# Visualizing Digital Collections at Archive-It

#### Kalpesh Padia

Director: Committee: Michele C. Weigle Michael L. Nelson Ravi Mukkamala

7/20/2012

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Introduction Motivation Related Work Collection Retrieval and Processing Visualizations Case Studies **4** Future Work Conclusion

# INTRODUCTION AND MOTIVATION

### **Digital Archives**

LIBRARY OF CONGRESS	ASK A LIBRARIAN DIGITAL COLLECTIONS	LIBRARY CATALOGS Search	GO					
<u>The Library of Congress</u> > Digital	Collections							
DIGITAL COLLECTIONS	Digital Collections & Access to print, pictorial and a	& Services udio-visual collections and other	digital services					
	Featured Digital Collection	ons & Services			=			
<ul> <li><u>Digital Collections Home</u></li> <li><u>About Digital Collections</u></li> <li><u>Digital Reference</u></li> </ul>	A digital library of hist photos, documents, a video from American	Yale UNIVERSITY LIBRA	ARY Research Tools gital Collections / Library Locations	Libraries & Collections / Hours / Ask! a Libraria	About the Library	Library Services		
Digital Library Standards     Digital Preservation     More Resources	Enhanced access to A historic newspapers th Chronicling Americ	Digital Collections	7		OCUS Notre Dame (Paris) :	exterior	 	-
<ul> <li>&gt; Bibliographies and Guides</li> <li>&gt; Finding Aids</li> <li>&gt; Virtual Reference Shelf</li> <li>&gt; Ask a Librarian</li> <li>&gt; Library Catalogs</li> </ul>	Materials and bilingua presentations from ov libraries from Global Legislative Informa: THOMAS provides se text of bills, Congress and more. Browse By Topic	CAS login FAQ Browse Content by Click here for Ad	ges SEA Ivanced Search options	RCH	ction: Visual Resource	5		
		Nationality/Culture The cross-collect Object Type collections cover Medium see the Advance Panository Disital Collection	ion search above retrieves results fro in selected Library Digital Collections ed by the search, or for individual co <u>d Search</u> page. For a listing of all coll <u>is by Name</u> .	om over . For a listing of llection access, ections see				
	Browse selected colle available online by Tc	Subject Headings A listing of our below: My Workspace Beinecke Rare I Online Shared Groups Classics Depart	larger image collections can be Book and Manuscript Library Digita ment at Yale Digital Collection	e found al Images				
		Lewis Walpole User Created Tags Add your own See all tags Yale Daily News	Library Digital Collection d Archives Digital Image Database as Collection at Yale a Historical Archive					

http://www.loc.gov/index.html http://digitalcollections.library.yale.edu/

## Archive-It

HOME EXPLORE LEAR	N MORE CONTACT US to but	A web archiving service arvest and preserve digital collections a service of the Internet Archive	
lcome to Archive-It! and a live informational webinar and der eam more about the service	Contact Us to sign u Jul 31 2012, 11:30 / Aug 14 2012, 11:30	p for an upcoming session: M.PDT AM.PDT	
lore Collections Find a Collection by	Name Show All Coll	ections	
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		IT HISTORY SOCIETY	
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#### http://archive-it.org/

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### **Archive-It Collection Hierarchy**



ARCHIVE-IT	LEARN MORE CONTACT US A web archiving service to harvest and preserve digital collections a service of the Internet Archive
Explore >> Columbia University Libraries >> H	human Rights Huuman Diabte
Center for	Collected by: Columbia University Libraries
Human Rights	Archived since: May 2008
Documentation & Research	Description: An initiative of CUL's Center for Human Rights Documentation and Research, the Human Rig 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, <u>Web archives</u>
Group	specific URL or to search the text of archived webpages. Enter search terms here Search
Annesty International sections (48) Elogs by individuals (6) National human rights institutions (71) Non-governmental organizations (356) Truth commissions, tribunals, and courts (12)	Siles Search Page Text
Subject	Page 1 of 6 (505 Total Results) Next Page >
Human rights (398)	Sourt By: Title (A-Z)   Title (Z-A)   URL (A-Z)   URL (Z-A)
Human rights advocacy (191) National human rights institutions (72)	Title: Anti Caste Discrimination Alliance ACDA
	URL: http://acda.co/
Civil rights (46) Democracy (40)	
Civil rights (46) Democracy (40) More V	Description: UK-focused organization based in Derby, working to eliminate caste-based discrimination. In English. New site; see www.acdauk.org.uk/ for older site. Captured 4 times between Oct 13, 2011 and Jun 2, 2012
Crvii rights (46) Democracy (40) More V Creator	Description: UX-focused organization hased in Derby, working to elminate caste-based discrimination. In English New site, each www.acdauk.org.uk/ for older site. Captured 4 times between Oct 13, 2011 and Jun 2, 2012 Subject: Discrimination, Caste, Caste-based discrimination, East Indians
Cruit right (46) Democracy (40) More V Creator Asoctacio 'n Paz con Dignidad (3)	Description: UK-focused organization hased in Derby, worlding to eliminate caste-based discrimination. In English New site, see New Acadaw Corg lub for older site. Captured 4 times between Oct 13, 2011 and Jun 2, 2012 Subject: Discrimination, Caste, Caste-based discrimination, East Indians More V
Cruit right (46) Democracy (40) More V Creator Asociacio 'n Pez con Dignified (5) Anti Caste Discrimination Alliance (2) Arguentina. Defenor del Pueblo de la	Description: UK-focused organization hased in Derby, worlding to eliminate caste-based discrimination. In English New site, see www.acdawk.org.uk for older site. Captured 4 times between Oct 13, 2011 and Jun 2, 2012 Subject: Discrimination, Caste, Caste-based discrimination, East Indians More V Title: Advocacy ForumNepal
Cruit right (46) Democracy (40) More V Asociacio 'n Pez con Dignidad (3) Anti Caste Discrimination Alliance (2) Argentina. Defenor del Pueblo de la Nacio 'n. (2) Asian Biuma Bishita Commission (2)	Description: UK-focused organization hased in Derby, worlding to eliminate caste-based discrimination. In English New site, see New Acadeak orguly for older site. Captured 4 times between Oct 13, 2011 and Jun 2, 2012 Subject: Discrimination, Caste, Caste-based discrimination, East Indians Tritle: Advocacy ForumNepal URL: http://advocacyforum.org/
Criil right (46) Democracy (40) Nore <b>7</b> Creator Asoctacio 'n Pez con Dignidad (3) Anti Catte Discrimination Alliance (2) Argentina. Defensor del Pueblo de la Nacio 'n. (2) Atian Human Rights Comunission (2) Beogradiki centar za ljudika prava (2) More <b>7</b>	Description: UK-focused organization hased in Derby, worlding to eliminate caste-based discrimination. In English. New site, see www.acdeak.org.uk/ for older site. Captured 4 times between Oct 13, 2011 and Jun 2, 2013 Subject: Discrimination, Caste, Caste-based discrimination, East Indians Tritle: Advocacy ForumNepal URL: http://advocacyforum.org/ Description: Kepal focused organization based in Kathmandu. Includes reports. In English. Captured 14 times between Sep 3, 2010 and Jun 3, 2013 Videou: 4 Videou Captured Subject: Human rights, Rule of Jaw, Human rights advocacy

http://archive-it.org/collections/1068

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	Login
ARCHIVE-IT	EARN MORE CONTACT US A web archiving service to harvest and preserve digital collections a service of the Internet Archive
Explore >> Columbia University Libraries >> H	uman Rights
Center for Human Rights Documentation & Research	Human Rights Collected by: <u>Columbia University Libraries</u> Description: An initiative of CUL's Center for Human Rights Documentation and Research, the Human Right 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 & Collive, Fuhman rights Non-governmental organizations. Human rights workers. National human rights institutions, Web archives <u>More ¥</u>
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.
Annesty International sections (48) Elogs by individuals (6) National human rights institutions (71) Non-governmental organizations (386) Truth commissions, tribunals, and courts (12)	Sites Search Page Text
Subject Human rights (398) Human rights advocacy (191) National human rights institutions (72) Civil rights (48) Democracy (40) More T Creator Associatedo 'n Paz con Dignidad (3) Anti Caste Discrimination Alliance (2) Argentina. Defensor del Pueblo de la Nato'n (2) Asian Human Rights Commission (2) Beogradiat centar za ljudika prava (2)	Page 1 of 6 (505 Total Results)         Sent By: Title (A-2)   Title (2-A)   UKL (A-2)   UKL (2-A)         Title: Anti Caste Discrimination Alliance ACDA         URL: http://acdca.co/         Description: UK-focused organization based in Derby, working to eliminate caste-based discrimination. In English. New site; see www.acdank.org.uk/ for older site.         Captured 4 times between Oct 13, 2011 and Jun 2, 2013         Subject: Discrimination, Caste, Caste-based discrimination, East Indians         More ▼         Title: Advocaccy ForumNepal         URL: http://advocaccyforum.org/         Description: Nepal-focused organization based in Kathmandu, Includes reports. In English. Captured 14 times between Sep 3, 2010 and Jun 3, 2012
Langnage	Subject Human rights, Rule of law, Human rights advocacy

#### http://archive-it.org/collections/1068

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	Login
ARCHIVE-IT HOME EXPLORE	LEARN MORE CONTACT US A web archiving service to harvest and preserve digital collections a service of the Internet Archive
Explore >> Columbia University Libraries >>	Human Rights
Center for Human Rights Documentation & Research	Human Rights Collected by: Columbia University Libraries Archived since: May, 1008 Description: An initiative of CULD Center for Human Right Documentation and Research, the Human Right Web Archive is an effort to greative and ensure access to freely available human rights resources created mating 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 More V
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.
Amnesty International sections (48) Blogs by individuals (6) National human rights institutions (71) Non-governmental organizations (356) Truth commissions, tribunals, and courts (12	Sites Search Page Text
Subject Human rights (396) Human rights advocacy (191) Netional human rights institutions (72) Civil right (46) Democracy (40) More V	Page 1 of 6 (505 Total Results)         Next Page >           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 utte; see www.acdauk.org.uk/ for older stte.           Casture of times between orts 3.2011 and time 1.2012
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Language	More V

#### http://archive-it.org/collections/1068

Center for Human Rights Documentation & Research	Human Rights Web Archive (Colum	ibia University Libraries)	<b>WayBack</b> Machine
	Enter Web Address: http://	All V Take Me Back	
Searched for http://acda.co/			4 Results ISS Metadata
Look up URL in general Internet Archive web col	lection Drag the cursor around the ar		Proxy Mode Help
* denotes when page was updated			
	Found 4 Captures between Oct	13, 2011 - Jun 2, 2012	
	2011	2012	
	2 pages	2 pages	
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ARCHIVE-IT HOME EXPLORE	LEARN MORE CONTACT US A web archiving service to harvest and preserve digital collections <i>a service of the Internet Archive</i>
Explore >> Columbia University Libraries >> 1	Human Rights
Center For Human Rights Documentation & Research	Human Rights Collected by: <u>Columbia University Libraries</u> Archived inner: Key, 2008 Description: An initiative of CUL's Center for Human Rights Documentation and Research, the Human R Web Archive is an effort to preserve and ensure access to freely available human rights resources creates manihy by non governmental organizations, and individuals. Subject <u>Society &amp; Cultures, Human rights, Non governmental organizations</u> , <u>Human rights workers</u> , National human rights institutions. Web archives <u>More v</u>
Narrow Your Results Group Anmety International sections (48) Blogs by individuals (6) National human rights institutions (71) Non-governmental organizations (356)	Sites for this collection are listed below. Narrow your results at left, or enter a search query below to find a specific URL or to search the text of archived webpages. Enter search terms here Sites Search Page Text
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Creator Asociacio 'n Paz con Dignidad (3) Anti Caste Discrimination Alliance (2) Argentina. Defenior del Pueblo de la Nacio 'n. (2) Asian Human Rights Commission (2) Beograduli centar za ljudaka preva (2)	Surger         Discrimination, Caste, Caste-Josed distrimination, East Innans           Marcer         Tritle: Advocacy ForumNepal           URL: http://advocacyforum.org/         Description: Nepal-focused organization based in Kathmandu. Includes reports. In English. Captured 14 times herven Sep 3, 2010 and Jun 3, 2012
More V	Videos: 4 Videos Captured Subject: Human rights, Rule of law, Human rights advocacy

http://archive-it.org/collections/1068



http://archive-it.org/collections/2836

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#### Drawbacks

No visual feedback

Discovering individual pages is difficult

Optional metadata and categorization

Collection structure known only to curator

## Contribution

#### Interactive visualizations

- Treemap
- Time cloud
- Bubble chart
- Image plot
- Wordle
- Timeline

# Temporal exploration of collections Uncover collection structure

# **RELATED WORK**

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### Microsoft Pivot

• Pivot by Live Labs		Go	> http://conte	nt.getpivot.com/Col	lections/MagicThe	Gathering/MagicTl	heGathering.cxml	S- ★		<b>*</b> _ 0 >
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#### http://www.microsoft.com/silverlight/pivotviewer/

### **Page History Explorer**

#### ND PERSON CONTRACTOR

Sites Tools

archiv soon DDC netrol index languag term lister live local music radio servic sport to to UK video weather world



A. Jatowt, Y. Kawai, and K. Tanaka, "Visualizing Historical Content of Web Pages," in *Proceedings of the* 17th international conference on World Wide Web,2008.

### **3D Wall**



http://www.webarchive.org.uk/ukwa/wall/Blogs



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#### Treemap



Johnson and Shneiderman, "Space-Filling Approach to the Visualization of Hierarchical Information Structures" in proceedings of the 2nd conference on Visualization '91

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### **Series Browser**



M. Whitelaw, "Visualising Archival Collections: The Visible Archive Project," in *Archives and Manuscripts, vol. 37, Issue 2, 2009.* 



#### A1 Explorer

1912 1926 **1937** 1938 aboriginal accommodation act affairs **affer** alice allocation application appointment appt estatics association australia australian bagot bay board boat botanic branch building buildings caste certain certificate certificates chin chinese clerk club collectors commission commissioner commonwealth compound council court creek crown curator customs cyclone collectors commission commissioner commonwealth compound council court creek crown curator customs cyclone collectors commission commissioner commonwealth compound council court creek crown curator customs cyclone contraction department deputation domicile electric employment establishment external facilities fanny female fire gaol gardens general government guard hait health home hospital house industry instructions july labour land lands lease leper licence local mail **march** matron may meat medical minister miss motor mrs myilly north northern notes number office officer oil ordinance pearlers pearling photo pine point police port powers proclamation proposed public quarters question railway rates repairs residence return road school scott sections senior senior senior shipping showing south springs statements station sub suggested supply supreme sydney taken teacher **territory town** transactions transfer transport under upon use visit waited ward water which windmill wireless works

79	of
374	items

excluded: focused: darwin

1900				
barcode	control symbol	title	date range	pages
1615740	1925/26874	Darwin Town Council - Request for cyclone fencing	1925-1925	0 pp
4240079	1937/4701 PHOTO 51	Darwin Leper station, Male ward after Cyclone at Darwin March 1937	1937-1938	0 pp
4240090	1937/4701 PHOTO41	Darwin Leper station, Sheets of roofing iron wrapped around trees after Cyclone at Darwin Ma	1937-1938	0 pp
4240097	1937/4701 PHOTO 34	Houses number 6 Myilly point after Cyclone at Darwin March 1937	1937-1938	1 pp
4240104	1937/4701 PHOTO 27	Uprooted tree at Myilly point after Cyclone at Darwin March 1937	1937-1938	0 pp
4240115	1937/4701 PHOTO 16	Senior guard Scott's Residence after Cyclone at Darwin March 1937	1937-1938	0 pp
4240122	1937/4701 PHOTO 9	Aboriginal compound after Cyclone at Darwin March 1937.	1937-1938	1 pp
4240077	1937/4701 PHOTO 53	Remains of store building now used as kitchen after Cyclone at Darwin March 1937	1937-1938	0 pp
4240078	1937/4701 PHOTO 52	Dawin Leper station, White male ward after Cyclone at Darwin March 1937	1937-1938	0 pp
4240091	1937/4701 PHOTO 40	Darwin hospital buildings taken from curator's residence showing debris after Cyclone at Dar	1937-1938	0 pp
4240092	1937/4701 PHOTO 39	Darwin Leper station hospital buildings taken from Curator's residence showing debris after	1937-1938	0 pp
4240109	1937/4701 PHOTO 22	Windmill near Health laboratory after Cyclone at Darwin March 1937	1937-1938	1 pp
4240110	1937/4701 PHOTO 21	Windmill after Cyclone at Darwin March 1937	1937-1938	0 pp
4240075	1937/4701 PHOTO 55	Darwin Leper station, Lepers Bathshed, Cyclone at Darwin March 1937 Government Properties Re	1937-1938	0 pp

M. Whitelaw, "Visualising Archival Collections: The Visible Archive Project," in *Archives and Manuscripts, vol. 37, Issue 2, 2009.* 



Scharnhorst et.al. "Looking at a digital research data archive Visual interfaces to EASY," in CORR, 2012, http://arxiv.org/abs/1204.3200



. Jonathan Feinberg, <a href="http://wordle.net/">http://wordle.net/</a> , Dogear MS Thesis - August 2012 23

# DATA RETRIEVAL AND PROCESSING

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#### 11 Collections, 2K+ Web pages, 70K+ Mementos

ID	Collection Name	Time Span	Groups	URI Domains	# of Webpages
11	South Dakota	3 Days	1	50	88
	Government				
12	State Minnesota Sites	3 Weeks	1	6	6
13	Ari Salomon Archive	1 Day	1	1	1
194	NC State Government	14 Years	1	451	609
	Web Site Archive				
499	Archive Montana:	15 Years	36	132	144
	Preserving State				
	Agency Websites				
667	The New York Greens	1 Day	1	1	1
677	Actors Equity	1 Day	1	1	1
	Association				
1068	Human Rights	3 Years	5	341	365
1621	Chile Earthquake	1 Day	1	13	19
2323	Jasmine Revolution -	5 Months	4	147	223
	Tunisia 2011				
2836	Pakistan Floods	20 Days	1	253	623
	(2011)				

### **Data Retrieval & Processing**

#### **4** Retrieval:

- Screen scrape
- Copy collection hierarchy
- Store page content
- Processing:
  - Calculate TF and TF-IDF
  - Generate screenshots
  - Generate wordles
  - Rule-based categorization
  - Construct JSON

#### No categorization



HOME EXPLORE LEARN MORE CONTACT US

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



Explore >> Virginia Tech: Crisis, Tragedy, and Recovery Network >> Pakistan floods ( 2011)



Description: The monsoon rains in Sindh province (Sept 2011), in southeastern Pakistan, have submerged more than 4.5 million acres of farming land, damaging an estimated 80% of cash cri least 5.5 million people have so far been affected, with more than 200 dead. Subject: <u>Floods</u>, <u>Pakistan</u>, <u>Spontaneous Events</u> Nore ¥

#### 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.

There are no further ways to narrow your results.

Sites Search Page Text

Enter search terms here

Page 1 of 7 (655 Total Results)

Sort By: Title (A-Z) | Title (Z-A) | URL (A-Z) | URL (Z-A)

URL: http://abcnews.go.com/MillionMomsChallenge/slideshow/floodingravages-pakistan-unhcr-relief-14565409 Captured on Sep 28, 2011

URL: http://acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/eng/ANN-820133234-NKW/

Title: Pakistan Flood Relief Fund - CIDA Captured on Sep 16, 2011

URL: http://adf.ly/2roFB Captured on Sep 28, 2011

URL: http://adf.ly/2roFC

Captured on Sep 28, 2011

URL: http://adf.ly/2roOP Captured on Sep 28, 2011

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### **Improper Categorization**

HOME EXPLORE LI	EARN MORE	A web archiving service to harvest and preserve digital collectio <i>a service of the Internet Archive</i>	ns 🛄
Explore >> Internet Archive Global Events >> Jas	mine Revolution - Tunisia 2011		
	Jasmine Revolution - Collected by: Internet Archive Globa Archived since: Jan, 2011 Description: This collection consists of wel partners at Library of Congress and Biblio collection, and the sites are primarily in Fi	TUNISIA 2011 IEvents osites documenting the revolution in Tunisia i thèque Nationale de France have contributed t rench and Arabic with some in English.	1 2011. Our vebsites for this
Narrow Your Results Group	Sites for this collection are listed below. Na site, specific URL or to search the text of an Enter search terms here	irrow your results at left, or enter a search query chived webpages.	y below to find a
News Sites and Articles (12) Social Media Sites (53)	Sites Search Page Text		
	Page 1 Sort By: Title (A-2)   Title (2-A)   T URL: http://www.youtube.com Captured 2 times between Feb 16, 2011 Group: Social Media Sites Less A URL: http://www.youtube.com Captured on Feb 28, 2011 Videos & videos Captured URL: http://www.youtube.com Captured 5 times between Mar 18, 201 Videos 4 Stimes between Mar 18, 201 Videos 4 Stimes Detween Mar 18	of 3 (235 Total Results) URL (A-2)   URL (2-A) a/watch?v=pGMqdOgERBw I and Feb 28, 2011 a/watch?v=omWjoDISOLE&ffeature a/watch?v=ob5Vs9BkN3M I and Oct 22, 2011	iext Page ≻

#### **Rule based categorization**



#### Pakistan floods (2011)

Collected by: <u>Virginia Tech: Crisis, Tragedy, and Recovery Network</u>

#### Archived since: Sep, 2011

Description: The monsoon rains in Sindh province (Sept 2011), in southeastern Pakistan, have submerged mor than 4.5 million acres of farming land, damaging an estimated 80% of cash crops. At least 5.5 million people have so far been affected, with more than 200 dead. Subject: <u>Floods</u>. <u>Pakistan</u>, <u>Spontaneous Events</u>

Narrow Your Results	Page 1 of 7 (655 Total Results) Next Page >	
There are no further ways to narrow your results.	Sort By: Title (A-Z)   Title (Z-A)   URL (A-Z)   URL (Z-A) URL: http://abcnews.go.com/MillionMomsChallenge/slideshow/flooding- ravages-pakistan-unhcr-relief-14565409 Captured on Sep 28, 2011	News Web pages
	URL: http://feww.wordpress.com/2011/09/22/pakistan-flood-death- toll-tops-1000/?utm_source=twitterfeed&utm_medium=twitter	Blogs
	URL: http://floodmaps.lums.edu.pk/ Title: Pakistan FloodMAPS Captured on Sep 16, 2011	
	URL: http://hithot.cc/en_UK/Pakistan/ URL: http://www.facebook.com/147433618618300/posts /148775358484126/	Social Media
	Captured on Sep 28, 2011 URL: http://www.youtube.com/watch?v=egZFQ_kucTE Captured on Sep 28, 2011	Videos

#### Special URI and TLD based categorization



#### Pakistan floods (2011)

Collected by: Virginia Tech: Crisis, Tragedy, and Recovery Network

#### Archived since: Sep, 2011

lescription: The monsoon rains in Sindh province (Sept 2011), in southeastern Pakistan, have submerged mo han 4.5 million acres of farming land, damaging an estimated 80% of cash crops. At least 5.5 million people lave so far been affected, with more than 200 dead. ubject: <u>Floods. Pakistan. Spontaneous Events</u>

Narrow Your Results

There are no further ways to narrow your results.

Page 1 of 7 (655 Total Results)

Next Page 🕨

Sort By: Title (A-Z) | Title (Z-A) | URL (A-Z) | URL (Z-A)

URL: http://abcnews.go.com/MillionMomsChallenge/slideshow/floodingravages-pakistan-unhcr-relief-14565409

Captured on Sep 28, 2011

URL: http://feww.wordpress.com/2011/09/22/pakistan-flood-deathtoll-tops-1000/?utm\_source=twitterfeed&utm\_medium=twitter Captured on Sep 28, 2011

URL: http://floodmaps.lums.edu.pk/ Title: Pakistan FloodMAPS Captured on Sep 16, 2011

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URL: http://hithot.cc/en\_UK/Pakistan/

URL: http://www.facebook.com/147433618618300/posts /148775358484126/ Captured on Sep 28, 2011

captured on sep 26, 2011

URL: http://www.youtube.com/watch?v=egZFQ\_kucTE Captured on Sep 28, 2011

#### Pakistani news web pages

7/20/2012

30

# VISUALIZATIONS

7/20/2012

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### Time Cloud



#### Bubble Chart, Image Plot & Timeline



# **CASE STUDIES**

7/20/2012

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# 1. Collection Building and Growth



# 2. Re-Categorization (Pakistan Flood: no categorization)



### 2. Re-Categorization (Pakistan Flood: after categorization)



1					f 🎐	Login
ARCHIVE-IT	HOME	EXPLORE	LEARN MORE	CONTACT US	A web archiving service to harvest and preserve digital collections <i>a service of the Internet Archive</i>	$\widehat{\blacksquare}$

Explore >> Virginia Tech: Crisis, Tragedy, and Recovery Network >> Pakistan floods ( 2011)



#### Pakistan floods (2011)

Collected by: Virginia Tech: Crisis, Tragedy, and Recovery Network

#### Archived since: Sep, 2011

**Description**: The monsoon rains in Sindh province (Sept 2011), in southeastern Pakistan, have submerged more than 4.5 million acres of farming land, damaging an estimated 80% of cash crops. At least 5.5 million people have so far been affected, with more than 200 dead. **Subject** Spontaneous Events. Floods. Pakistan More **v** 

#### 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.

			Arch	ve-lt - Pakistan floods	(2011)	
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	There are no further ways results.	to narrow your	Enter sear	ch terms here	Search	ear -
			Sites Seer By: 1 URL: http: rawages- Captured on Title: Pal (URL: http: Captured on URL: ht	Search Page Text Page 5://abcnews.go.com 5://abcnews.go.com parkistan-unhcr-re- tex on Sep 28, 2011 cistan Flood Relief 5://adfi-by/2noFB com Sep 28, 2011 5://adfi.by/2noFB com Sep 28, 2011 5://adfi.by/2noFC com Sep 28, 2011 5://adfi.by/2noFC com Sep 28, 2011 5://adfi.by/2noFC com Sep 28, 2011	e 1 of 7 (655 Total Results) ULL (A-2) ULL (A-4) m/XUII on Morns Challenge/slideshow/flooding- alac-14565409 FFund - CIDA /acdi-cida/ACDI-CIDA.nst/eng/ANN-	











MS Thesis - August 2012



2002 - 2003 Primary: General Information Secondary: Election



2008 - 2009 Primary: Education, Health Secondary: Government, Business

MS Thesis - August 2012

# **Informal User Evaluation**

Alex Thurman, Columbia University Libraries
 Feedback on

- ease of browsing and obtaining information
- user-friendliness of the interface
- whether they prefer textual or graphical interface
- most effective visualization
- effectiveness of the rule-based categorization in exploring archives

#### Feedback

#### Effective visualizations:

- Treemap color coding useful for identifying newer additions
- Image plot screenshots with mouse-over wordles allow for good navigation
- Timeline useful for visualizing development of groups in collection
- Suggestions
  - Broader timescale for treemaps
  - Include stop words from other languages

# FUTURE WORK AND CONCLUSION

### **Future Work**

- N-Gram wordles
- Term expansion
- 4 Krovetz stemmer (dictionary based stemmer)
- Integration with Archive-It
- Detailed user evaluation
- Implementation for other archives

#### **4** Identified metrics for collections

# Identified metrics for collections *Visualizations*

Treemap



# Identified metrics for collections Visualizations

- Treemap
- Time cloud



# Identified metrics for collections

#### Visualizations

- Treemap
- Time cloud
- Bubble chart



#### Identified metrics for collections

- Visualizations
  - Treemap
  - Time cloud
  - Bubble chart
  - Image plot



#### Identified metrics for collections

#### Visualizations

- Treemap
- Time cloud
- Bubble chart
- Image plot
- Wordle



#### Identified metrics for collections

#### Visualizations

- Treemap
- Time cloud
- Bubble chart
- Image plot
- Wordle
- Timeline



#### Identified metrics for collections

- Visualizations
  - Treemap
  - Time cloud
  - Bubble chart
  - Image plot
  - Wordle
  - Timeline

#### **4** Rule – based categorization



# BACKUP

7/20/2012

# Time Span

Center for Human Rights Documentation & Research	Human Rights Web Archive (Colun Libraries)	nbia University	INTERNET ARCHIVE	Time span	Small Medium Large	1 Day - 2 Weeks 2 Weeks - 4 Months > 4 Months
	Enter Web Address: http://	All 💌 Take Me E	Back			
Searched for http://	/amigosdemujeres.org/		10 Results RSS Metadata			
Look up URL in gen	neral Internet Archive web collection		Proxy Mode Help			

\* denotes when page was updated

Found 10 Captures between May 14, 2009 - Mar 2, 2012						
2009	2010	2011	2012			
1 page	4 pages	4 pages	1 page			
<u>May 14, 2009</u> *	<u>Mar 19, 2010</u> *	<u>Mar 2, 2011</u> *	<u>Mar 2, 2012</u> *			
	<u>Sep 2, 2010</u> *	<u>Sep 2, 2011</u> *				
	<u>Dec 2, 2010</u> *	<u>Dec 2. 2011</u> *				
	· · · · · · · · · · · · · · · · · · ·					

Home | Internet Archive

http://wayback.archive-it.org/1068/\*/http://amigosdemujeres.org/

### Groups

A

EXPLORE LEARN MORE CONTACT US

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



	Small	1
Groups	Medium	2 - 5
	Large	> 5

#### Explore >> Columbia University Libraries >> Human Rights

HOME

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Center for Human Rights Documentation & Research	Human Rights Collected by: <u>Columbia University Libraries</u> 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 More <b>Y</b>
arrow 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.
roup mnesty International sections (48) ogs by individuals (6) ational human rights institutions (71) on-governmental organizations (356) uth commissions tribunals and courts (12)	Enter search terms here Search

Na

GI An Blo Na No Tru Page 1 of 5 (499 Total Results) Subject Sort By: Title (A-Z) | Title (Z-A) | URL (A-Z) | URL (Z-A) Human rights (398)

http://www.archive-it.org/collections/1068

#### **URI** Domains



	Small	1 - 10
URI Domains	Medium	11 - 20
	Large	> 20

http://www.archive-it.org/collections/2836

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### **Number of Web Pages**



#### <u>Pakistan floods ( 2011)</u>

ollected by: <u>Virginia Tech: Crisis, Tragedy, and Recovery Network</u>

Archived since: Sep, 2011

Description: The monsoon rains in Sindh province (Sept 2011), in outbeastern Pakistan, have submerged more than 4.5 million acres of farming land, damaging an estimated 80% of each crops. At less 5 million people have so far been affected, with more than 200 dead. Subject: <u>spontaneous Events</u>, <u>Filoods</u>, <u>Pakistan</u> More **V**.

#### 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.

There are no further ways to narrow your results.

Enter search terms here

Sites Search Page Text

Captured once on Sep 28, 2011

Page 1 of 7 (655 Total Results) Next Page >
Sort By: Title (A-Z)   Title (Z-A)   URL (A-Z)   URL (Z-A)
URL: http://abcnews.go.com/MillionMonsChallenge/slideshow/flooding- ravages-paldstan-unhcr-relief-14565409 Captured once on Sep 28, 2011
Title: Pakistan Flood Relief Fund - CIDA URL: http://acdi-cida.go.ca/acdi-cida/ACDI-CIDA.nst/eng/ANN- 820133234-NKW/ Captured once on Sep 16, 2011 More v
URL: http://adfly/2roFB Captured ance on Sep 28, 2011
URL: http://adfly/ZroPC Captured ance on Sep 28, 2011
URL: http://adfly/ZroOP Captured once on Sep 28, 2011
URL: http://aidnews.org/pakistan-another-year-another-flood/ Captured once on Sep 28, 2011
URL: http://aidresources.org/pakistan-another-year-another-flood/

	Small	1 - 10
# of Web Pages	Medium	11 - 99
	Large	> 99

#### http://www.archive-it.org/collections/2836

#### Jigsaw





In light of the information in PDI report for 10 pecender, 2004, an immediate theories of a constraints of the routes ablo lines to see if there were other occurrences of such double countings. Positive replice were obtained from the *RouteNormaginal* that is in the *route* (b) and the *Bearline* (b) is th

#### Stasko et.al., IEEE VAST 2007

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#### Themeriver



Wei et.al. in SIGKDD, 2010

### Time Cloud

06-06-2005 06-07-2006

TF-IDF

2005 919 board Carolina college commission community contact county department health information nc north office program public resource school service site

TF

1 2 2005 27699 919 busines Carolina com commission department division law ncdot ncdot ncdot ncdot raleigh resource tax

#### **Bubble Chart**



#### Image Plot with Wordle



7/20/2012

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#### Timeline



7/20/2012

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http://tmix.cs.odu.edu:8080/project/test.php?coll\_id=1068