Large Crawls of the Web for Linguistic Purposes

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Outline

The WaCky approach

- `http://wacky.sslmit.unibo.it`
- Current target: 1-billion token English, German, Italian Web-corpora by 2006.
- Use existing open tools, make developed tools publicly available.
- Please join us (for other languages as well!)

The basic steps

- Select “seed” urls.
- Crawl.
- Post-processing.
- Linguistic annotation.
- Indexing, etc.

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- How random are the urls collected in this way? Ongoing work with Massimiliano Ciaramita (ISTC, Rome).

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Crawling

- Fetch pages, extract links.
- Follow links, fetch pages.

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- Works out of the box, reasonable defaults

Heritrix

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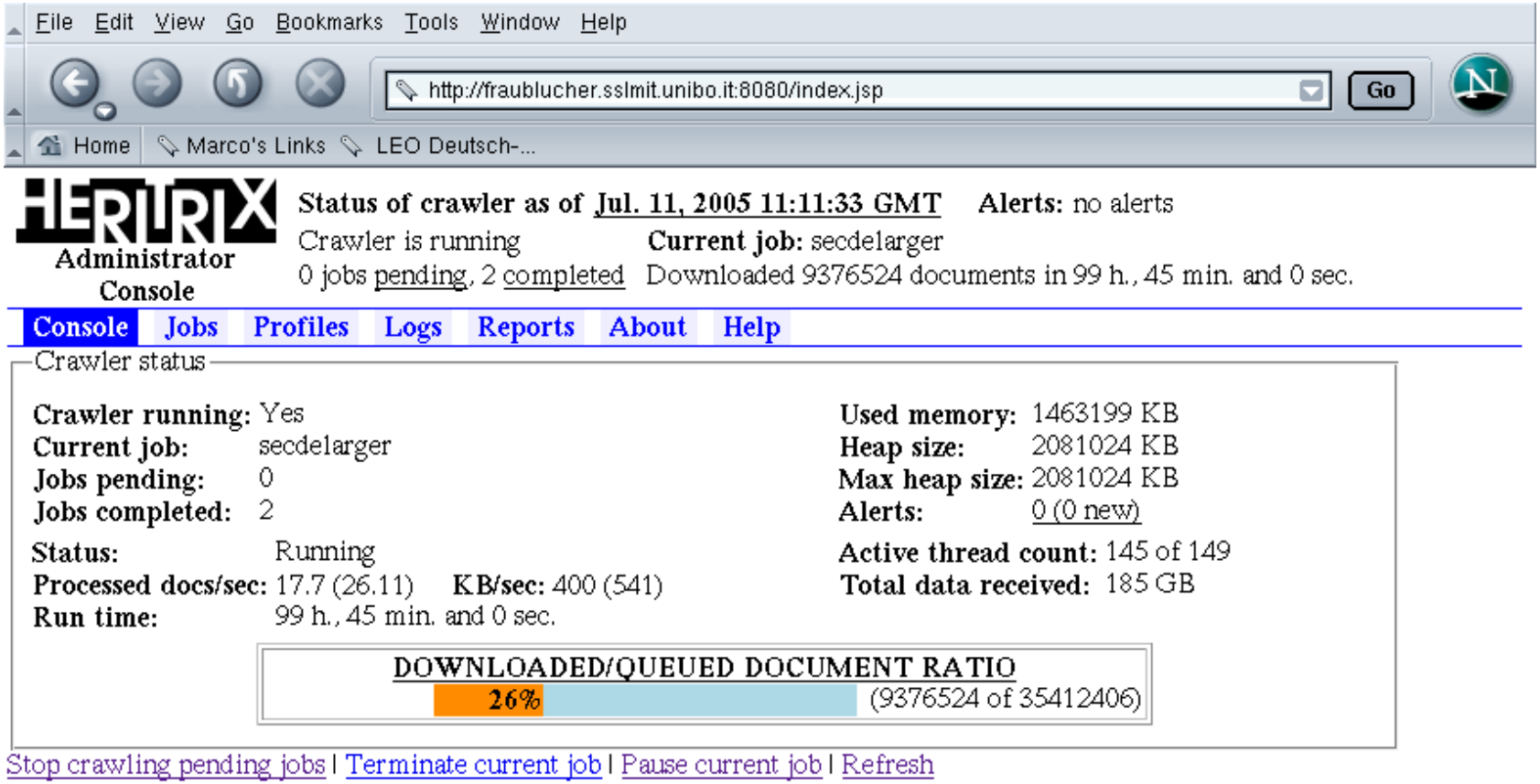
- that includes linguists and machine learning experts

The Heritrix WUI



The outpuf of Heritrix

- Documents distributed across gzipped “arc” files not larger than 100 MB.
- Info about retrieved docs (fingerprints, size, path) in arc file headers and in log files.

My German crawl

- On server running RH Fedora Core 3 with 4 GB RAM, Dual Xeon 4.3 GHz CPUs, about 1.1 TB hard disk space.
- Seeded from random Google queries for SDZ and basic vocabulary list terms.
- 8631 urls, all from different domains.
- SURT scope:
  `http:(at,`
  `http:(de,`
- Tom Emerson's regexp to "focus on HTML"
- For most settings, Heritrix defaults.

Current status of crawl

- In about a week:
- Retrieved about 265 GB, about 54 GB of arc files
- In earlier experiments, 7 GB arc files yielded about 250M words after cleaning.

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- Near-duplicate identification

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- Promising: brand new Heritrix/Rainbow interface.

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- Boilerplate removal: see next talk.

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- Non-latin1 languages: recognize language *and* encoding

Near-duplicate spotting

- Simplified version of shingling algorithm of: Broder, Glassman, Manasse and Zweig (1997). Syntactic Clustering of the Web. Sixth International World-Wide Web Conference.
- Freely available implementation in perl and MySQL written with Eros Zanchetta (SSLMIT).

The shingling algorithm

- For each page, randomly sample N n-grams (e.g., 25 pentagrams)
- Look for pages that share at least X of the randomly sampled n-grams (e.g., 5)
- (Important to do boilerplate removal before, or most of your n-grams will be things like: “buy click here”.)

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- Should we really be throwing them away?

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Annotation

- With standard tools. . .
- However, need for robustness.
- Following wreaks havoc on TreeTagger tokenizer and tagger:
  `und bewusst werden. ein unsichtbares band verbindet`

Indexing, retrieval, interfaces. . .

- CWB, SketchEngine, Xaira?
- Lucene?
- MySQL?

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- Some (of many) open issues:
  - What “language” are we sampling from?
  - How large is large enough?