LECTURE16: GOOD PRACTICES OF SITE DESIGN

CS418/518: WEB PROGRAMMING

BY DR. JIAN WU

COURTESY: DR. JUSTIN BRUNELLE

LAYOUT

- Consistent header, logo, navigation https://www.semanticscholar.org/
- Clear logo/title/site name
- Consistent footer with contact info
- Header and navigation =~ 0.10-0.25 of viewport real-estate (e.g., https://time.com/)
- Sitemap, help, … (see https://time.com/robots.txt)

site name

contact

header

logo

navigation

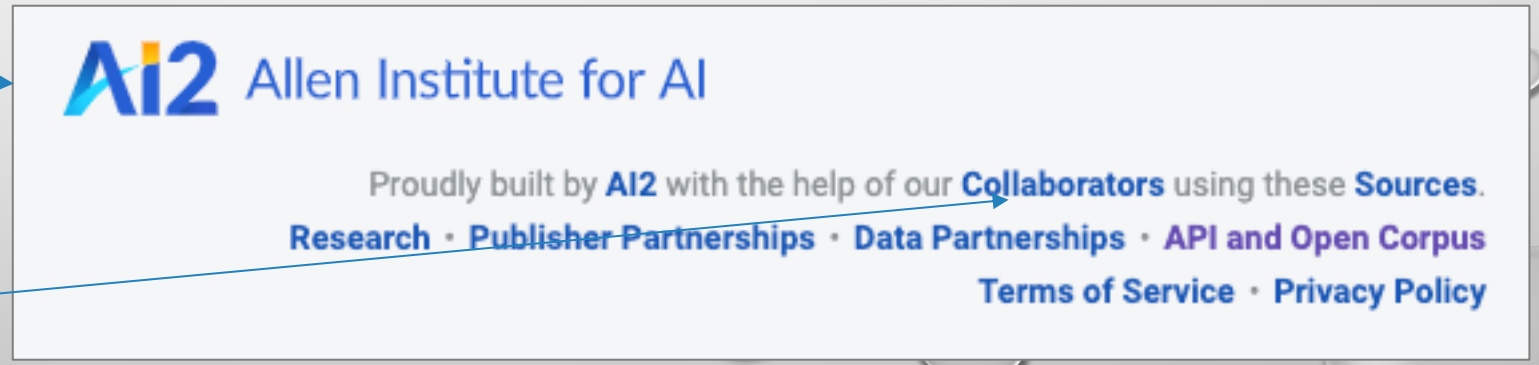
navigation

title

logo

footer

navigation



COMPATIBILITY

- Visible with vary screen sizes https://www.codeproject.com/Articles/762201/Adjusting-your-websites-to-fit-all-types-of-resolu
- All major browsers: Mozilla, Safari, Edge, etc.
  - HTML Responsive Web Design
  - CSS Responsive Web Design
  - Tutorial on Creating Cross-Browser Compatible HTML and CSS by Harshit Paul
  - How to make a cross browser compatible website? by Deeksha Agarwal
- Captions/alt text
- Structured language for machines, natural language for humans
  - Error codes and messages, paired!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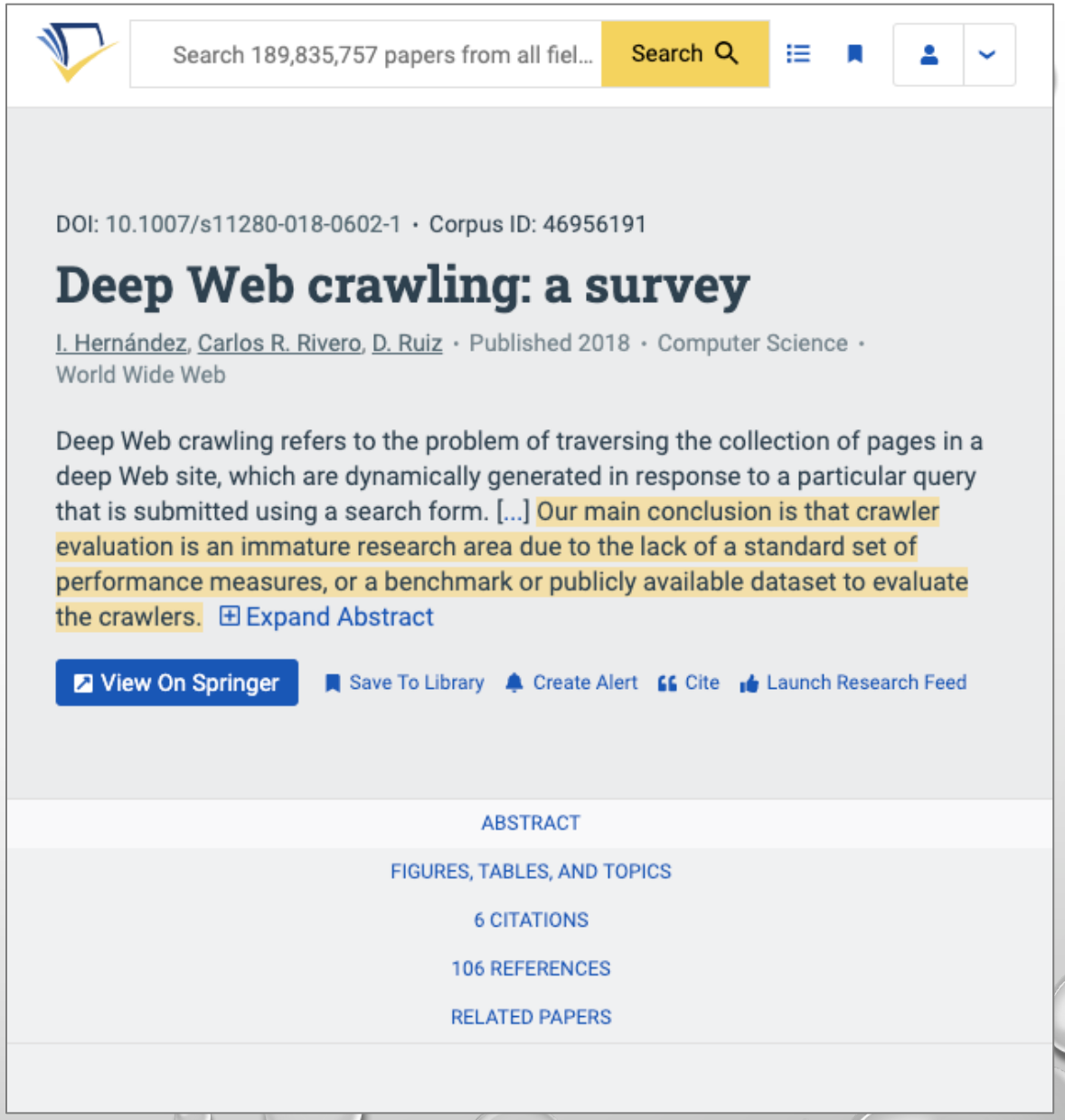
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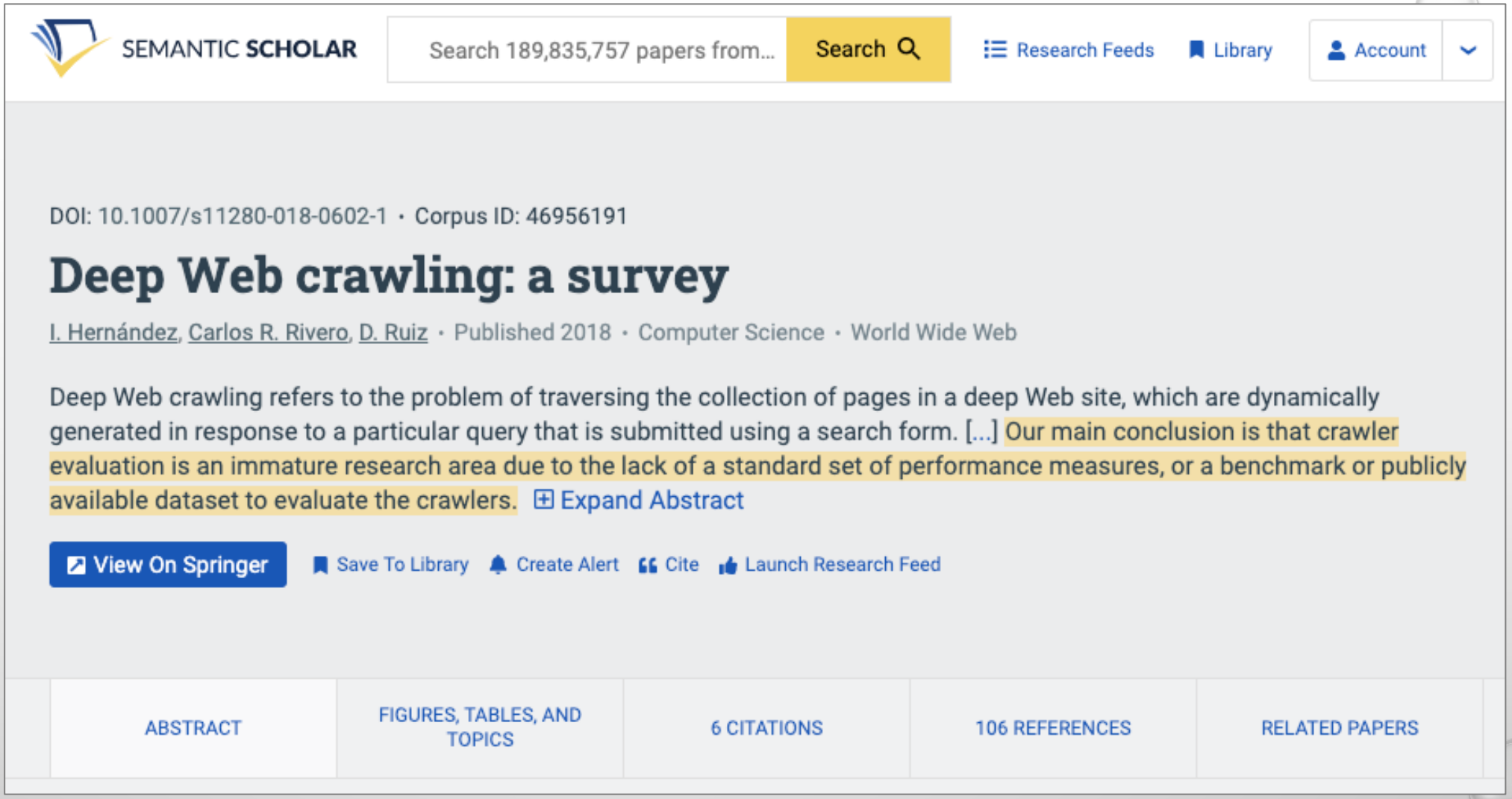
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Guosheng Xu, Zhimin Wu, ... L. Wang · SpaCCS · 2019

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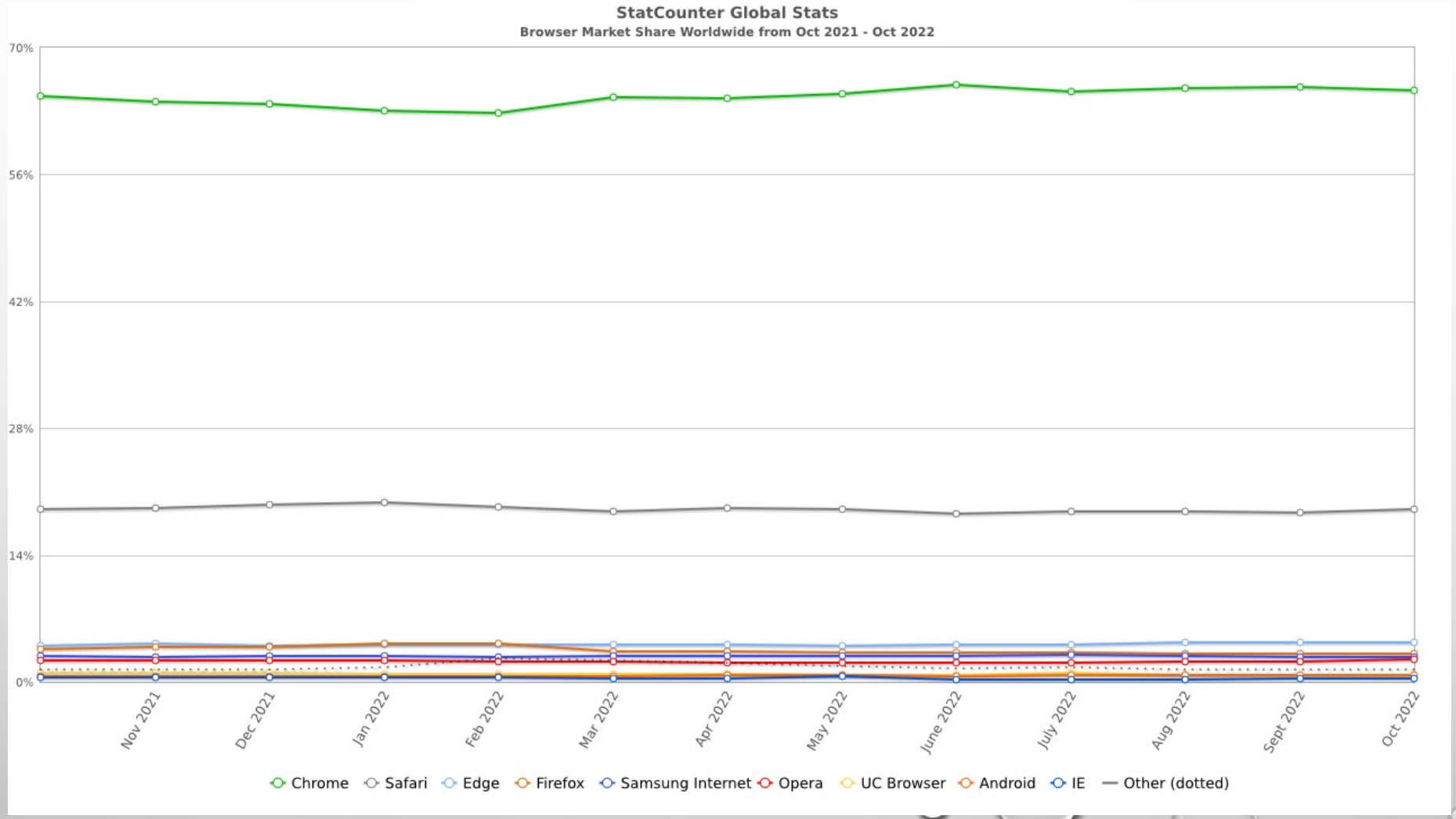
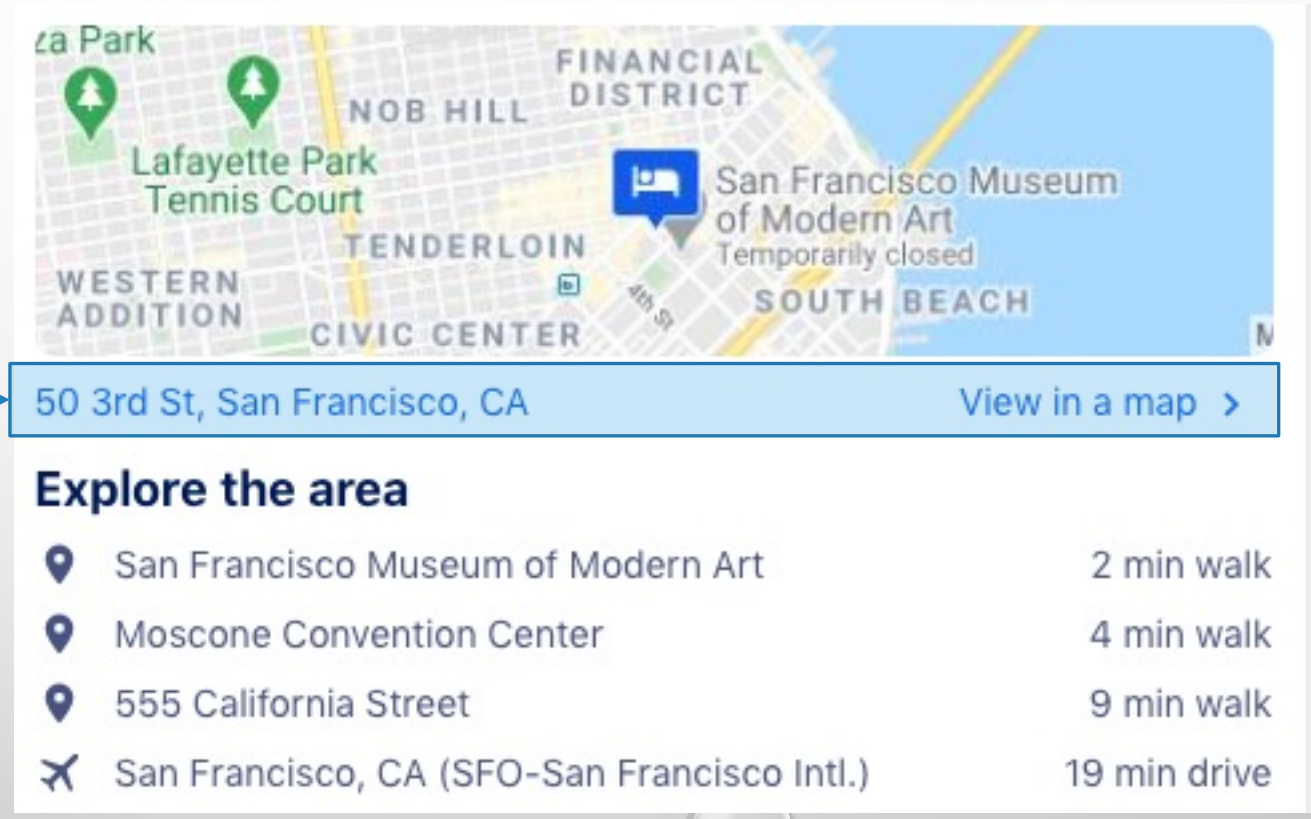
MAINSTREAM WEB BROWSERS



EXAMPLES CAPTIONS

figure caption



Expedia.com

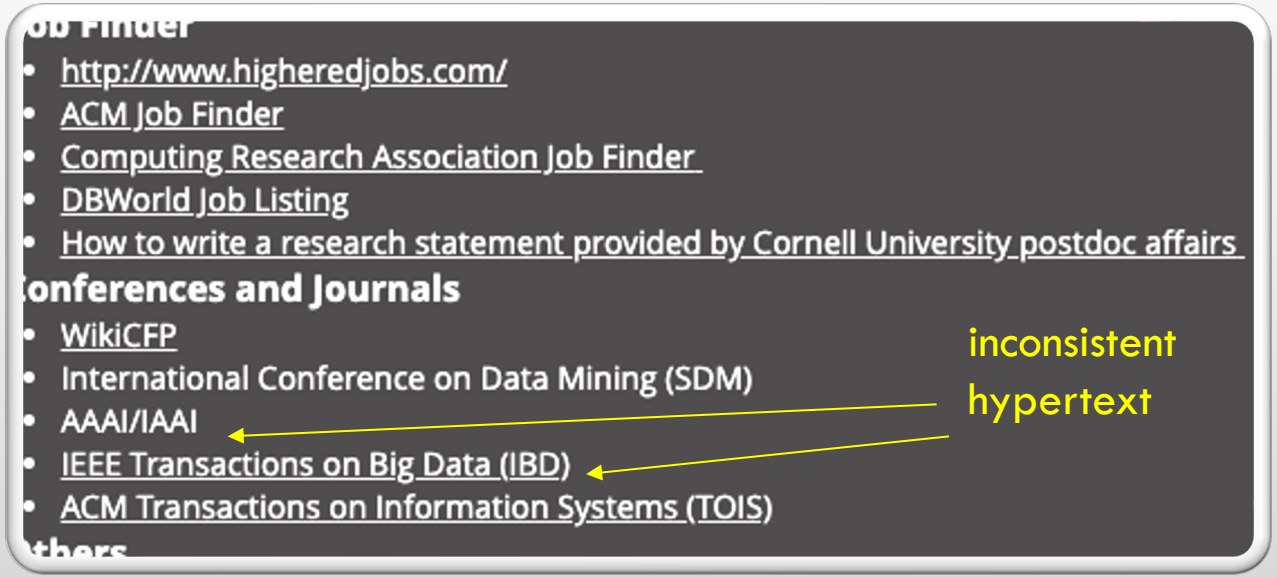
PERFORMANCES

- Ideal website load time for mobile sites is <1 second.
- 53% of mobile site visits are abandoned if pages take longer than 3 seconds to load.
- All graphics serve a purpose
- Images not significantly scaled: a negative example
- Indicate progress
  - Under construction templates: https://colorlib.com/wp/free-under-construction-templates/#html-templates

How Fast Should A Website Load & How To Speed It Up

APPEARANCE

- Consistent/purposeful fonts
- Clearly indicate hyperlinks
- Sort long lists: example citations of papers (next page)
- Highlight action areas/errors: modify URL and see what happens (next next page)



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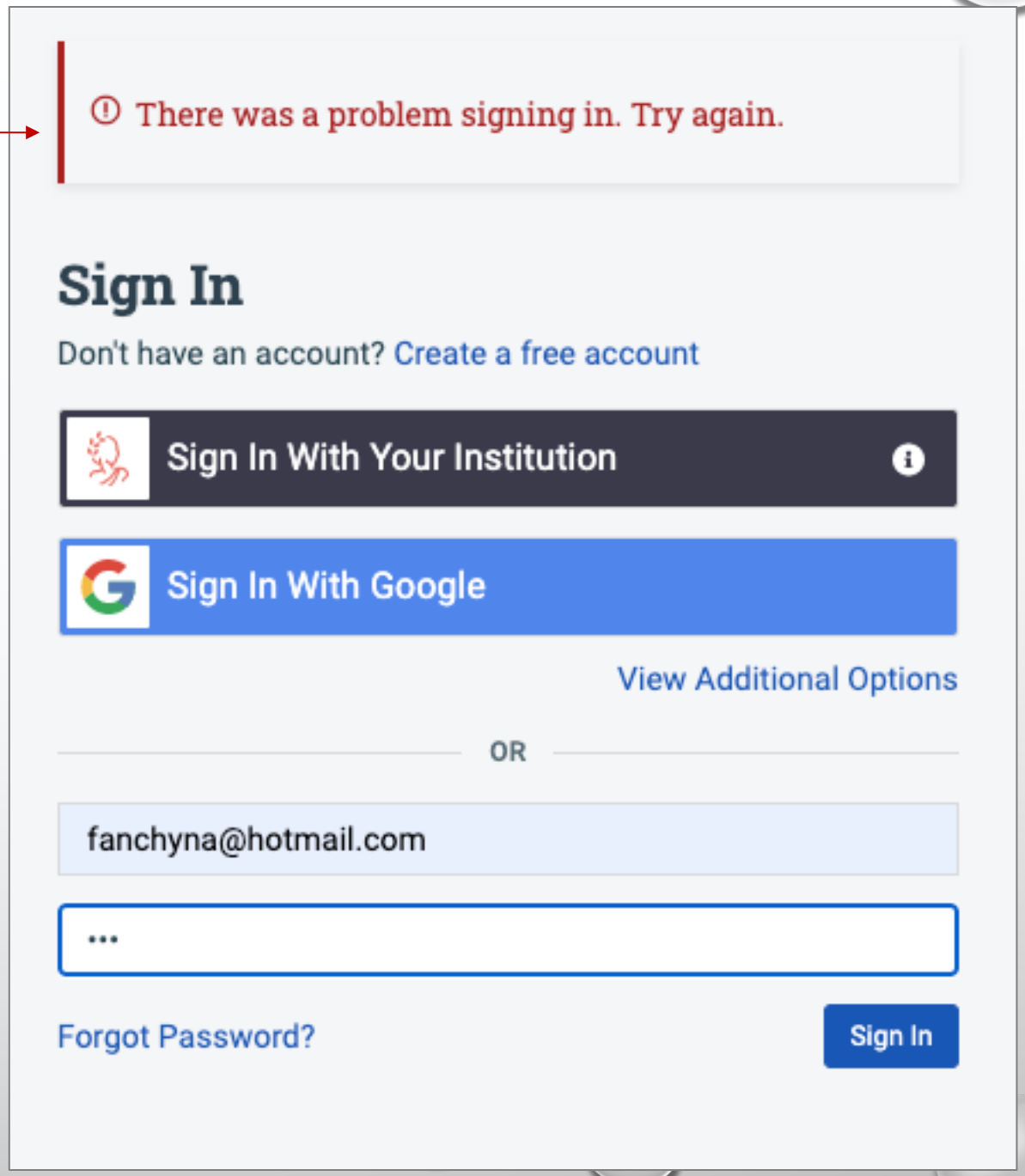
Citations

4671 The anatomy of a large-scale hypertextual web search engine. Computer Networks - Brin, Page - 1998 (Show Context)
373 The Web as a graph: Measurements, Models, and Methods - Kleinberg, Kumar, et al. - 1999 (Show Context)
203 A technique for measuring the relative size and overlap of public web search engines - Bharat, Broder - 1998 (Show Context)
133 and H.Garcia-Molina, "Parallel crawlers". - Cho - 2002 (Show Context)
128 Introduction to Informetrics: Quantitative methods in library, documentation, and information science. - Egghe, Rousseau - 1990 (Show Cont
128 Challenges in web search engines. - Henzinger, Motwani, et al. - 2002 (Show Context)
96 An adaptive model for optimizing performance of an incremental web crawler. - Edwards, McCurley, et al. - 2001 (Show Context)
93 Engineering a multipurpose test collection for web retrieval experiments. - Bailey, Craswell, et al. - 2003
84 Hyperlink analysis for the web. - Henzinger - 2001
77 The RBSE Spider - balancing effective search against Web load - Eichmann - 1994 (Show Context)
69 Crawling towards eternity: Building an archive of the world wide web. - Burner - 1997 (Show Context)
67 Bibliometrics and beyond: some thoughts on web-based citation analysis. - Cronin - 2001 (Show Context)
65 A comparison of techniques to find mirrored hosts on the WWW - Bharat, Broder, et al. - 1999
62 The connectivity sonar: Detecting site functionality by structural patterns. - Amitay - 2003
52 Performance Web Crawling - Najork, Heydon, et al. - 2001 (Show Context)
45 A web crawler design for data mining, - Thelwall - 2001 (Show Context)
41 Data Collection Methods on the Web for Informetric Purposes – A Review and Analysis', - Bar-Ilan - 2001
30 Focused crawls, tunneling, and digital libraries. - Bergmark, Lagoze, et al. - 2002 (Show Context)
29 Internet search engines - fluctuations in document accessibility. - Mettrop, Nieuwenhuysen - 2001
25 Secondary research: Information sources and methods. - Stewart, Kamins - 1993 (Show Context)
10 Informetric Theories and Methods for Exploring the Internet: An Analytical Survey of Recent Research Literature', - Bar-Ilan, Peritz - 2002
3 Google's Web page ranking applied to different topological Web graph structures - Meghabghab - 2002 (Show Context)
2 Scholarly communication and bibliometrics. In B. Cronin (Ed.) Annual Review of Information Science and Technology - Borgman, Furner - 20
1 Harvest-NG homepage. Retrieved June 18, 2003, from http://webharvest.sourceforge.net/ng - Harvest-NG - 2003 (Show Context)
1 Guidelines for robot writers. Retrieved May 12, 2003, from http://www.robotstxt.org/wc/guidelines.html - Koster - 1993 (Show Context)
1 Research Report 173, Compaq: Systems Research - Center, California - 2001
1 Growth and structure of the World Wide Web: Towards realistic modelling - Tadić - 2002
1 Methodologies for crawler based surveys - Thelwall - 2002

Highlight errors

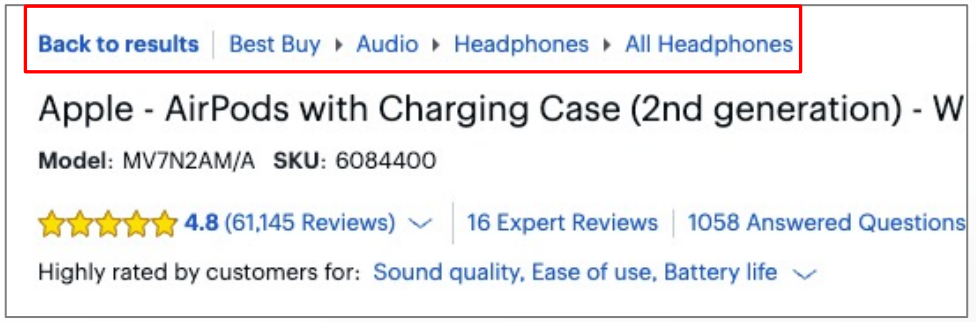


COLORS

- Consider black & white printing
  - https://ColorBrewer2.org
- Consistent color schemes
  - Same functions have same colors
  - Bootstrap may help?
- Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development.

Bootstrap contains CSS- and (optionally) JavaScript-based design templates
for typography, forms, buttons, navigation, and other interface components.
See examples.
See search engine templates.
More search engine examples.

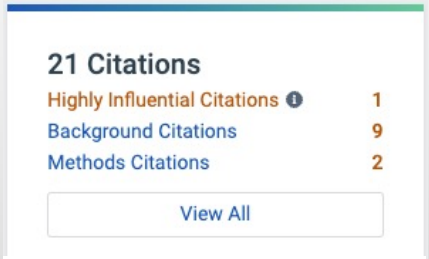
NAVIGATION



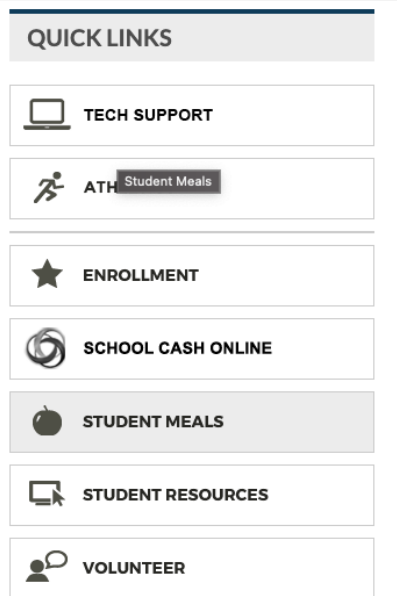
breadcrumbs on Bestbuy.com

- Use breadcrumbs/pagination
  - For large websites and websites that have hierarchically arranged pages, e.g., e-commerce websites, in which a large variety of products is grouped into logical categories.
  - You **shouldn't** use breadcrumbs for single-level websites that have no logical hierarchy or grouping.
- Use fragment IDs
- Minimize number of clicks to reach a page
  - e.g., creating shortcut (Old Donation School website with quick links)
- Navigation menus can be grouped
  - The "View All" Menu
  - Also see the next page
- Cool URLs: use descriptive words, instead of just numbers

  https://time.com/5894969/the-recession-isnt-over/

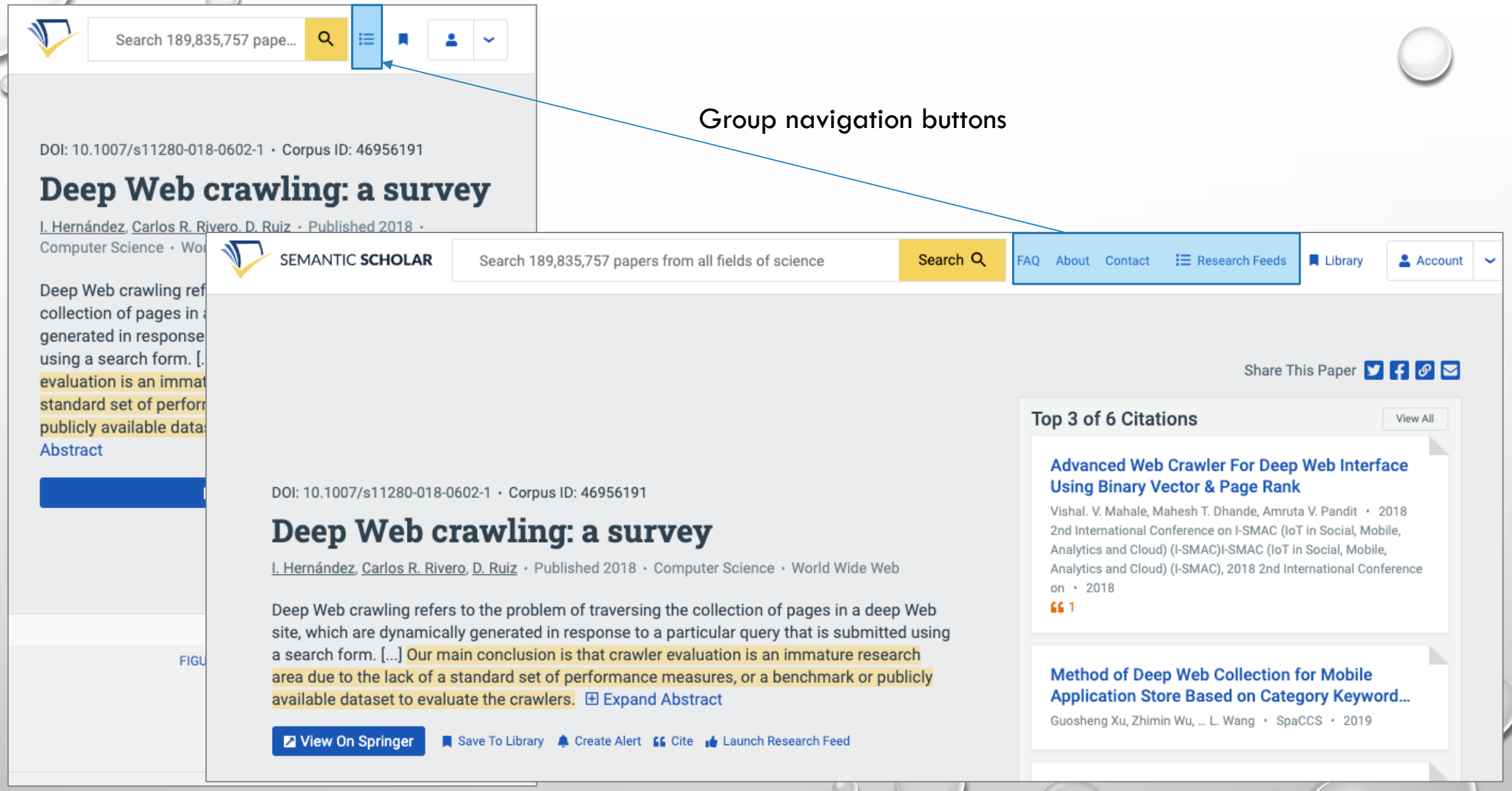


The "View All" menu on semantic scholar website



Quick links on the Old Donation School website

Hansel and Gretel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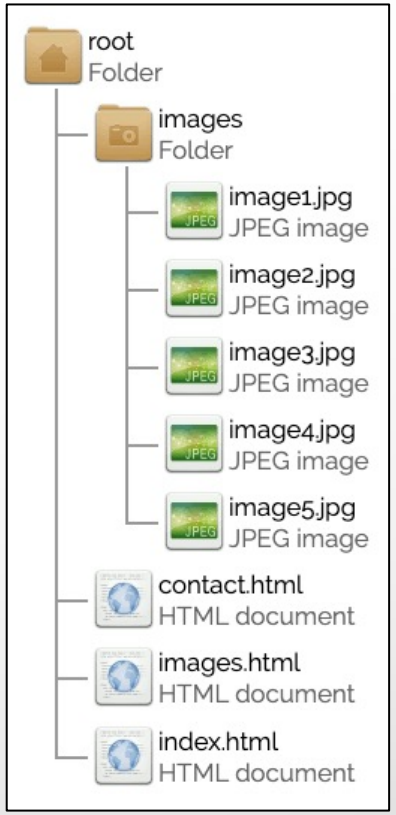
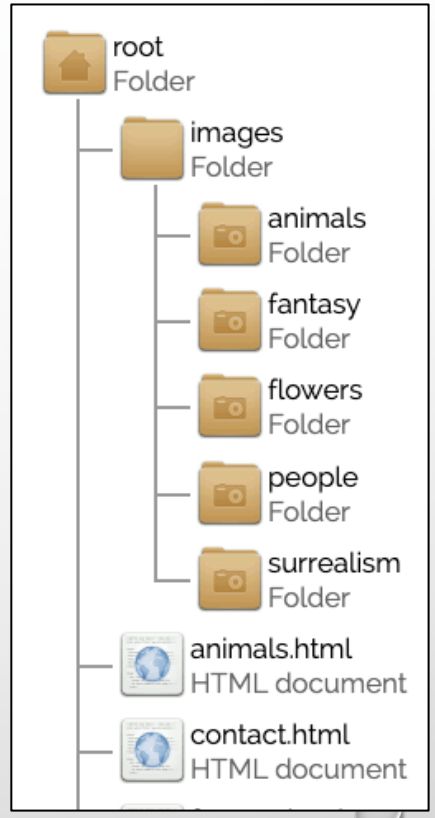
FILE ORGANIZATION AT THE BACKEND

Which one do you prefer?

- Directory structure, file names, etc.
  - CiteSeerX code repository
- Logical flow
  - Where would you want it to be?
  - Site diagram
- Sitemap for websites that
  - are large
  - contains isolated links
  - has few external links to it
  - has lots of rich media
  - See the introduction on Google Search Central
  - https://developers.google.com/search/docs/crawling-indexing/sitemaps/overview





CODE

- Use validators:
  - W3C markup validation service
  - Other validators: https://w3c.github.io/developers/tools/
- Use Git!
  - Rollbacks
  - Recovery
  - Issue tracking…
- Comment
  - **Do make comment and documentation!**
  - Just enough, do not abuse it (i.e., things that are confusing)
- Grouping, functions, common naming/camelCase
  - The "Don't repeat yourself" (DRY) principle
- Use MVC to logically group functions, application/logic/infrastructure

What is **Code Validation**? **Code validation** is the process of checking that the **coding** of a web page is in compliance with the standards and recommendations set by the World Wide Web Consortium (W3C) for the web. **Code validation** helps to produce clean **code**.

BACK-END STUFF

- Storage that makes sense
  - Files when necessary: because disk I/O is the slowest
  - SQL when necessary: communication may have a significant overhead
  - Key-value vs. array when appropriate
- Improve markup and metadata for SEO and discoverability
  - https://searchengineland.com/guide/seo/html-code-search-engine-ranking

NO-BRAINERS

- Hyperlinks
- Forms
- JavaScripts
- **ALL SHOULD WORK!**
- NO TYPOS!