ClueWeb09 and TREC Diversity

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The Big Picture

Our goal is to explore and evaluate Web retrieval technologies over a (nearly) commercial-scale collection.

2009 was our first year; continues in 2010

Tasks: adhoc, diversity, spam (new)

The collection: ClueWeb09

- One billion pages; 25TB uncompressed; multiple languages (but in practice we use only the English-language subset comprising about half of the collection)
- "Category B" subset of 50 million English pages used by many participants.
- Crawled in early 2009.

`http://boston.lti.cs.cmu.edu/Data/clueweb09`

Adhoc task

- Return a ranked list of documents in order of decreasing probability of relevance.
- Automatic runs only, returning the top 1000 documents for each of 50 topics.
- Judged by NIST on a four-point scale of “highly relevant”, “relevant”, “not relevant” and “not relevant, but reasonable”.

(more-or-less the same as always)

Diversity task

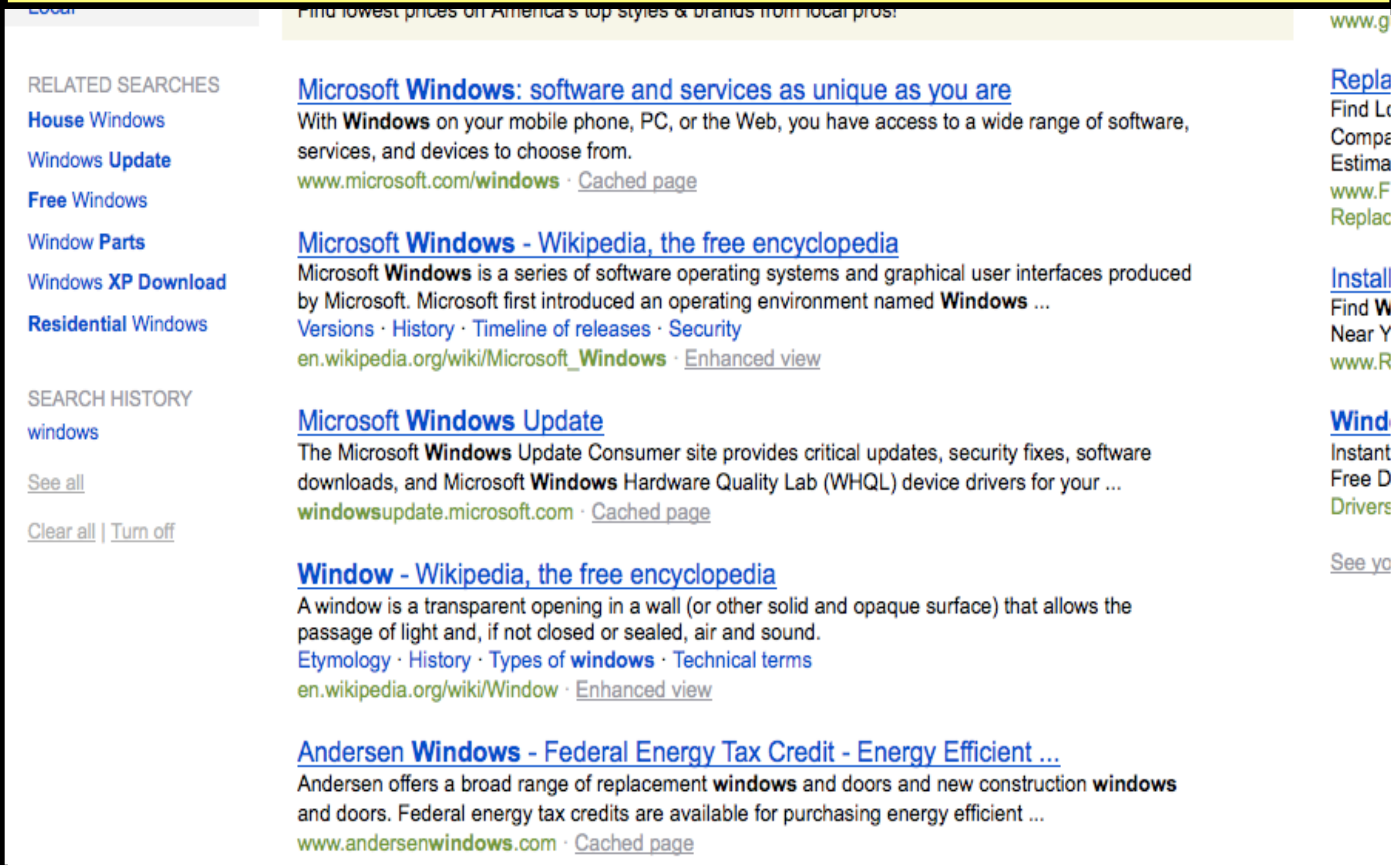
- Return a ranked list of documents in order of decreasing probability of relevance, where relevance is considered in the context of higher-ranked documents.
- Automatic runs only, returning the top 1000 documents for each of 50 topics.
- Judged by NIST through binary judgments with respect to sub-topics.

(closer to “real” Web retrieval?)

What does “`windows`” mean?

1. Microsoft Windows
   a) Can I upgrade directly from XP to Windows 7?
   b) What’s the Windows update URL?
   c) I want to download Windows Live Essentials
2. House windows
   a) Where can I buy replacement windows?
   b) What brands are available?
   c) Aluminum or vinyl?
3. Windows Restaurant, Las Vegas

Novelty and Diversity



Local

RELATED SEARCHES

House Windows

Windows **Update**

Free Windows

Window **Parts**

Windows **XP Download**

Residential Windows

SEARCH HISTORY

windows

See all

Clear all | Turn off

Find lowest prices on America's top styles & brands from local pros!

Microsoft **Windows**: software and services as unique as you are
With **Windows** on your mobile phone, PC, or the Web, you have access to a wide range of software, services, and devices to choose from.
www.microsoft.com/**windows** · Cached page

Microsoft **Windows** - Wikipedia, the free encyclopedia
Microsoft **Windows** is a series of software operating systems and graphical user interfaces produced by Microsoft. Microsoft first introduced an operating environment named **Windows** ...
Versions · History · Timeline of releases · Security
en.wikipedia.org/wiki/Microsoft_**Windows** · Enhanced view

Microsoft **Windows** Update
The Microsoft **Windows** Update Consumer site provides critical updates, security fixes, software downloads, and Microsoft **Windows** Hardware Quality Lab (WHQL) device drivers for your ...
windowsupdate.microsoft.com · Cached page

Window - Wikipedia, the free encyclopedia
A window is a transparent opening in a wall (or other solid and opaque surface) that allows the passage of light and, if not closed or sealed, air and sound.
Etymology · History · Types of **windows** · Technical terms
en.wikipedia.org/wiki/Window · Enhanced view

Andersen **Windows** - Federal Energy Tax Credit - Energy Efficient ...
Andersen offers a broad range of replacement **windows** and doors and new construction **windows** and doors. Federal energy tax credits are available for purchasing energy efficient ...
www.andersen**windows**.com · Cached page

www.g

Repla
Find Lo
Compa
Estima
www.F
Replac

Install
Find **W**
Near Y
www.R

Wind
Instant
Free D
Drivers

See yo

50 New Topics

- Query + Detailed Subtopics
- Initial release: query only
- Based on clusters created from co-click and other information extracted from the logs of a commercial search engine (with thanks to Microsoft, Filip Radlinski, and Martin Szummer).

Raw material for topics

```
obama family tree
   obama(100) family(71) barack(42) tree(28) pictures(28)...
   chris(99) rock(99) video(18) quotes(9) show(9) police(9)...
   mother(100) obama(100) dunham(66) stanley(50) ann(50)...
   obama(100) s(55) father(55) barack(44) sr(33)...
   bush(100) family(85) tree(42) george(28) history(14)...


kcs
   kansas(100) kcs(100) city(100) southern(100) com(85) railroad(57)...
   kanawha(100) county(100) school(50) schools(42) calendar(21)...
   kcs(100) railroad(100) jobs(25) careers(25) career(25)...
   county(100) knox(90) schools(49) school(39) www(9) system(9)...
   energy(100) kcs(100) www(25) merger(25) kcsenergy(25) inc(25)...
```

Topic development by NIST

- Clusters used for “inspiration” (avoiding strange and rare aspects and interpretations).
- Two topic types:
  - faceted
  - ambiguous
- Two subtopic types:
  - informational
  - navigational

Topic #1: obama family tree

```
<topic number="1" type="faceted">
  <query>obama family tree</query>
  <description>
    Find information on President Barack Obama's family history,
    including genealogy, national origins, places and dates of
    birth, etc.
  </description>
  <subtopic number="1" type="nav”>
    Find the TIME magazine photo essay "Barack Obama's Family Tree".
  </subtopic>
  <subtopic number="2" type="inf">
    Where did Barack Obama's parents and grandparents come from?
  </subtopic>
  <subtopic number="3" type="inf">
    Find biographical information on Barack Obama's mother.
  </subtopic>
</topic>
```

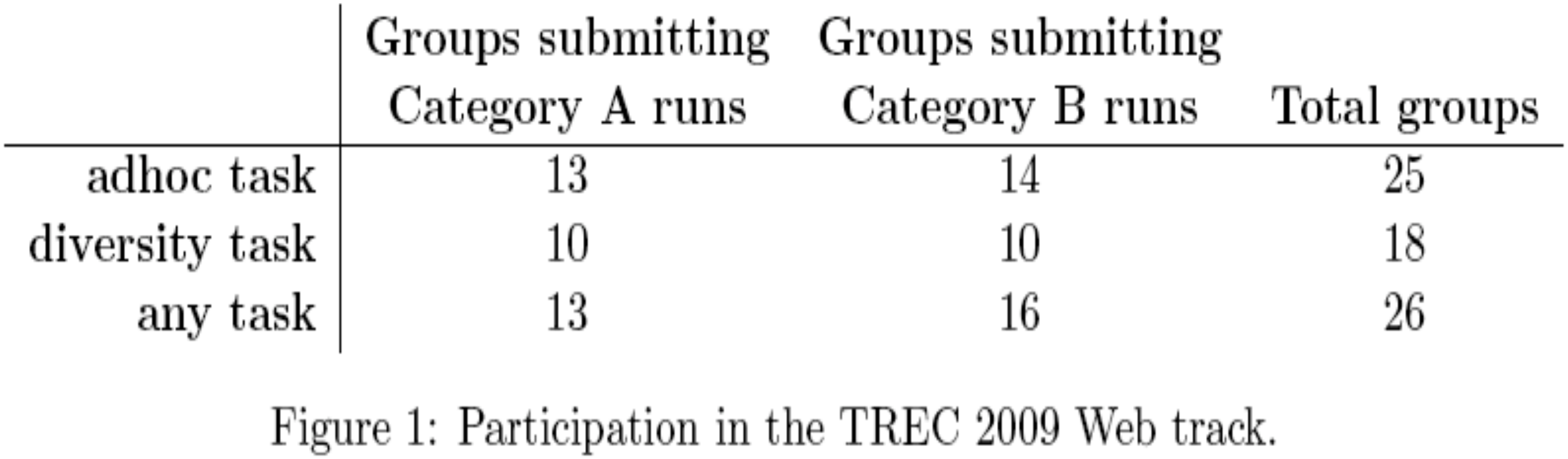
Topic #6: kcs

```
<topic number="6" type="ambiguous">
  <query>kcs</query>  <description>
    Find information on the Kansas City Southern railroad.
  </description>
  <subtopic number="1" type="nav">
    Find the homepage for the Kansas City Southern railroad.
  </subtopic>
  <subtopic number="2" type="inf">
    I'm looking for a job with the Kansas City Southern railroad.
  </subtopic>
  <subtopic number="3" type="nav">
    Find the homepage for Kanawha County Schools in West Virginia.
  </subtopic>
  <subtopic number="4" type="nav">
    Find the homepage for the Knox County School system in Tennessee.
  </subtopic>
  <subtopic number="5" type="inf">
    Find information on KCS Energy, Inc., and their merger with
```

Topics and sub-topics

- For adhoc task, relevance judged in terms of description field.
- For diversity task, relevance judged independently with respect to each subtopic.
- 3-8 subtopic per topic (mean 4.9)

Participants



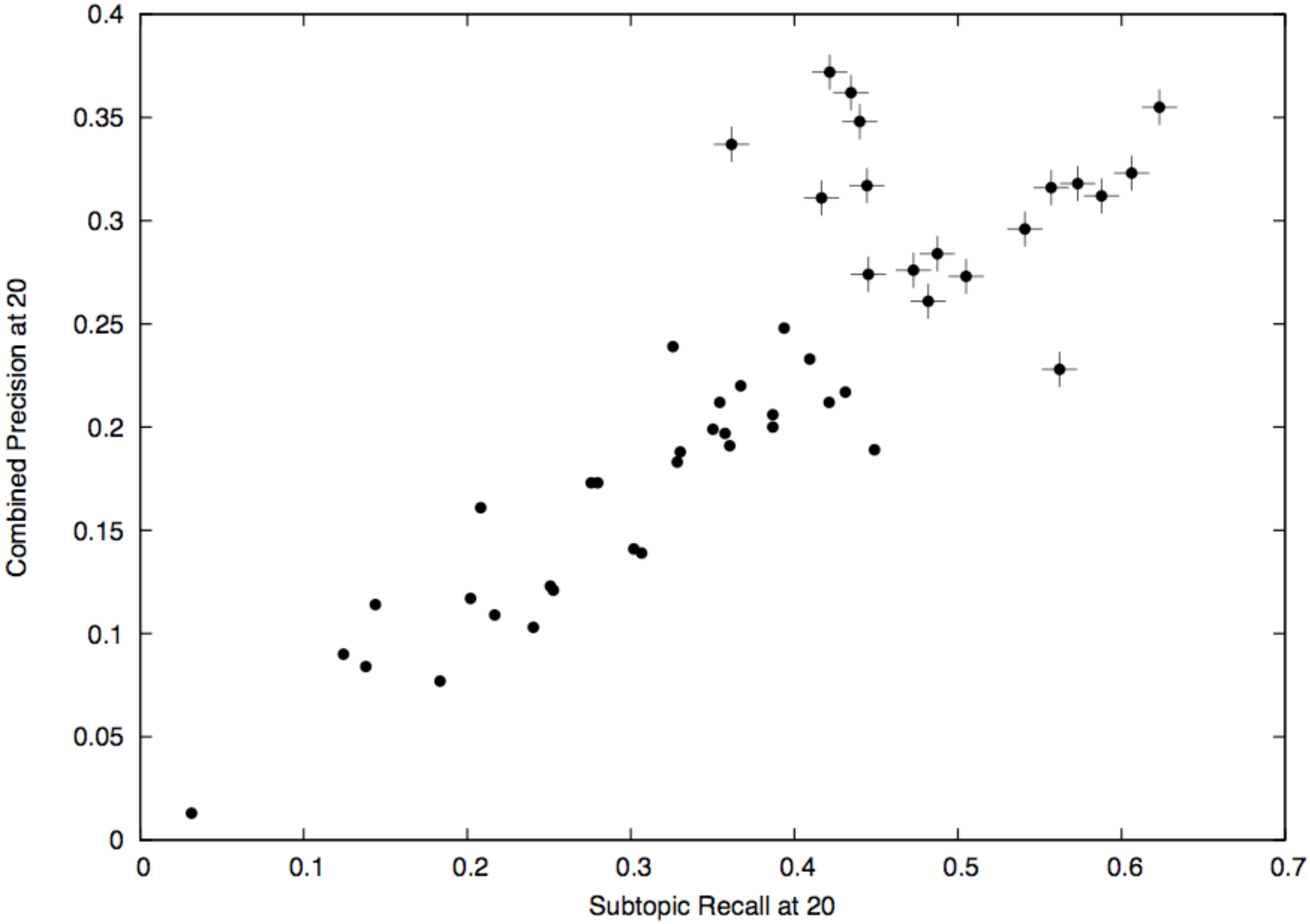
	Groups submitting Category A runs	Groups submitting Category B runs	Total groups
adhoc task	13	14	25
diversity task	10	10	18
any task	13	16	26

Figure 1: Participation in the TREC 2009 Web track.

Evaluation

- adhoc task: Expected MAP, etc.
  - see TREC Million Query Track for details
- diversity task:
  - α-nDCG, see Clarke et al. (SIGIR ’08)
  - precision-IA, see Agrawal et al. (WSDM ’09)
  - intent aware ERR, see Chapelle et al. (CIKM ‘09)
  - NRBP, see Clarke et al. (ICTIR ‘09)
  - simple measures…

results



0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Combined Precision at 20
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
Subtopic Recall at 20

TREC 2010

- Track continues in 2010
  - adhoc and diversity tasks continue
  - new spam task
- 50 new topics; 6-level adhoc judging
- Submissions due: August 9
  - still time to participate!

Web spam

- Simple filtering of 2009 results to remove Web spam substantially improved results.
- See http://arxiv.org/abs/1004.5168

- TREC 2010 spam task: *Score each English document in the full ClueWeb09 collection according to how likely it is to be spam.*

TREC 2010 Web Track

plg.uwaterloo.ca/~trecweb/2010.html

Questions?

TREC Web Track

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