Enabling Access to Old Wu-Tang Clan Fan Sites

Facilitating Interdisciplinary Web Archive Collaboration

Nick Ruest (@ruebot)
Ian Milligan (@ianmilligan1)

UNIVERSITY OF WATERLOO

YORK UNIVERSITÉ UNIVERSITY
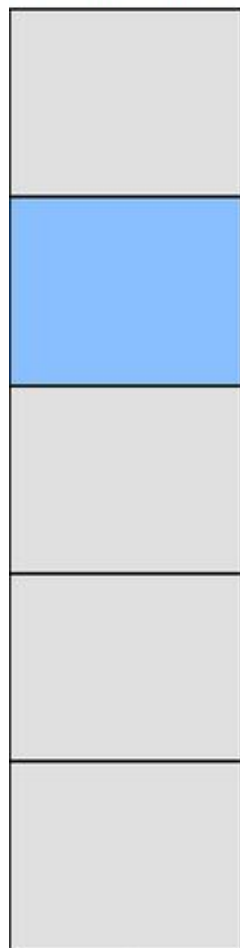
Why should we even care about web archives?

First, more data than ever before is being preserved...

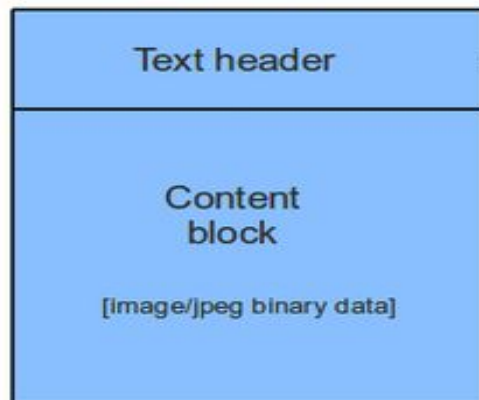Second, it'll be saved and delivered to us in very different ways

WARC (ISO 28500:2009)

WARC file

WARC record

Text header

Content block

[image/jpeg binary data]

WARC/1.0
WARC-Type: resource
WARC-Target-URI: file://var/www/htdoc/images/logoc.jpg
WARC-Date: 2006-09-19T17:20:24Z
WARC-Record-ID: <urn:uuid:92283950-ef2f-4d72-b224-f54c6ec90bb0>
Content-Type: image/jpeg
WARC-Payload-Digest: sha1:CCHXETFVJD2MUZY6ND6SS7ZENMWF7KQ2
WARC-Block-Digest: sha1:CCHXETFVJD2MUZY6ND6SS7ZENMWF7KQ2
Content-Length: 1662

...etc.

OccupyWallStreet

The revolution continues worldwide!

Welcome login | signup
Language en es fr

News | LiveStream | #HowToOccupy | Forum | Chat | User Map | NYCGA | About | Donate

Farmers Join Occupy Wall Street, Calling for Food Justice

Posted 5 hours ago on Dec. 2, 2011, 6:21 p.m. EST by OccupyWallSt

As Wall Street's corrupt influence on the economy has grown, the corporate ownership of our food system has hurt the health and livelihood's of some of our most vulnerable communities. This *Sunday, December 4th* food justice activists and occupiers will be traveling from as far as Colorado, Iowa, Maine and Upstate New York to join together for the Occupy Wall Street FARMERS' MARCH. Through a day of dialogue, musical performances, and a march, farmers and their urban allies working for food justice in their communities will form alliances to fight and expose corporate control of the food supply.

Events throughout the day will call and inspire participants to fight against the corporate manipulation of the agriculture system. An industry that is responsible for using chemical toxins tied to soaring obesity rates, heart disease and diabetes and limiting access to affordable, wholesome food to the country's poorest citizens.

Read More...

30 Comments

Occupy Wall Street Goes Home

Posted 1 day ago on Dec. 1, 2011, 3:04 p.m. EST by OccupyWallSt

NATIONAL DAY OF ACTION
DEC. 6, 2011

On December 6th Occupy Wall Street will join in solidarity with a Brooklyn community to re-occupy a foreclosed home. The day of action marks a national kick-off for a new frontier for the

General Inquiries:
general@occupywallst.org
Press Inquiries:
press@occupywallst.org
Press Phone: +1 (347) 292-1444
Help & Directions: +1 (516) 708-4777
Watch: The world we're building
Read: This call to action
Liberty Square Eviction Defense:
Text "@occupyalert" to 23559 to receive alerts in the event of imminent emergency.

Occupy Wall Street is leaderless resistance movement with people of many colors, genders and political persuasions. The one thing we all have in common is that We Are The 99% that will no longer tolerate the greed and corruption of the 1%. We are using the revolutionary Arab Spring tactic to achieve our ends and encourage the use of nonviolence to maximize the safety of all participants.

This #ows movement empowers real people to create real change from the bottom up. We want to see a general assembly in every backyard, on every street corner because we don't need Wall Street and we don't need politicians to build a better society.
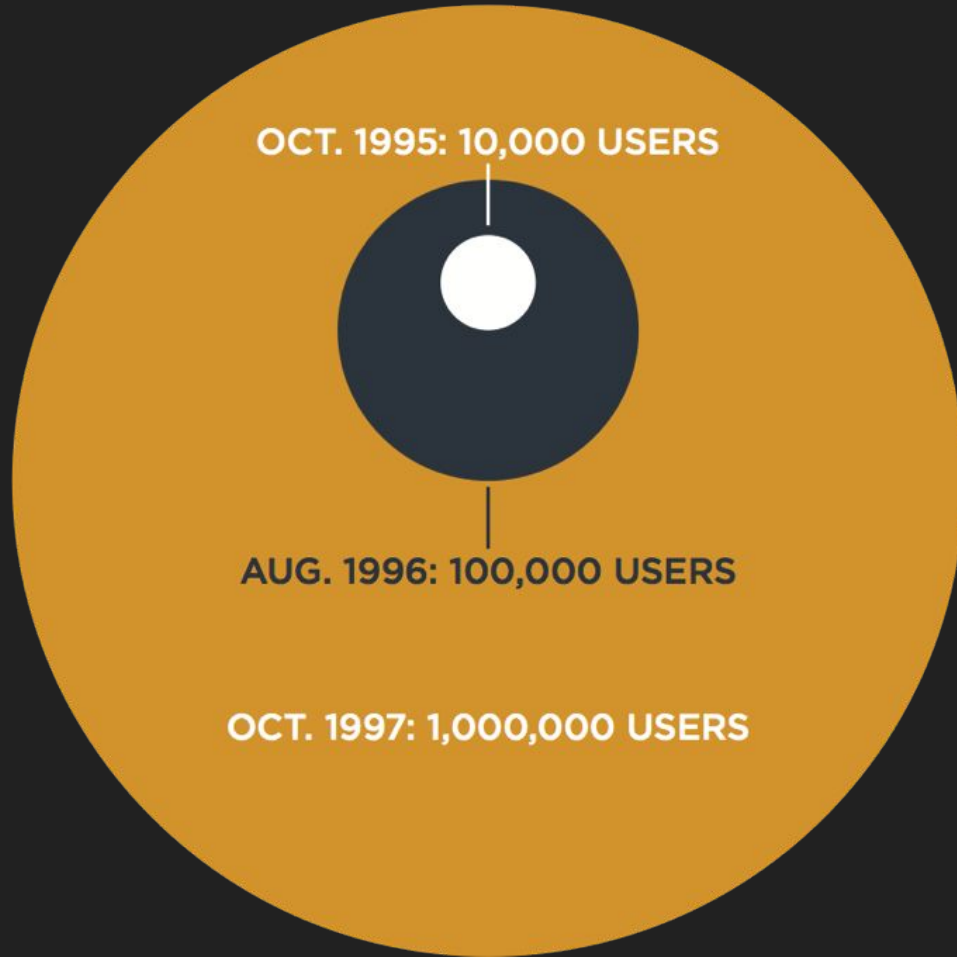
the only solution is WorldRevolution
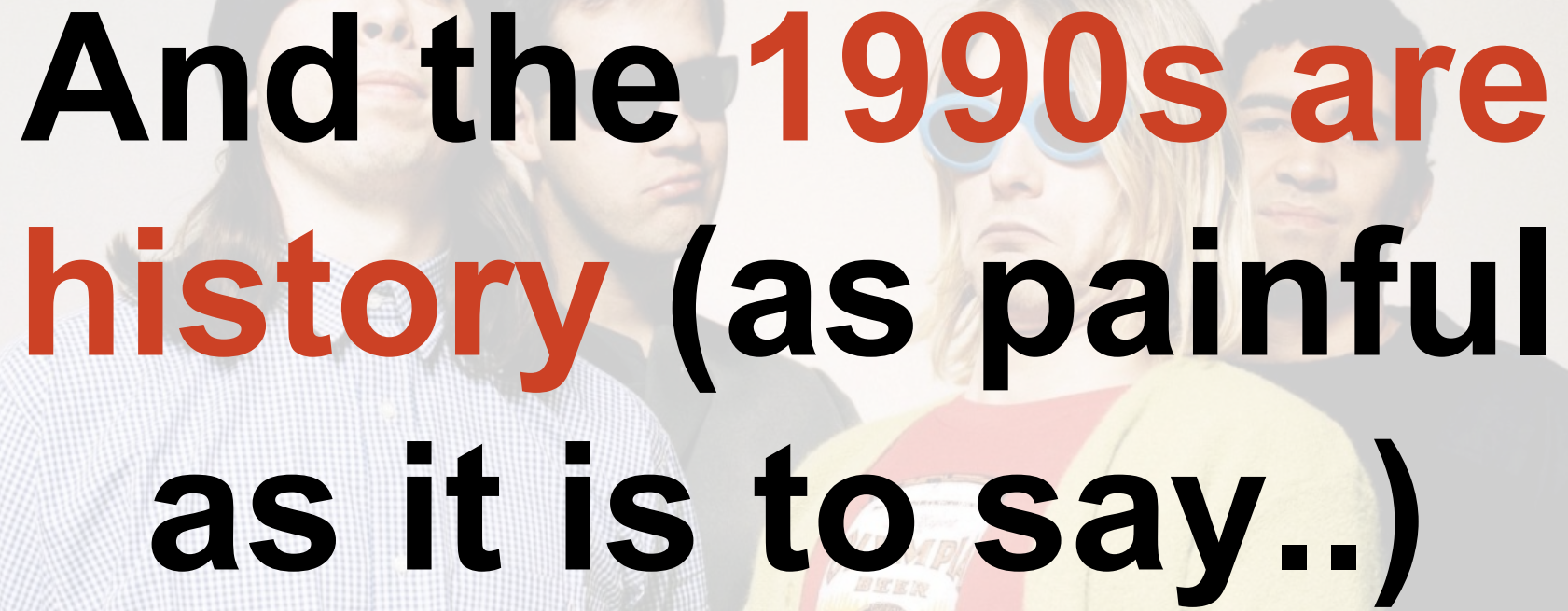
Click here for NYCGA committee meeting times.

~~Scarcity~~
Abundance

Could one study the 1990s or beyond **without web archives**?

And the 1990s are history (as painful as it is to say..)

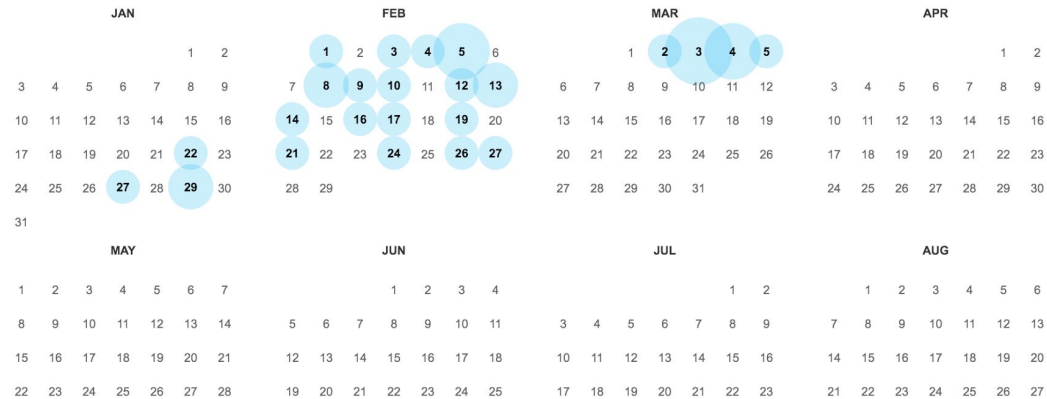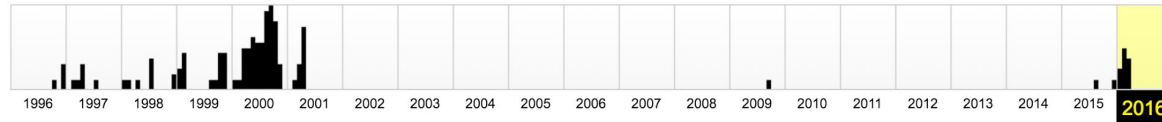But right now you have to use the Wayback Machine - requiring you know the URL!

INTERNET ARCHIVE
WayBackMachine

http://geocities.com

BROWSE HISTORY

http://geocities.com

Saved **1,675 times** between October 22, 1996 and March 5, 2016.

PLEASE DONATE TODAY. Your generosity preserves knowledge for future generations. Thank you.

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 **2016**

JAN

					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	**22**	23
24	25	26	**27**	28	**29**	30
31						

FEB

		1	2	**3**	**4**	**5**	6
7	**8**	**9**	**10**	11	**12**	**13**
14	15	**16**	**17**	18	**19**	20
21	22	23	**24**	25	**26**	**27**
28	29					

MAR

	1	**2**	**3**	**4**	**5**	6
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13	14	15	16	17	18	19
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27	28	29	30	31		

APR

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MAY

1	2	3	4	5	6	7
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JUN

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JUL

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10	11	12	13	14	15	16
17	18	19	20	21	22	23

AUG

	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27

Microsoft **Visual Basic™ 5.0** Site Builder network
C O N T R O L   C R E A T I O N   E D I T I O N

Visual Basic 5.0 Control Creation Edition Free!

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HEARTLAND

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WHAT IS GEOCITIES?

* **Free Home Pages & Free Member Email**   **Advertiser Information**

GeoCities Daily Audio Update -- *Sponsored by IBM VoiceType Simply Speaking*

Happy Holidays from all of us at Geocities!

A message from our CEO

Today's Cool Homestead
WallStreet1456
Beginning investors and speculators won't want to miss the Working Class Investor Newsletter.

GeoCities News of the Day - 12/25/96

GEOCITIES LIVE CHRISTMAS TREE!
ON CAMERA!

Building a home page for the holidays?
Submit your letters to Santa, favorite holiday recipes and other holiday cheer to our special
NorthPole neighborhood. And share your holiday spirit with GeoCitizens around the world
in our virtual holiday tree!

We need interdisciplinary collaboration to tackle this problem!

Team(s)

WARCS RULE EVERYTHING AROUND ME (US!)

Ian Milligan

History Faculty Member

Jimmy Lin

Computer Science Faculty Member

Jeremy Wiebe

History PhD Candidate

Alice Zhou

Computer Science Undergraduate

Nick Ruest

Digital Assets Librarian

Collaboration

My beats travel like a vortex, through your spine
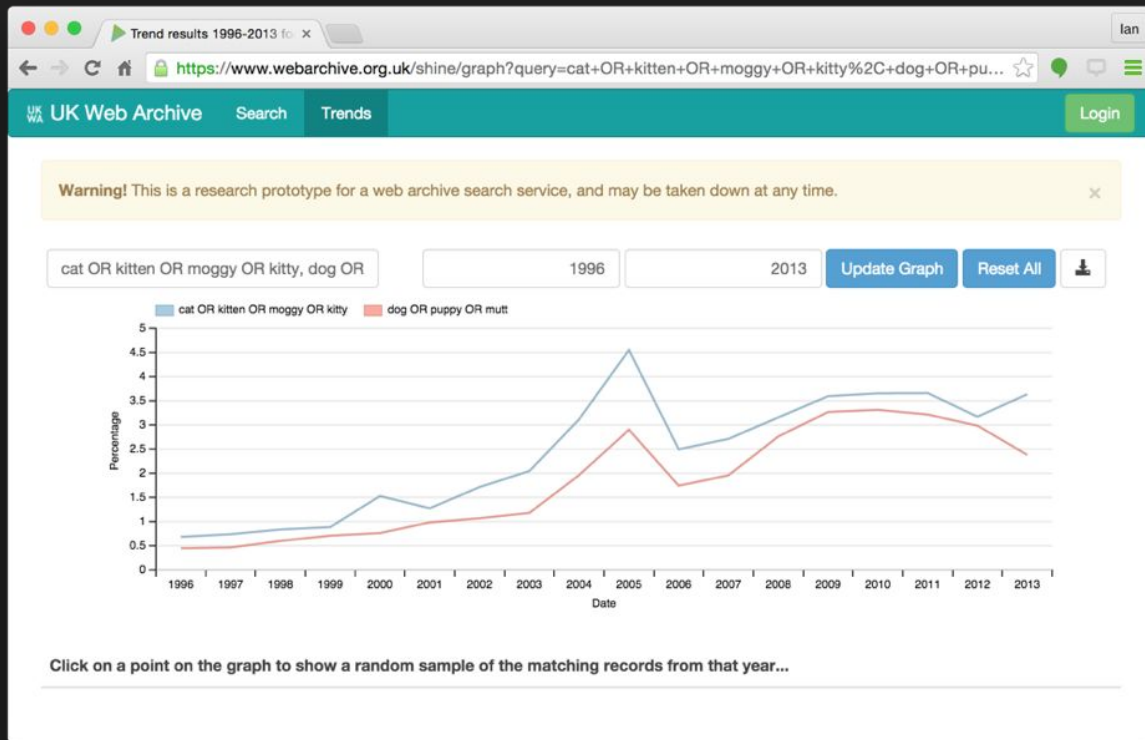to the top of your cerebrum cortex

#Slack & GitHub

Platforms

Every time the horn blows, the Wu's signal's back on
Transform, pack form a whole another platform

Shine

https://github.com/ukwa/shine/

Shine

webarchives.ca

CLI tools

awk, sed, grep, parallel, sort, uniq, wc, jq

Geocities

File   Edit   View   Go   Communicator   Help

Back   Forward   Reload   Home   Search   Netscape   Print   Security   Stop

Bookmarks   Location: http://www.geocities.com/Hollywood/2979/

DOOM LEVEL DESIGN WITH
DEUS

Table of Contents

1. **Getting Started**
   - Introduction
   - Software/Hardware Requirements
2. **What Editor to Choose?**
   - Understanding the Editor
   - Understanding the Construction Features
3. **Building a New Level**
   - Inserting Vertices
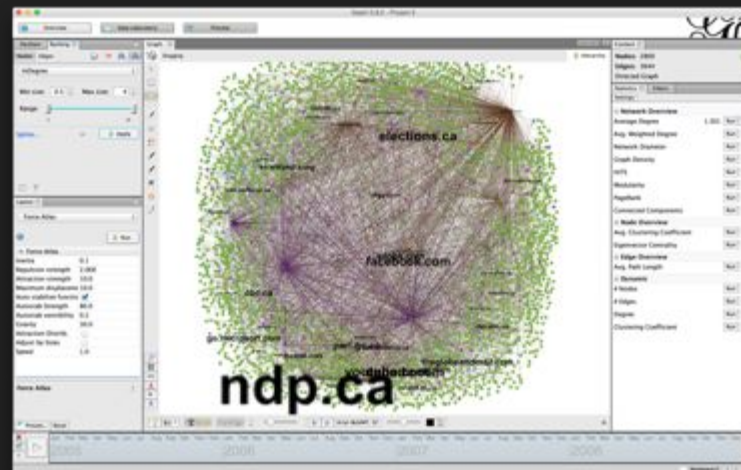
Document: Done

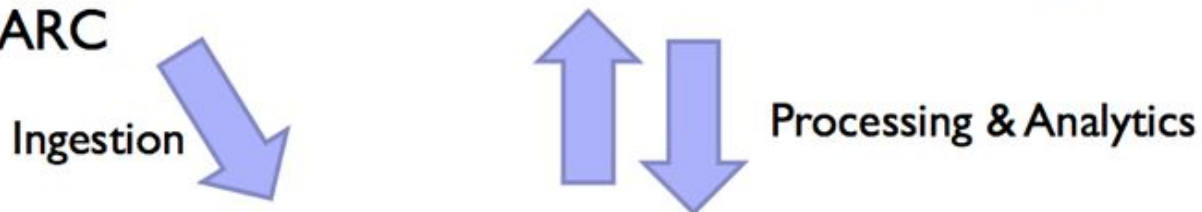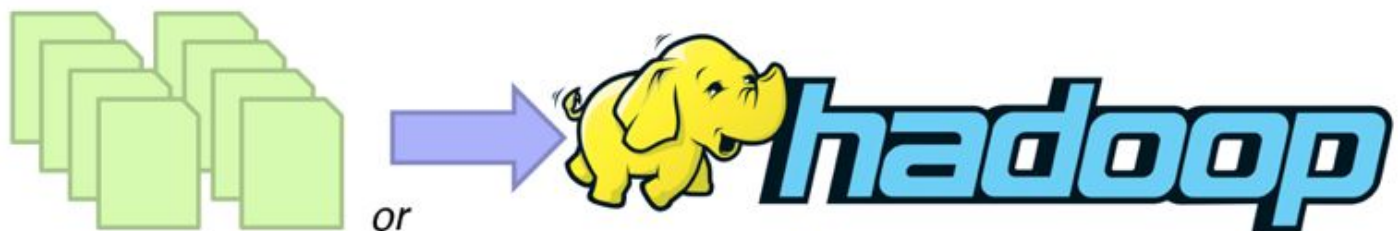Start   Doom Level Design w...   00:36

Join **GeoCities**

Neighborhoods   Members' Area   Shopping Center   Search

Search the At Hand® Network Yellow Pages

CATEGORY [ ]   CITY [ ]   STATE [AL ▾]   Go!

NEIGHBORHOODS

GeoAvenues
Great GeoShops
Visit Virtual Offices

Search GeoCities
[ ] GO

Yellow Pages | Domains Stocks |
White Pages | Maps

Home
Help
Info

Visit These Neighborhoods

GeoCities members, or Homesteaders, create their home pages within themed communities called Neighborhoods. Find a Neighborhood that interests you, and see how our Homesteaders use their pages to showcase their interests and creative content for millions of people to see.

Area51	Science fiction and fantasy
Athens	Education, literature, poetry, philosophy
Augusta	Golf and the finer side of the fairways
Baja	Four-wheeling, SUVs, off-roading, adventure travel
BourbonStreet	Jazz, Cajun food, Southern culture
Broadway	Theater, musicals, show business
CapeCanaveral	Science, mathematics, aviation
CapitolHill	Government, politics, and lots of strong opinions
CollegePark	University life, from academics to extracurriculars
Colosseum	Sports and recreation
EnchantedForest	A neighborhood for and by kids
Eureka	Small businesses, home offices
FashionAvenue	Top designers, beauty and fashion

more re
just go

GEOCITIES

AREA51   PARIS   HEARTLAND   ATHENS   TIMES SQUARE

Our communities are home to the most popular collection of *FREE HOME PAGES* & *E-MAIL* on the web. Please join or visit one of our 29 neighborhoods today.

- NEIGHBORHOODS
- WHAT'S NEW
- WHAT'S COOL
- WHAT IS GEOCITIES?

* **Free Home Pages & Free Member Email**   **Advertiser Information**

Today's Cool Homestead   DIAL web Audio Update   GeoCities Daily Audio Update

Next Stop   PLANET DIRECT

LYCOS

FREELOADER 2.0

NEW! GeoStore

HotSprings 1837
So you hit the snooze bar ten times every morning. You might be lazy. But then again, you might have a sleep disorder. Find out here.

GeoCities News of the Day - 10/22/96

Warcbase

Warcbase

- An open-source platform for managing web archives

- Two main components
  - A flexible data store: your own Wayback Machine
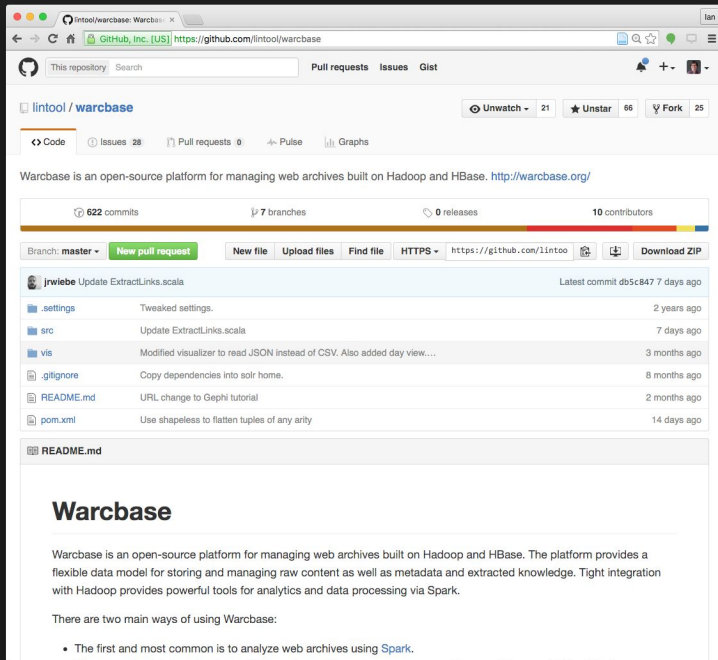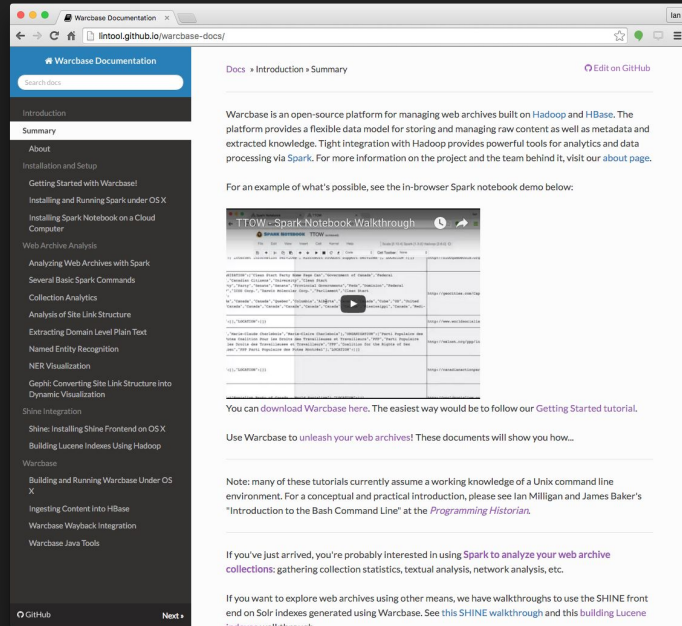 - Scriptable analytics and data processing

Warcbase

- Scalable
  - From Raspberry Pi to Desktop Computer to Server to Cluster, **all with same scripts and commands**
- Potentially very powerful
  - **Trantor**: 1.2PB of disk, 25 compute nodes (each w/ 128GB memory, 2×6-core Intel Xeon E5 v3 = 3.2TB memory and 300 current-generation Intel cores)
- In active development, led by **Jimmy Lin**, collaborator with Web Archives Historical Research Group

You can Warcbase Too! (...and Twarcbase soon!)

warcbase.org

docs.warcbase.org

Let's do a quick walkthrough of how we've used it on GeoCities

```
1. i2millig@rho: /mnt/vol1/data_sets/geocities/warcs (ssh)

        bash                    bash              i2millig@rho: /mnt/vol1/data...
GEOCITIES-20091029114236-00191-ia400110.us.archive.org.warc.gz
GEOCITIES-20091029115416-00171-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029123034-00172-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029130439-00173-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029134536-00174-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029140344-00192-ia400110.us.archive.org.warc.gz
GEOCITIES-20091029141553-00193-ia400110.us.archive.org.warc.gz
GEOCITIES-20091029141726-00175-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029144445-00176-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029152151-00177-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029160824-00178-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029164941-00179-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029165037-00194-ia400110.us.archive.org.warc.gz
GEOCITIES-20091029170431-00195-ia400110.us.archive.org.warc.gz
GEOCITIES-20091029171605-00180-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029174154-00181-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029180818-00182-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029182725-00183-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029185858-00184-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029193728-00185-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029194541-00196-ia400110.us.archive.org.warc.gz
GEOCITIES-20091029195911-00197-ia400110.us.archive.org.warc.gz
GEOCITIES-20091029202041-00186-crawling08.us.archive.org.warc.gz
GEOCITIES-20091029221340-00198-ia400110.us.archive.org.warc.gz
GEOCITIES-20091029222459-00199-ia400110.us.archive.org.warc.gz
GEOCITIES-20091030021147-00197-ia400103.us.archive.org.warc.gz
GEOCITIES-20091030021444-00198-ia400103.us.archive.org.warc.gz
GEOCITIES-20091030022413-00171-ia400104.us.archive.org.warc.gz
i2millig@rho:/mnt/vol1/data_sets/geocities/warcs$ du -h
4.1T    .
i2millig@rho:/mnt/vol1/data_sets/geocities/warcs$
```

```
ianmilligan1@Ians-MacBook-Pro:~$ rho
i2millig@rho.library.yorku.ca's password:
Welcome to Ubuntu 14.04.2 LTS (GNU/Linux 3.13.0-32-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

  System information as of Mon Mar  7 13:43:20 EST 2016

  System load:  0.99              Users logged in:         1
  Usage of /:   34.7% of 744.67GB IP address for em1:      130.63.180.18
  Memory usage: 16%               IP address for em2:      10.0.0.18
  Swap usage:   6%                IP address for docker0: 172.17.0.1
  Processes:    359

  Graph this data and manage this system at:
    https://landscape.canonical.com/

242 packages can be updated.
130 updates are security updates.

Last login: Mon Mar  7 13:43:21 2016 from 38.123.136.254
i2millig@rho:~$ ./spark-1.5.1/bin/spark-shell --jars ~/warcbase/target/warcbase-0.1.0-SNAPSHOT-fatjar.jar
WARN  NativeCodeLoader - Unable to load native-hadoop library for your platform... using builtin-java classes where applicable
Welcome to
      ____              __
     / __/__  ___ _____/ /__
    _\ \/ _ \/ _ `/ __/  '_/
   /___/ .__/\_,_/_/ /_/\_\   version 1.5.1
      /_/

Using Scala version 2.10.4 (Java HotSpot(TM) 64-Bit Server VM, Java 1.8.0_45)
Type in expressions to have them evaluated.
Type :help for more information.
WARN  MetricsSystem - Using default name DAGScheduler for source because spark.app.id is not set.
Spark context available as sc.
SQL context available as sqlContext.

scala> :paste
// Entering paste mode (ctrl-D to finish)

import org.warcbase.spark.matchbox._
import org.warcbase.spark.rdd.RecordRDD._

val r =
RecordLoader.loadWarc("/mnt/vol1/data_sets/geocities/warcs/GEOCITIES-20090808133634-04399-crawling08.us.archive.org.warc.gz", sc)
.keepValidPages()
.map(r => ExtractTopLevelDomain(r.getUrl))
.countItems()
.take(10)

// Exiting paste mode, now interpreting.

INFO  WacWarcInputFormat - Loading file:/mnt/vol1/data_sets/geocities/warcs/GEOCITIES-20090808133634-04399-crawling08.us.archive.org.warc.g
z
import org.warcbase.spark.matchbox._
import org.warcbase.spark.rdd.RecordRDD._
r: Array[(String, Int)] = Array((geocities.com,3748), (www.geocities.com,240), (www.myfilehut.com,12), (asiarooms.com,7), (us.geocities.com
,6), (www.theginge.com,3), (www.angelfire.com,3), (images.quizilla.com,3), (pub28.bravenet.com,3), (ss.webring.yahoo.com,2))

scala>
```
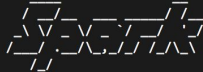
SPARK NOTEBOOK   Spark Notebook Demo (unsaved changes)

File   Edit   View   Insert   Cell   Kernel   Help

Scala [2.10.4] Spark [1.3.0] Hadoop [2.6.0]

Code   Cell Toolbar: None

C4L Hackathon Demo, March 2016

This is a notebook to demo how we're forseeing the rapid prototyping of work with web archives.

Note that we can begin to intersperse text with the code that we're writing, to enable the sharing of notebooks and research ideas.

```
In [ ]:    :cp /Users/ianmilligan1/dropbox/warcbase/target/warcbase-0.1.0-SNAPSHOT-fatjar.jar
```
...

```
In [ ]:    import org.warcbase.spark.matchbox._
           import org.warcbase.spark.rdd.RecordRDD._
```
...

```
In [ ]:    var arc="/Users/ianmilligan1/Dropbox/warcs-workshop/227-20051004191331-00000-crawling015.archive.org.arc.gz";
           var warc="/Users/ianmilligan1/dropbox/wahr/sample-data/arc-warc/ARCHIVEIT-227-QUARTERLY-XUGECV-20091218231727-00039-crawling06.us.
           var arcdir="/Users/ianmilligan1/dropbox/warcs-workshop";
```
...

```
In [ ]:    val r =
           RecordLoader.loadArc(arc,
           sc)
           .keepValidPages()
           .map(r => ExtractTopLevelDomain(r.getUrl))
           .countItems()
           .take(10)

           r: Array[(String, Int)] = Array((cpcml.ca,271), (partimarijuana.org,215), (communist-party.ca,156), (westernblockpart
           y.com,144), (liberal.ca,107), (worldsocialism.org,105), (agoracosmopolite.com,103), (wegovern.ca,74), (www.conservativ
           e.ca,70), (canadianactionparty.ca,58))
```

Out[4]:

10 items

- cpcml.ca
- partimarijuana.org
- communist-party.ca
- westernblockparty.com
- liberal.ca
- worldsocialism.org
- agoracosmopolite.com
- wegovern.ca
- www.conservative.ca
- canadianactionparty.ca

Extracting all URLs

```scala
1  import org.warcbase.spark.matchbox._
2  import org.warcbase.spark.rdd.RecordRDD._
3
4  val r = RecordLoader.loadWarc("/mnt/vol1/data_sets/geocities/
         warcs", sc)
5  .keepValidPages()
6  .map(r => r.getUrl)
7  .saveAsTextFile("/mnt/vol1/derivative_data/geocities/url-list")
```

Results = 186,761,346 URLs, 9.9GB text file

Extracting a Link Graph

```scala
1  import org.warcbase.spark.matchbox.{ExtractTopLevelDomain,
       ExtractLinks, RecordLoader}
2  import org.warcbase.spark.rdd.RecordRDD._
3
4  RecordLoader.loadArc("/mnt/vol1/data_sets/geocities/warcs/*", sc)
5  .keepValidPages()
6  .map(r => (r.getCrawldate, ExtractLinks(r.getUrl, r.
       getContentString)))
7  .flatMap(r => r._2.map(f => (r._1, ExtractTopLevelDomain(f._1).
       replaceAll("^\\s*www\\.", ""), ExtractTopLevelDomain(f._2).
       replaceAll("^\\s*www\\.", ""))))
8  .filter(r => r._2 != "" && r._3 != "")
9  .countItems()
10 .filter(r => r._2 > 5)
11 .saveAsTextFile("/mnt/vol1/data_sets/geocities/geocities.
       sitelinks")
```

Results

```
1  ((20090903,http://geocities.com/saganaki2000/ADSLGR/adslgr.htm,
   http://www.adslgr.com),15337)
2  ((20091026,http://geocities.com/saganaki2000/ADSLGR/adslgr.htm,
   http://www.adslgr.com),15337)
3  ((20091027,http://geocities.com/spankbank69hard/,http://pg.photos
   .yahoo.com/ph/spankbank69hard/my_photos/),9807)
4  ((20090903,http://geocities.com/spankbank69hard/index.html,http:/
   /pg.photos.yahoo.com/ph/spankbank69hard/my_photos/),9807)
5  ((20091027,http://geocities.com/CollegePark/Locker/8187/,http://
   www.comercialuruapan.com),8056)
6  ((20090903,http://geocities.com/CollegePark/Locker/8187/,http://
   www.comercialuruapan.com),8056)
```

Creating Entities

403GB of link graph data.

- http://www.geocities.com/EnchantedForest/Grove/1234/index.html
- http://www.geocities.com/EnchantedForest/Grove/1234/pets/cats.html
- http://www.geocities.com/EnchantedForest/Grove/1234/pets/dogs.html
- http://www.geocities.com/EnchantedForest/Grove/1234/pets/rabbits.html

Bash-Fu

Find all four digit numbers:

```
sed 's/[()]*//g; s/^[^,]*,//; s/\([0-9]\{4\}\)[^,]*/\1/g'
enchantedforest-links.txt > enchantedforest-entities-cleaned1.txt
```

Then find internal:

```
grep -P '(.*/[0-9]{4}){2}' enchantedforest-entities-cleaned1.txt >
enchantedforest-entities-internal.txt
```

Link Structure

```
1  Source,Target,Weight
2  http://www.geocities.com/EnchantedForest/Meadow/1134,http://www.
   geocities.com/EnchantedForest/1004,83
3  http://www.geocities.com/EnchantedForest/Meadow/1134,http://www.
   geocities.com/EnchantedForest/1004,83
4  http://www.geocities.com/Area51/Stargate/1357,http://www.
   geocities.com/Area51/EnchantedForest/4213,33
5  http://www.geocities.com/Area51/Stargate/1357,http://www.
   geocities.com/Area51/EnchantedForest/4213,33
6  http://www.geocities.com/Eureka/1309,http://www.geocities.com/
   EnchantedForest/Tower/7555,27
7  http://www.geocities.com/Eureka/1309,http://www.geocities.com/
   EnchantedForest/Tower/7555,27
```

EnchantedForest/Glade/3891

Yahoo got rid of us! Sorry but we do not exist anymore. We haven't in a long time now. Yahoo doesn't care about the kids anymore. Pedophiles and porno sickos can now run rampid and there's nothing anyone at Yahoo is gonna do! They just don't care about the safety of children. All they care about is numbers and money! May God have mercy on them all!

Historical Uses

- The prevalence of awards pages and awards hubs within this neighbourhood;
- A protest movement that may have emerged when Yahoo! decided to shut down the neighbourhood;
- We can begin to follow links from this awards page, by highlighting it in Gephi, to find pages that hosted awards in connection with it;

We could do Shine indexing, but metadata might be the best way forward.

Also lets us share datasets!

Datasets

Links!

- https://uwaterloo.ca/web-archive-group/
- https://github.com/web-archive-group/
- https://github.com/ianmilligan1/
- https://github.com/ruebot
- http://dataverse.scholarsportal.info/dvn/dv/wahr

By Napalm filled tires (Wu Tang Clan)
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