<a href="#">May 24, 2012</a> *	<a href="#">Jan 24, 2013</a>	<a href="#">May 24, 2014</a> *
<a href="#">May 31, 2012</a> *	<a href="#">Jan 31, 2013</a>	<a href="#">May 25, 2014</a> *
<a href="#">Jun 7, 2012</a> *	<a href="#">Feb 7, 2013</a>	<a href="#">May 26, 2014</a> *
<a href="#">Jun 14, 2012</a> *	<a href="#">Feb 15, 2013</a>	<a href="#">May 27, 2014</a> *
<a href="#">Jun 21, 2012</a> *	<a href="#">Feb 21, 2013</a>	<a href="#">May 28, 2014</a> *
<a href="#">Jun 28, 2012</a> *	<a href="#">Feb 28, 2013</a>	<a href="#">May 29, 2014</a> *
<a href="#">Jul 5, 2012</a> *	<a href="#">Mar 7, 2013</a>	<a href="#">May 30, 2014</a> *
<a href="#">Jul 12, 2012</a> *	<a href="#">Mar 14, 2013</a>	<a href="#">May 31, 2014</a> *
<a href="#">Jul 19, 2012</a> *	<a href="#">Mar 21, 2013</a> *	<a href="#">Jun 1, 2014</a> *

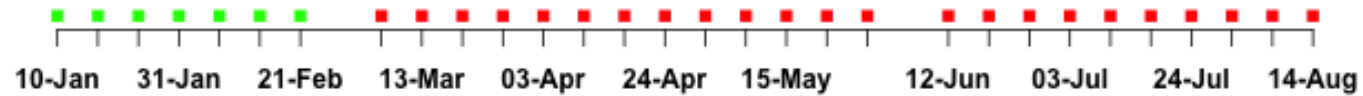


# We identified 5 types of TimeMaps

## 1. Always On



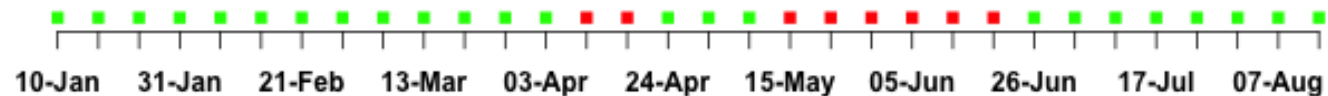
## 2. Step Function On



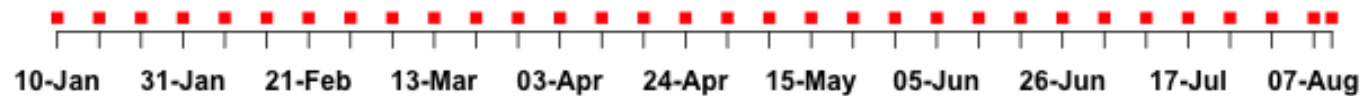
## 3. Step Function Off



## 4. Oscillating



## 5. Always Off



1. [wayback.archive-it.org/2950/\\*/http://occupypsl.org](http://wayback.archive-it.org/2950/*/http://occupypsl.org)
2. [wayback.archive-it.org/2950/\\*/http://occupygso.tumblr.com](http://wayback.archive-it.org/2950/*/http://occupygso.tumblr.com)
3. [wayback.archive-it.org/2950/\\*/http://occupyashland.com](http://wayback.archive-it.org/2950/*/http://occupyashland.com)
4. [wayback.archive-it.org/2950/\\*/http://www.indyows.org](http://wayback.archive-it.org/2950/*/http://www.indyows.org)
5. [wayback.archive-it.org/2950/\\*/http://occupy605.com](http://wayback.archive-it.org/2950/*/http://occupy605.com)

# A web page goes off-topic (Step Function On)

Internet Archive Wayback x

← → ↻ 🏠 [https://wayback.archive-it.org/2358/\\*/http://www.7amla.net/](https://wayback.archive-it.org/2358/*/http://www.7amla.net/) 🌐 ⭐ 📌 🌟 ☰

**Egypt Revolution and Politics Web Archive (American University in Cairo)** INTERNET ARCHIVE WaybackMachine

Enter Web Address:  All ▾ Take Me Back

Searched for <http://www.7amla.net/> 24 Results [RSS](#) [Metadata](#)  
[Look up URL](#) in general Internet Archive web collection [Proxy Mode Help](#)

\* denotes when page was updated

**Found 24 Captures between Mar 7, 2011 - Jan 30, 2012**

2011	2012
19 pages	5 pages

[Mar 7, 2011](#) \*

[Mar 7, 2011](#)

[Mar 14, 2011](#) \*

[Mar 14, 2011](#)

[Aug 3, 2011](#) \*

[Aug 14, 2011](#) \*

[Aug 28, 2011](#) \*

[Jan 2, 2012](#) \*

[Jan 9, 2012](#) \*

[Jan 16, 2012](#) \*

[Jan 23, 2012](#) \*

[Jan 30, 2012](#) \*

[Sep 11, 2011](#)

[Oct 9, 2011](#) \*

[Nov 17, 2011](#) \*

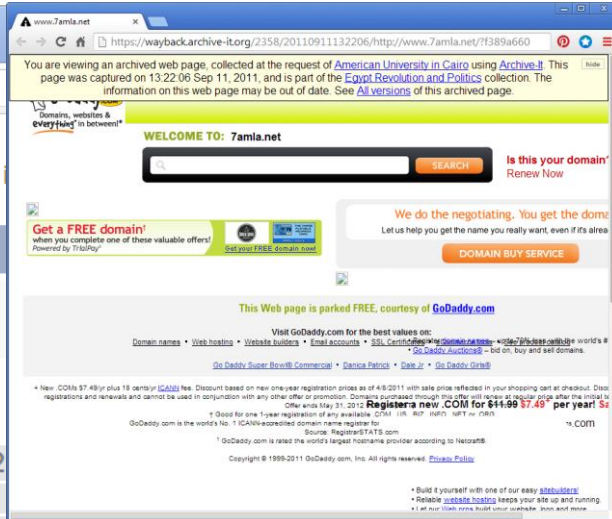
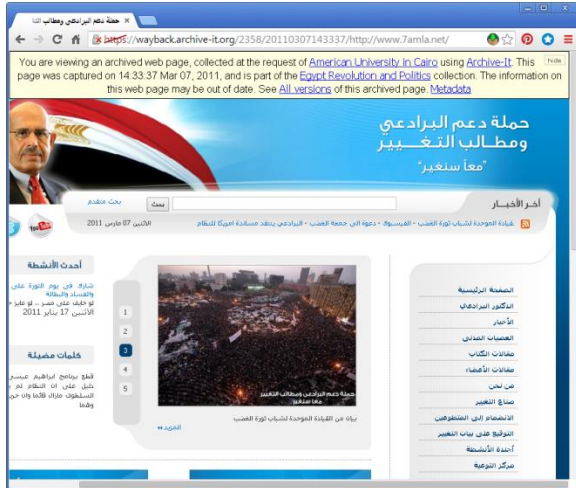
[Nov 20, 2011](#) \*

[Nov 22, 2011](#) \*

**On-topic: Egyptian Revolution coverage**

**Off-topic: the domain registration is lost**

# A web page goes off-topic (Step Function On)



Off-topic: the domain registration is lost

# A web page goes off-topic and on-topic many times (Oscillating)

Internet Archive Wayback Machine

Search for [http://www.bbc.co.uk/news/world/middle\\_east/](http://www.bbc.co.uk/news/world/middle_east/) in general Internet Archive web collection

627 Results [RSS](#) [Metadata](#) [Proxy Mode Help](#)

\* denotes when page was updated

Found 627 Captures between Feb 1, 2011 - Feb 6, 2014

2011	2012	2013	2014
28 pages	317 pages	270 pages	12 pages
<a href="#">Feb 1, 2011</a> *	<a href="#">Jan 2, 2012</a> *	<a href="#">Jan 1, 2013</a> *	<a href="#">Jan 26, 2014</a> *
<a href="#">Feb 1, 2011</a> *	<a href="#">Jan 9, 2012</a> *	<a href="#">Jan 2, 2013</a> *	<a href="#">Jan 27, 2014</a> *
<a href="#">Feb 2, 2011</a> *	<a href="#">Jan 16, 2012</a> *	<a href="#">Jan 3, 2013</a> *	<a href="#">Jan 28, 2014</a> *
<a href="#">Feb 4, 2011</a> *	<a href="#">Jan 23, 2012</a> *	<a href="#">Jan 4, 2013</a> *	<a href="#">Jan 29, 2014</a> *
<a href="#">Feb 5, 2011</a> *	<a href="#">Jan 30, 2012</a> *	<a href="#">Jan 5, 2013</a> *	<a href="#">Jan 30, 2014</a> *
<a href="#">Feb 7, 2011</a> *	<a href="#">Feb 22, 2012</a> *	<a href="#">Jan 6, 2013</a> *	<a href="#">Jan 31, 2014</a> *
<a href="#">Feb 9, 2011</a> *	<a href="#">Feb 23, 2012</a> *	<a href="#">Jan 7, 2013</a> *	<a href="#">Feb 1, 2014</a> *
<a href="#">Feb 11, 2011</a>	<a href="#">Feb 24, 2012</a> *	<a href="#">Jan 8, 2013</a> *	<a href="#">Feb 2, 2014</a> *
<a href="#">Feb 11, 2011</a>	<a href="#">Feb 25, 2012</a> *	<a href="#">Jan 9, 2013</a> *	<a href="#">Feb 3, 2014</a> *
<a href="#">Feb 13, 2011</a>	<a href="#">Feb 26, 2012</a> *	<a href="#">Jan 10, 2013</a> *	<a href="#">Feb 4, 2014</a> *

Off-topic: news about Iraq

Off-topic: Palestine

On-topic: Egyptian Revolution coverage

Off-topic: news about Syria

On-topic: Egypt news

# A web page goes off-topic and on-topic many times (Oscillating)

Politics Web Archive (American University in Cairo)

ff-topic: news about Iraq

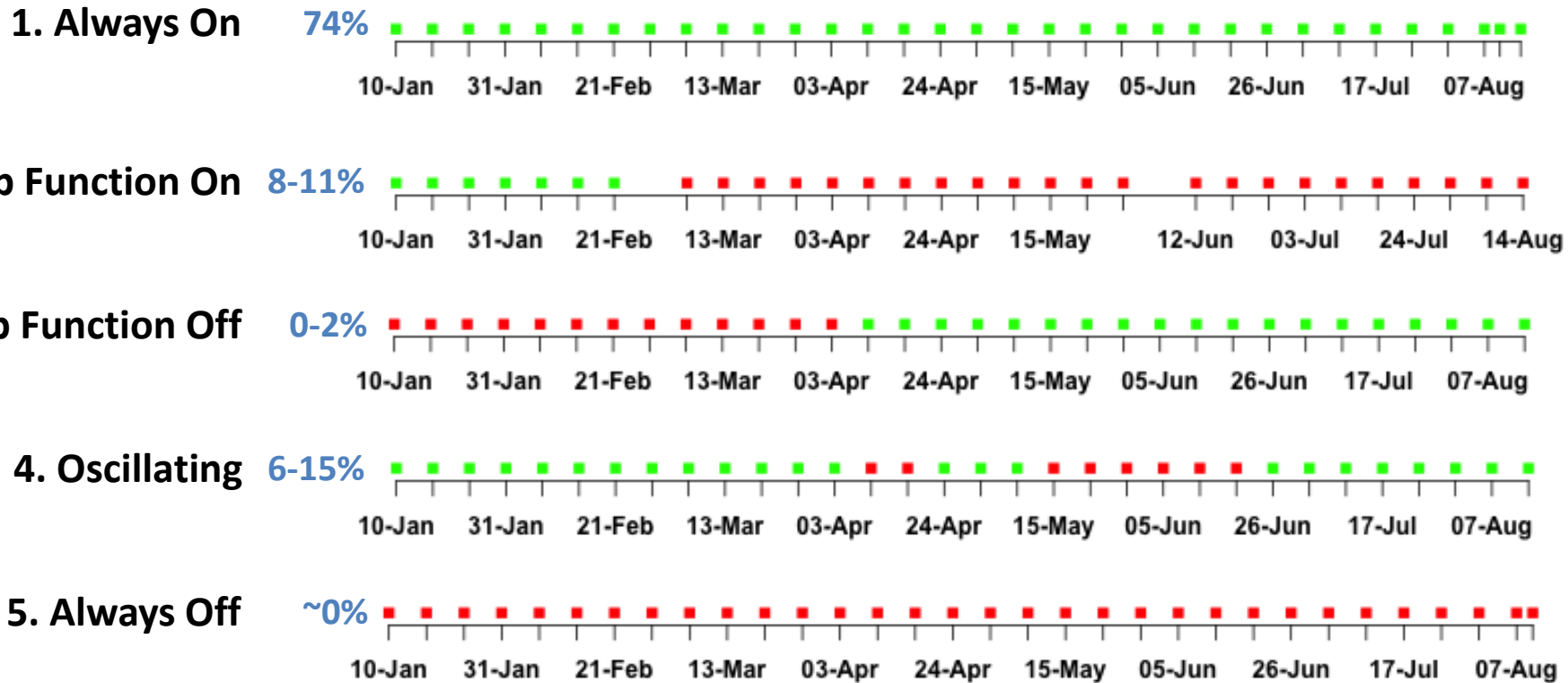
On-topic: Egyptian Revolution coverage

Off-topic: news about Syria

On-topic: Egypt news

Date	Topic
Jan 1, 2013	Off-topic
Jan 2, 2013	Off-topic
Jan 3, 2013	Off-topic
Jan 4, 2013	Off-topic
Jan 5, 2013	Off-topic
Jan 6, 2013	Off-topic
Jan 7, 2013	Off-topic
Jan 8, 2013	Off-topic
Jan 9, 2013	Off-topic
Jan 10, 2013	Off-topic
Feb 1, 2014	On-topic
Feb 2, 2014	Off-topic
Feb 3, 2014	Off-topic
Feb 4, 2014	Off-topic

# Most TimeMaps are Always On



1. [wayback.archive-it.org/2950/\\*/http://occupypsl.org](http://wayback.archive-it.org/2950/*/http://occupypsl.org)
2. [wayback.archive-it.org/2950/\\*/http://occupygso.tumblr.com](http://wayback.archive-it.org/2950/*/http://occupygso.tumblr.com)
3. [wayback.archive-it.org/2950/\\*/http://occupyashland.com](http://wayback.archive-it.org/2950/*/http://occupyashland.com)
4. [wayback.archive-it.org/2950/\\*/http://www.indyows.org](http://wayback.archive-it.org/2950/*/http://www.indyows.org)
5. [wayback.archive-it.org/2950/\\*/http://occupy605.com](http://wayback.archive-it.org/2950/*/http://occupy605.com)

# Methods for detecting off-topic pages

# Pre-processing

1. Obtain the seed URIs from the front-end interface of Archive-It
2. Obtain the TimeMap of the seed URIs from the CDX file\*
3. Extract the HTML of the mementos from the WARC files\*
4. Extract the text of the page using the Boilerpipe library
5. Extract terms from the page, using scikit-learn to tokenize, remove stop words, and apply stemming



# Similarity Metrics

- Textual Content
  - cosine similarity
  - intersection of the most frequent terms
  - Jaccard coefficient
- Semantics
  - Web based kernel function using the search engine (SE)
- Structural
  - the change in number of words
  - the change in content length

# Textual Content

cosine similarity, intersecting the most frequent terms,  
Jaccard similarity



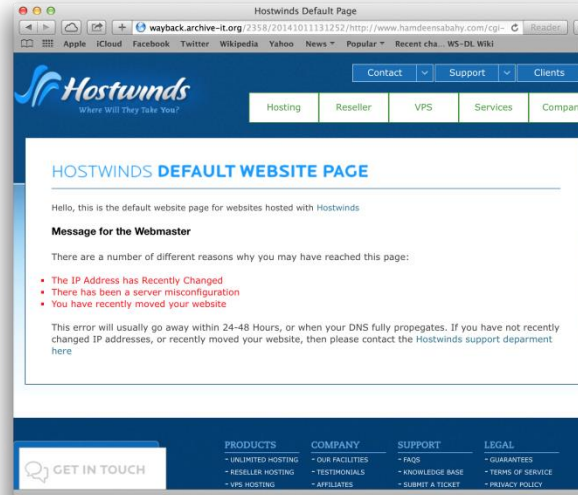
Method	Similarity
cosine	0.7
TF-Intersection	0.6
Jaccard	0.5

# Textual Content

cosine similarity, intersecting the most frequent terms,  
Jaccard similarity



Method	Similarity
cosine	0.7
TF-Intersection	0.6
Jaccard	0.5

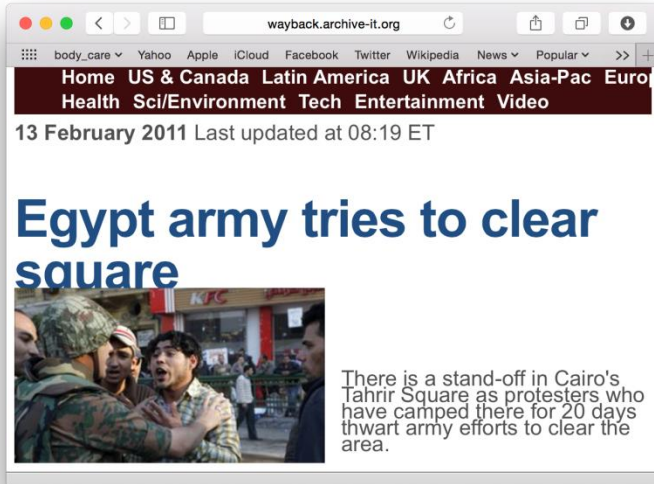


Method	Similarity
cosine	0.0
TF-Intersection	0.0
Jaccard	0.0

# Semantics of the Text

Web based kernel function using the search engine (SE)

Feb. 2011



Tahrir, Egypt, army

No term-wise overlap

July 2013



Cairo, Morsi, protests

# Semantics of the Text

Web based kernel function using the search engine (SE)

Feb. 2011



July 2013



Tahrir, Egypt, army

No term-wise overlap

Cairo, Morsi, protests

**Egyptian army** retakes **Tahrir Square** | World news | The ...  
[www.theguardian.com](http://www.theguardian.com) › World › Egypt  
 Egypt's army has violently retaken Cairo's Tahrir Square from protesters, less than 48 hours before the former president Hosni Mubarak is to stand trial in the capital.



**2012-13 Egyptian protests** - Wikipedia, the free ...  
[en.wikipedia.org/wiki/2012-13\\_Egyptian\\_protests](http://en.wikipedia.org/wiki/2012-13_Egyptian_protests)  
 The 2012-13 Egyptian protests were part of a large scale popular uprising in Egypt against then-President Mohamed Morsi. On 22 November 2012, millions of protesters ...

Egypt, Tahrir, president, protests, army, Cairo

Method	Similarity
SE-Kernel	0.7

Egypt, protests, Morsi, Cairo, president

# Structural Methods

no. of words, content-length

100



109



Method	% change
WordCount	0.09

# Structural Methods

no. of words, content-length

100



109



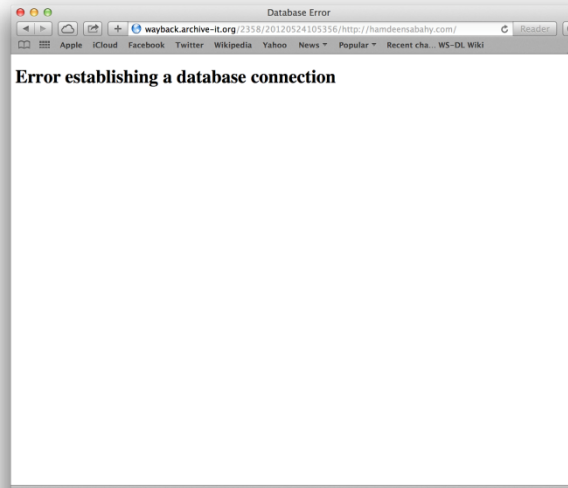
Method	% change
--------	----------

WordCount	0.09
-----------	------

100



5



Method	% change
--------	----------

WordCount	-0.95
-----------	-------

We built a gold standard data set to  
evaluate the methods



# We manually labeled 15,760 mementos

Archive-It - Occupy Move x  
https://archive-it.org/collections/2950

## Occupy Movement 2011/2012

Collected by: [Internet Archive Global](#)

Archived since: Nov, 2011

Description: This collection documents a starting in the Autumn of 2011 and conti New York City, calling itself "Occupy Wall demonstrations around the world calling referred to as the "Occupy Movement".

Subject: [Spontaneous Events](#) [Society & politics](#)

Creator: [Archive-It](#)

Publisher: [Internet Archive](#) [Archive-It](#)

Coverage: [international](#) [US](#)

Date: [2011](#)

Collector: [Archive-It](#) [Archive-It Partners](#)

Language: [english](#) [spanish](#)

Narrow Your Results

Sites for this collection are listed below. Narrow your results at left, or enter a search query below to find a site, specific URL or to search the text of archived webpages.

Enter search terms here

Group    Sort By: [Count](#) | [A-Z](#)

Blogs (7)

International (124)

News Sites and Articles (184)

Other Sites (428)

Social Media (158)

More ▾

Subject    Sort By: [Count](#) | [A-Z](#)

occupy movement (4)

Coverage    Sort By: [Count](#) | [A-Z](#)

Alabama (14)

Alaska (7)

Arizona (5)

Ireland (1)

Sort By: [Title \(A-Z\)](#) | [Title \(Z-A\)](#) | [URL \(A-Z\)](#) | [URL \(Z-A\)](#)

URL: <http://15october.org/>

Captured 7 times between Feb 10, 2011 and Feb 7, 2013

Videos: 1 Videos Captured

Group: [International](#)

Title: [15th october: #United](#)

URL: <http://15october.net/>

Captured 42 times between Dec 3, 2010 and Feb 7, 2013

Group: [Other Sites](#)

Archive-It - Egypt Revolut x  
https://archive-it.org/collections/2358

## Egypt Revolution and Politics

Collected by: [American University in Cairo](#)

Archived since: Feb, 2011

Description: The January 25th Revolution Web Sites collection of and regional media coverage, and other sites related to the Janu the American University in Cairo Rare Books and Special Collect suggested by AUC students, faculty, and staff as well as other co Documenting Egypt's 21st Century Revolution project

Subject: [Politics & Elections](#) [Society & Culture](#) [Blogs & Social coverage](#) [Demonstrations](#) [Political participation](#) [Revolutions networks](#) [Social media](#) [Politics and government](#) [Foreign relat](#)

Coverage: [Egypt](#)

Format: [collections \(object groupings\)](#)

Type: [Collection](#)

Language: [ar](#) [en](#) [fr](#)

Collector: [American University in Cairo](#) [Rare Books and Special](#)

Narrow Your Results

Sites for this collection are listed below. Narrow your results at left, or enter a search query below to find a site, specific URL or to search the text of archived webpages.

Enter search terms here

Group    Sort By: [Count](#) | [A-Z](#)

Ultras (3)

Subject    Sort By: [Count](#) | [A-Z](#)

Egypt-Politics and government (11)

Politics and government (9)

Egypt-Foreign relations (7)

Revolutions-egypt (7)

Social media-Political aspects (7)

More ▾

Creator    Sort By: [Count](#) | [A-Z](#)

Al-Masry Al-Youni (3)

Jam'iyat al-Ikhwan al-Muslimin (Egypt) (2)

Shafik, Ahmed (2)

We are all Khaled Said (2)

Aboul Fotouh, Abdel Moneim (1)

Sort By: [Title \(A-Z\)](#) | [Title \(Z-A\)](#) | [URL \(A-Z\)](#) | [URL \(Z-A\)](#)

Title: [Egypt Remembers](#), مهنن نلتكر

URL: <http://1000memories.com/egypt/>

Captured 53 times between Feb 11, 2011 and Feb 7, 2013

Videos: 2 Videos Captured

Title: [Egypt remembers](#) | مهنن نلتكر

URL: <http://1000memories.com/egypt/>

Description: An online memorial to remember those killed in Captured 53 times between Feb 11, 2011 and Feb 7, 2013

Archive-It - Human Rights x  
https://archive-it.org/collections/1068

## Human Rights

Collected by: [Columbia University Libraries](#)

Archived since: May, 2008

Description: An initiative of CUL's Center for Human Rights Documentation and Research, the Human Rights Web Archive is an effort to preserve and ensure access to freely available human rights resources created mainly by non-governmental organizations, national human rights institutions, and individuals.

Subject: [Society & Culture](#) [Human rights](#) [Non-governmental organizations](#) [Human rights workers](#) [National human rights institutions](#) [Web archives](#)

Creator: [Columbia University Libraries](#) [Center for Human Rights Documentation and Research](#)

Collector: [Columbia University Libraries](#) [Center for Human Rights Documentation and Research](#)

Narrow Your Results

Sites for this collection are listed below. Narrow your results at left, or enter a search query below to find a site, specific URL or to search the text of archived webpages.

Enter search terms here

Group    Sort By: [Count](#) | [A-Z](#)

Amnesty International sections (53)

Blogs by individuals (12)

National human rights institutions (95)

Non-governmental organizations (475)

Truth commissions, tribunals, and courts (16)

Subject    Sort By: [Count](#) | [A-Z](#)

Human rights (516)

Human rights advocacy (197)

National human rights institutions (93)

Civil rights (54)

Democracy (46)

More ▾

Creator    Sort By: [Count](#) | [A-Z](#)

Asociación Paz con Dignidad (4)

Comité de Familiares de Desaparecidos y Desaparecidos en Honduras (3)

Markaz al-Watniyya-Hiqaqat al-insan (Jordan) (3)

National Human Rights Commission (Mauritius) (3)

Sort By: [Title \(A-Z\)](#) | [Title \(Z-A\)](#) | [URL \(A-Z\)](#) | [URL \(Z-A\)](#)

Title: [Anti Caste Discrimination Alliance, ACDA](#)

URL: <http://acda.co/>

Description: UK-focused organization based in Derby, working to eliminate caste-based discrimination. In English. New site, see [www.acdauk.org.uk/](http://www.acdauk.org.uk/) for older site.

Captured 12 times between Oct 13, 2011 and Jun 23, 2014

Subject: [Discrimination](#), [Caste](#), [Caste-based discrimination](#), [East Indians](#)

Group: [Non-governmental organizations](#)

Creator: [Anti Caste Discrimination Alliance](#)

Language: [English](#)

Coverage: [Great Britain](#)

Collector: [Columbia University Libraries](#) [Center for Human Rights Documentation and Research](#)

Title: [Americans for Democracy and Human Rights in Bahrain](#)

URL: <http://adhrb.org/>

Description: "Americans for Democracy and Human Rights in Bahrain (ADHRB) fosters awareness

**Occupy Movement**  
URI-Rs: 255  
URI-Ms: 6,570  
Off-topic URI-Ms: 458

**Egypt Revolution and Politics**  
URI-Rs: 136  
URI-Ms: 6,886  
Off-topic URI-Ms: 384

**Columbia Univ. Human Rights collection**  
URI-Rs: 198  
URI-Ms: 2,304  
Off-topic URI-Ms: 94

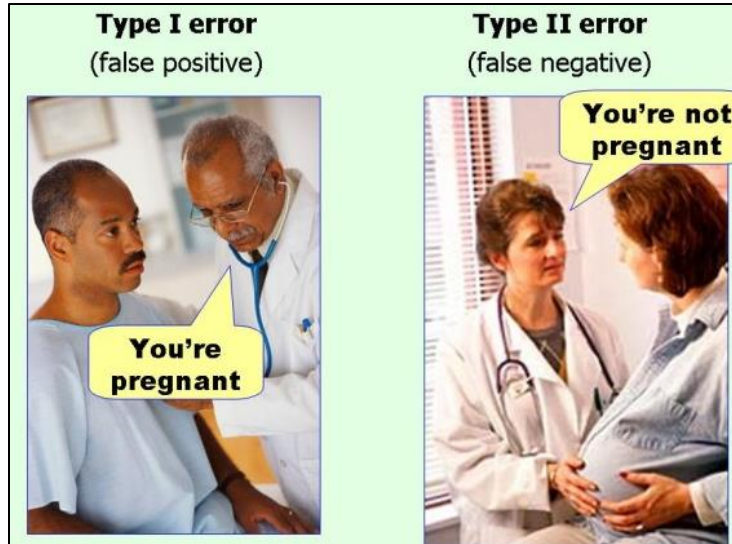
# Manually labeled set is available

[https://github.com/yasmina85/OffTopic-Detection/tree/master/collections\\_dataset](https://github.com/yasmina85/OffTopic-Detection/tree/master/collections_dataset)

id	date	URI	label
9	20120124014240	<a href="http://wayback.archive-it.org/2950/20120124014240/http://occupysarasota.com/">http://wayback.archive-it.org/2950/20120124014240/http://occupysarasota.com/</a>	1
9	20120131014118	<a href="http://wayback.archive-it.org/2950/20120131014118/http://occupysarasota.com/">http://wayback.archive-it.org/2950/20120131014118/http://occupysarasota.com/</a>	1
9	20120207014119	<a href="http://wayback.archive-it.org/2950/20120207014119/http://occupysarasota.com/">http://wayback.archive-it.org/2950/20120207014119/http://occupysarasota.com/</a>	1
9	20120501041141	<a href="http://wayback.archive-it.org/2950/20120501041141/http://occupysarasota.com/">http://wayback.archive-it.org/2950/20120501041141/http://occupysarasota.com/</a>	0
9	20120508032644	<a href="http://wayback.archive-it.org/2950/20120508032644/http://occupysarasota.com/">http://wayback.archive-it.org/2950/20120508032644/http://occupysarasota.com/</a>	0
9	20120515034720	<a href="http://wayback.archive-it.org/2950/20120515034720/http://occupysarasota.com/">http://wayback.archive-it.org/2950/20120515034720/http://occupysarasota.com/</a>	0

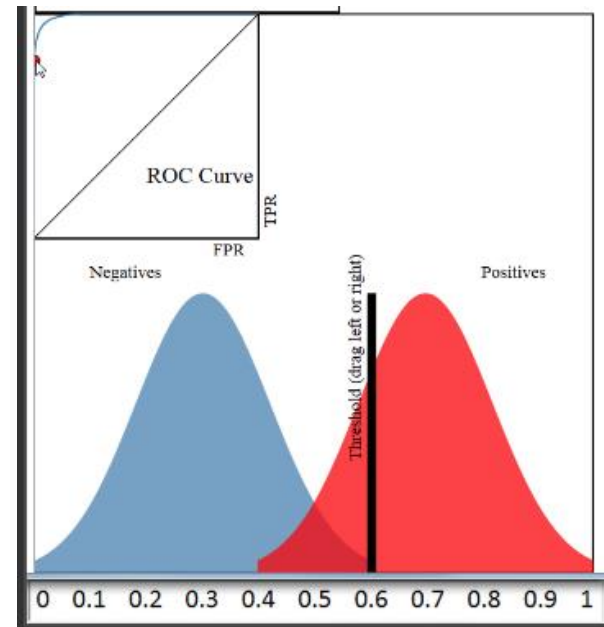
Future work: convert to annotated/extended  
TimeMap format

# Evaluation Metrics



- False positives (FP)
  - on-topic labeled as off-topic
- False negatives (FN)
  - off-topic labeled as on-topic
- Accuracy (ACC)
  - proportion of correct classifications
  - $(TP + TN)/(TP + FP + FN + TN)$

- $F_1$  score
  - weighted average of precision and recall
  - $2TP/(2TP + FP + FN)$
- AUC
  - area under the ROC curve
  - ROC - plots false positive rate vs. true positive rate



# Evaluation Setup

- Assumed first memento was on-topic
- Tested each method on each labeled memento at 21 different thresholds
- Combined two methods ('OR') to find best combination method
  - 15 combinations
  - 6,615 tests (15 combinations x 21 thresholds x 21 thresholds)
- Averaged the results at each threshold over the three collections

# Cosine Similarity performed well

Similarity Measure	Threshold	FP	FN	FP+FN	ACC	F1 ▼	AUC
Cosine   WordCount	0.10   -0.85	24	10	34	0.987	0.906	0.968
Cosine   SEKernel	0.10   0.00	6	35	40	0.990	0.901	0.934
Cosine	0.15	31	22	53	0.983	0.881	0.961
WordCount   SEKernel	-0.80   0.00	14	27	42	0.985	0.818	0.885
WordCount	-0.85	6	44	50	0.982	0.806	0.870
SEKernel	0.05	64	83	147	0.965	0.683	0.865
Bytes	-0.65	28	133	161	0.962	0.584	0.746
Jaccard	0.05	74	86	159	0.962	0.538	0.809
TF-Intersection	0.00	49	104	153	0.967	0.537	0.740

# Finding off-topic pages in other Archive-It collections

# Applied best method to 11 Archive-It collections

- Cosine | Word Count with 0.10 | -0.85 thresholds
- Collection Characteristics
  - governmental, event-based, theme-based
  - time spans of 1 week - 7 years
  - 35 - 1459 URI-Rs
  - 118 - 10,283 URI-Ms

# Average precision of 0.92 on 11 Archive-It collections

ID	Collection	URI-Rs	URI-Ms	Off-topic URI-Ms	Affected URI-Rs	TP	FP	P
2893	Global Food Crisis	65	3063	22	7	22	0	1.000
1084	Government in Alaska	68	506	16	4	16	0	1.000
2966	Virginia Tech Shootings	239	1670	24	2	24	0	1.000
2017	Wikileaks 2010 Document	35	2360	107	8	107	0	1.000
2323	Jasmine Revolution 2011	231	4076	114	31	107	7	0.939
1827	IT Historical Resource	1459	10,283	59	34	45	14	0.763
1475	Human Rights Document	147	1530	54	20	39	15	0.722
1826	Maryland State Document	69	184	0	0	-	-	-
694	April 16 Archive	35	118	0	0	-	-	-
2535	Brazilian School Shooting	476	1092	0	0	-	-	-
2823	Russia Plane Crash	65	447	0	0	-	-	-



# Summary

- We presented six methods for measuring similarity between pages:
  - cosine similarity
  - Jaccard similarity
  - intersection of the most 20 frequent terms
  - Web-based kernel function
  - change in number of words
  - change in content length
- We tested the approaches on a gold standard data set from three Archive-It collections
- We evaluated best approach on 11 diverse Archive-It collections

# Findings

- Combining cosine similarity at threshold 0.10 and change in size using word count at threshold -0.85 gives the best performance
- Cosine similarity at threshold = 0.15 is the best single method
- Using the combined method, we achieved 0.92 average precision on 11 Archive-It collections

# Tool for detecting off-topic pages

- A python command-line tool for suggesting off-topic pages in web archives
  - Cosine Similarity
  - default threshold is 0.15
  - operates on live TimeMaps

Available at

<https://github.com/yasmina85/OffTopic-Detection>

# Detecting off-topic pages in an Archive-It Collection (Maryland State Docs)

```
% python detect_off_topic.py -i 1826 -th 0.15
```

```
extracting seed list
```

```
...
```

```
http://agroecol.umd.edu/Research/index.cfm
```

```
http://casademaryland.org
```

```
...
```

```
50 URIs are extracted from collection https://archive-it.org/collections/1826
```

```
Downloading timemap using uri http://wayback.archive-it.org/1826/timemap/link/http://agroecol.umd.edu/Research/index.cfm
```

```
Downloading timemap using uri http://wayback.archive-it.org/1826/timemap/link/http://casademaryland.org
```

```
...
```

```
Downloading 4 mementos out of 306
```

```
Downloading 14 mementos out of 306
```

```
...
```

```
Detecting off-topic mementos
```

This was run live after we did the evaluation, so now there are off-topic mementos

Similarity	memento_uri
0.0	http://wayback.archive-it.org/1826/20131220205908/http://www.mncppc.org/commission_home.html/
0.0	http://wayback.archive-it.org/1826/20141118195815/http://www.mncppc.org/commission_home.html/

# Detecting off-topic pages in a single TimeMap

```
% python detect_off_topic.py -t https://wayback.archive-it.org/2358/timemap/link/http://hamdeensabahy.com/
```

```
Downloading 0 mementos out of 270
```

```
http://wayback.archive-it.org/2358/20140524131241/http://www.hamdeensabahy.com/
```

```
http://wayback.archive-it.org/2358/20130321080254/http://hamdeensabahy.com/
```

```
http://wayback.archive-it.org/2358/20130621131337/http://www.hamdeensabahy.com/
```

```
...
```

```
Downloading 270 mementos out of 270
```

```
...
```

```
Extracting text from the html
```

```
...
```

```
Detecting off-topic mementos
```

```
Similarity    memento_uri
```

```
0.0509170839413    http://wayback.archive-it.org/2358/20140524131241/http://www.hamdeensabahy.com/
```

```
0.0                http://wayback.archive-it.org/2358/20130321080254/http://hamdeensabahy.com/
```

```
0.0368021561791    http://wayback.archive-it.org/2358/20130621131337/http://www.hamdeensabahy.com/
```

```
0.12899637517      http://wayback.archive-it.org/2358/20140602131307/http://hamdeensabahy.com/
```

```
...
```

# Future Work

- Enhancements to the detection tool
  - add WordCount method
  - allow input of local CDX and WARC files
- Determine collection aboutness
  - detect off-topic URI-Rs in a collection



**OLD DOMINION**  
UNIVERSITY

# **Tools for Managing Seed URIs (Detecting Off-Topic Pages)**

**Yasmin AlNoamany, Michele C. Weigle,  
Michael L. Nelson**

Old Dominion University

Web Science and Digital Libraries Group

<http://ws-dl.cs.odu.edu/>, @WebSciDL

Python Tool: <https://github.com/yasmina85/OffTopic-Detection>

**Web Archiving Collaboration: New Tools and Models**  
June 4-5, 2015