Natural Search User Interfaces

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Book full text freely available at:
http://searchuserinterfaces.com
What works well in search now?
Faceted Navigation

Flamenco Fine Arts Search
Images from the Collections of the Fine Arts Museums of San Francisco;
Legion of Honor and de Young Museums, http://www.thinker.org

These terms define your current search. Click the \( \times \) to remove a term.

LOCATION: Asia > Japan

Items 1 to 40 of 538 results
Group by: Location

1 41 81 121 161 201 241 281 321 361 401 ... 521

MEDIA (group results)
- Ceramic (1)
- Objects (8)
- Drawing (22)
- Print (508)

LOCATION: all > Asia > Japan

OBJECTS (group results)
- Clothing (112)
- Musical Instruments (11)
- Containers (43)
- Food and Meals (64)
- Vehicles (105)
- Fuel (1)
- Weapons (47)
- Writing Tools (93)

BUILT PLACES (group results)
- Bridge (17)
- Building (62)
- Dwelling (42)
- Part of Building (51)
- Road (21)

ANIMALS AND PLANTS (group results)
- Birds (61)
- Creatures and Beasts (11)
- Mammals, Hor (47)
- Mammals, Oth (24)
- Plants (24)

Subcategories:
- castle
cottage	house
- garden
- mansion
- palace
- residence
- villa

Woman Writing a Letter, circa 1810 - 1815
Hakone, no. 11 f., 1804
Kneeling Woman Shoburin, circa 1794 - 1796
The Courtesan Tsumura, circa 1815 - 1825
The New Yoshiwara, 1815 - 1825
Women in Boats near Stuyvesant Town, circa 1790
Children's Pastime, circa 1820
Real-Time Suggestions

http://netflix.com

http://www.imamuseum.org/
Forecasting the Future

First: What are the larger trends?

In technology?
In society?

Next: Project out from these.
Preferences for Audio / Video / Touch

Preferences for Social Interaction

Preferences for Natural Language

Statistical Analysis of Enormous Collections Of Behavioral and Other Data

Wide adoption of social media & user-generated content

Advances in UI Design
Trend: More Natural Queries
Trend: Longer, more natural queries

- The research suggests people prefer to state their information need rather than use keywords.
  - But after first using a search engine they quickly learned that full questions resulted in failure.
Trend: Longer, more natural queries

- The research suggests people prefer to state their information need rather than use keywords.
  - But after first using a search engine they quickly learned that full questions resulted in failure.
- Average query length continues to increase
  - In 2010 vs 2009, searches of 5-8 words were up 10%, while 1-2 word searches were down.

U.S. keyword breakdown by percentage of clicks (4-week rolling period)

<table>
<thead>
<tr>
<th>Subject</th>
<th>9/5/2009</th>
<th>9/4/2010</th>
<th>Year-over-Year percent change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 word</td>
<td>24.21%</td>
<td>22.72%</td>
<td>-6%</td>
</tr>
<tr>
<td>2 words</td>
<td>23.77%</td>
<td>23.83%</td>
<td>0%</td>
</tr>
<tr>
<td>3 words</td>
<td>20.76%</td>
<td>20.24%</td>
<td>-3%</td>
</tr>
<tr>
<td>4 words</td>
<td>13.76%</td>
<td>13.97%</td>
<td>2%</td>
</tr>
<tr>
<td>5 words</td>
<td>7.88%</td>
<td>8.40%</td>
<td>7%</td>
</tr>
<tr>
<td>6 words</td>
<td>4.20%</td>
<td>4.60%</td>
<td>10%</td>
</tr>
<tr>
<td>7 words</td>
<td>2.25%</td>
<td>2.56%</td>
<td>14%</td>
</tr>
<tr>
<td>8+ words</td>
<td>3.16%</td>
<td>3.68%</td>
<td>16%</td>
</tr>
<tr>
<td>5 to 8+ words</td>
<td>4.37%</td>
<td>4.81%</td>
<td>10%</td>
</tr>
<tr>
<td>1 to 4 words</td>
<td>20.63%</td>
<td>20.19%</td>
<td>-2%</td>
</tr>
</tbody>
</table>

Note: data is based on all searches conducted on all search engines on a four week rolling period from the Experian Hitwise sample of 10 million US Internet users.

Source: Experian Hitwise
Trend: Longer, more natural queries

- Social Question Answering Sites:
  - Information worded as questions increasing available
    - with the questions that the audience really wants the answers to, and
    - written in the language the audience wants to use.
  - AND with advanced user interface design.
Long Queries Aided by Advanced User Interface Design
A recent example: keywords failed

**rca-3 male two female**

About 649,000 results (0.25 seconds)

Amazon.com: "2 x RCA Male / 1 x 3.5mm Stereo Female, Y-Cable, 6 ...
2 x RCA "Y" Audio Cable connects PC Sound Cards, portable CD players, MP-3 players or any mini-home stereo audio source with 3.5mm jacks to a stereo ...
www.amazon.com › ... › Cables › Cables & interconnects - Cached - Similar

Amazon.com: RiteAV - 3.5mm to RCA Stereo Female Cable - 6 inch ...
Splits a 3.5mm jack into two RCA jacks; Connectors: 3.5mm Stereo Male to 2-RCA Female ....
I use it to listen to my Playstation 3 through my speakers. ...
www.amazon.com › ... › Audio Cables › RCA Cables - Cached - Similar

Show more results from www.amazon.com

Shopping results for rca-3 male two female

**Rca 3" Rca Y-adapter - Male To Female**
$6.99 new - eBay

**RCA 3"" RCA Y-Adapter - Male To Female**
$6.99 new - mysavingshop.com

**Rca Rca 3" Mini Stereo Headphone Adapter (ah202) (ah202)**
$7.69 new - CompUPlus.com

Audio Cables - RCA / 3.5mm

Product image for PREMIUM 3.5mm Stereo Male to (2) 3.5mm Stereo Female - Product ID: 5614 .... Product image for RCA Plug/2 RCA Jack cable - 6 inches ...
www.monoprice.com › CABLES - Cached - Similar

**3.5mm Male to 2 RCA Jacks**
... 3.5mm Male Stereo Audio to 2 Female RCA Connect two stereo audio cables to the ...
Connect the adapter to our "3 RCA to 3 RCA" cable - see link below. ...
www.svideo.com/rca3stereoplug.html - Cached - Similar
Reworded as I would have said it:

How can I connect both my Wii and a DVD player to my TV? - Yahoo...
May 1, 2010 ... the Comcast cable box. I finally got the DVD player to work by ... While we are doing this, let's learn some of the right terminology. ...
answers.yahoo.com/question/index?qid... - Cached
Resolved Question

How can i connect both my wii and a dvd player to my tv?

the comcast cable box.

i finally got the dvd player to work by putting it into the tv holes and setting the tv to aux. where can i put the wii to make that work too (i really don't want to switch the wii with the dvd player every time i wanna use it)? can i plug it into the cable box? and then what would i set the cable box to? or the dvd player...?

4 months ago

Additional Details
sorry the first part is supposed to say:

i have the three holes (red white and yellow) on the tv, the dvd player, and the comcast cable box

4 months ago

Best Answer - Chosen by Asker

While we are doing this, let's learn some of the right terminology. The yellow, red, and white colored jacks are called composite video. On the back of your TV they would be composite video inputs while on the back of your DVD player, Wii, and cable box, they would be outputs.

So, no, you can not plug the Wii into the cable box because the cable box has the same color "holes" because what you would be doing is plugging the Wii output into a cable box output.

What you need to plug everything in to your TV is a composite video switch... one with at least 3 inputs. You then take the output of the switch to the TV's input.
Trend: More Natural Queries

- Blend two ideas:
  - “sloppy commands”
  - predictions based on user behavior data
- This is subtly and steadily increasing in sophistication across many interfaces
Sloppy Commands + Rich Data
Sloppy Commands + Rich Data

- WolframAlpha
  - Input:
    - 2 pieces of pizza with pepperoni
  - Interpretation:
    - Using closest WolframAlpha interpretation: 2 Piece of pie with pepperoni
    - Assuming any type of pie | Use pie, peach or more instead
  - Input interpretation:
    - pie amount 2 pieces +
    - pepperoni amount 245 grams
  - Total nutrition facts:
    - serving sizes (total: 479 g)
      - pie: 2 pieces (234 g)
      - pepperoni: 245 g
Sloppy Commands + Rich Data

Assuming "pepperoni" is a food | Use "with pepperoni" as referring to an attribute instead
Assuming any type of pizza | Use pizza, cooked, frozen, rising crust, with cheese or | more | instead

Input interpretation:
- pizza amount 2 pieces +
- pepperoni amount 245 grams

Total nutrition facts:
- serving sizes (total: 530 g)
  - pizza: 2 pieces (285 g)
  - pepperoni: 245 g
- total calories 1993
- fat calories 1293
- % daily value*
Why Spoken Input?

- Phone-based devices widely used
  - Naturally accepts spoken input
  - Difficult to type on
- Touch screen interaction increasingly popular
  - Also difficult to type on
- Speech recognition technology is improving
  - Huge volumes of training data is now available

- What are the impediments?
We need a “cone of silence”
Alternative text entry

swype.com

Gesture search, Li 2010
Speaking leads to conversation

- Dialogue is a long-time dream of AI

- We’re getting closer with a combination of
  - Massive behavioral data
  - Intense machine learning research
  - Advanced user interface design
  - Real-time contextual information
No Longer a Future Trend: Dialogue

- SIRI came out of the DARPA CALO project
What can I ask?
What time is it?
It's 2:26 pm on December 31, 2010.
What's the phone number for Claremont vet
I'm looking for a telephone number for veterinarians named "Claremont" near your current location in Berkeley...
Tap it... Say it!

The telephone number for Claremont Veterinary Hospital on 5331 College Ave in Oakland is 510-652-5835.
Call: 510-652-5835

Claremont Veterinary Hospital
Oakland, 1.6 miles
4.5 stars 38 ratings

How far away is that

Campus Veterinary Clinic, a veterinarian, is at 1720 Shattuck Ave, Berkeley
You didn't specify a location, so I looked near here.
Tap it...
Cultural Preferences

Novels

Movies

Marketing text

Marketing podcasts

Textbooks

Video lectures

Web news text

Web news videos

Screenshot tutorials

Video tutorials
Trend: Social Search

People are Social; Computers are Lonely.

Don’t Personalize Search, Socialize it!
Social Search

**Implicit**: Suggestions generated as a side-effect of search activity.

**Explicit**: Knowledge accumulating via the deliberate contributions of many.

**Collaborative**: Working with other people on a search task.

**Asking**: Communicating directly with others.
Social Search: Explicit Recommendations

“Crowdsourcing” for explicit recommendations

Previous generation
- Digg, StumbleUpon
- Delicious, Furl
- Google’s SearchWiki (now defunct)
- Open Directory

Current happenings
- Blekko
- Localmind
- Google Social
dog pacing

Did you mean dog racing?

1 to 20 of 315K web results for dog pacing

Establishment of a canine model of cardiac memory using endocardial pacing via internal jugular vein. Other articles by authors. Li Yue-chun, Ge Li-sha, Guang Xue-Qiang, Chen biomedcentral.com/1471-2261/10/30/abstract Jun 2010

Left ventricular septal and apex pacing for optimal pump function in canine Bloat Article

Helpful hints in deciding the bloat phase of a dog (Practice the following three actions on a well dog beforehand). To do this, stand over the dog facing the same direction as the dog. canadasguidetodogs.com/health/healtharticle6.htm Nov 2003

BEHAVIOR PROBLEMS IN GERIATRIC DOGS by Wayne Hunthausen


Understanding Canine Dementia
Social Search: Seeing what people you know have seen

- Yahoo MyWeb, circa 2006
Google’s Social Search, 2012

For "obama daily show"

October 27, 2010 - Barack Obama - The Daily Show With Jon Stewart
Oct 27, 2010 ... Barack Obama talks about the recovering economy, health care reform, and bringing change to Washington.
www.thedailyshow.com/full.../wed-october-27-2010-barack-obama - Cached
Nundu Janakiram shared this on Twitter - Oct 29, 2010

The Daily Show with Jon Stewart Official Website | Current Events
Feb 8, 2011 ... Jon Stewart and The Daily Show writers present the ...
www.thedailyshow.com/ - Cached - Similar
Show more results from thedailyshow.com

On the Daily Show, Obama is the last laugh
Oct 27, 2010 ... On Comedy Central, the joke was on President Obama Wednesday night.
www.washingtonpost.com › Opinions

Videos for obama daily show

Obama On 'Daily Show': Stewart Presses ...
Oct 28, 2010
huffingtonpost.com

The Daily Show - 10/27/2010 - Barack Obama Pt ...
4 min - Oct 27, 2010
thedailyshow.com

Barack Obama's dumb 'Daily Show' Jon Stewart appearance and the ...
Oct 27, 2010 ... President Obama's handlers have been indiscriminate, carpet-bombing Americans with the man they elected rather than launching communications ...
www.nydailynews.com/.../2010-10-27_obamas_dumb_daily_show_appearance_and_the_presidents_diminishing_brand.html
# Social Search: Asking for Answers

What do people ask of their social networks?

<table>
<thead>
<tr>
<th>Type</th>
<th>%</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommendation</strong></td>
<td>29%</td>
<td>Building a new playlist – any ideas for good running songs?</td>
</tr>
<tr>
<td><strong>Opinion</strong></td>
<td>22%</td>
<td>I am wondering if I should buy the Kitchen-Aid ice cream maker?</td>
</tr>
<tr>
<td><strong>Factual</strong></td>
<td>17%</td>
<td>Anyone know a way to put Excel charts into LaTeX?</td>
</tr>
<tr>
<td><strong>Rhetorical</strong></td>
<td>14%</td>
<td>Why are men so stupid?</td>
</tr>
<tr>
<td><strong>Invitation</strong></td>
<td>9%</td>
<td>Who wants to go to Navya Lounge this evening?</td>
</tr>
<tr>
<td><strong>Favor</strong></td>
<td>4%</td>
<td>Need a babysitter in a big way tonight... anyone??</td>
</tr>
<tr>
<td><strong>Social connection</strong></td>
<td>3%</td>
<td>I am hiring in my team. Do you know anyone who would be interested?</td>
</tr>
</tbody>
</table>

Morris et al., CHI 2010
Context-Aware Mobile Search

http://www.localmind.com/
Social Search: People Collaborating
Social Search: People Collaborating
Social Search: People Collaborating
Social Search: Asking for Answers

Asking experts in a social network

Richardson and White, WWW 2011
Summary

- As CS gets more sophisticated, we can build search interfaces that allow people to interact more naturally:
  - More language-like queries
  - Speaking & viewing rather than typing & reading
  - More able to interact with other people while doing search tasks
  - More able to use the knowledge in peoples’ heads.