

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>

Powered by Flamenco

Save Search

History and Settings

Return to Search

New Search

Logout

search

☒ all items ☐ in current results

These terms define your current search. Click the to remove a term.

LOCATION: [Asia](#) > [Japan](#)

Items 1 to 40 of 538 results

Group by: [Location](#)

Refine your search within these categories:

MEDIA [\(group results\)](#)

[Ceramic](#) (1) [Objects](#) (8)
[Drawing](#) (22) [Print](#) (508)

LOCATION: [all](#) > [Asia](#) > [Japan](#)

OBJECTS [\(group results\)](#)

[Clothing](#) (112) [Musical](#)
[Containers](#) (48) [Instruments](#) (11)
[Food and Meals](#) (64) [Vehicles](#) (105)
[Fuel](#) (1) [Weapons](#) (47)
[Lighting](#) (22) [Writing Tools](#) (93)

BUILT_PLACES [\(group results\)](#)

[Bridge](#) (17) [Dwelling](#) (42)
[Building](#) (62) [Part of Building](#)
[Built Open Space](#) (14) [Road](#) (21)

ANIMALS AND PLANTS [\(group results\)](#)

[Birds](#) (61) [Mammals, Ho...](#)
[Creatures and](#) [Mammals, Oth...](#)
[Beasts](#) (1) [Parts of Plants](#) (24)

Subcategories:

castle
cottage
house
mansion
palace
residence
villa

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



[Hakone, no. 11 f...](#)
[1804](#)



[Kneeling Woman Sho...](#)
[circa 1794 - 1796](#)



[The Courtesan Tsum...](#)
[circa 1815 - 1825](#)



[The New Yoshiwara...](#)
[1815 - 1825](#)



[Woman Writing a Le...](#)
[circa 1810 - 1815](#)

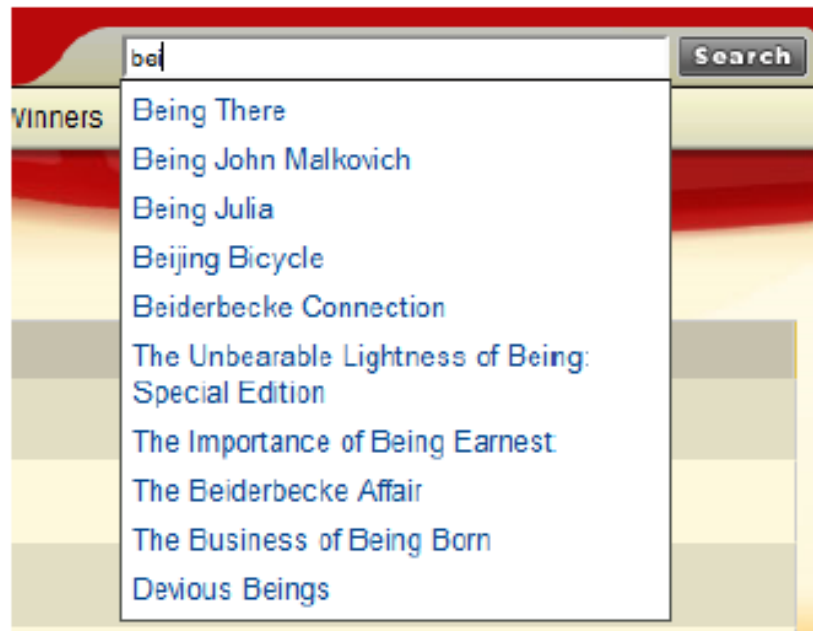
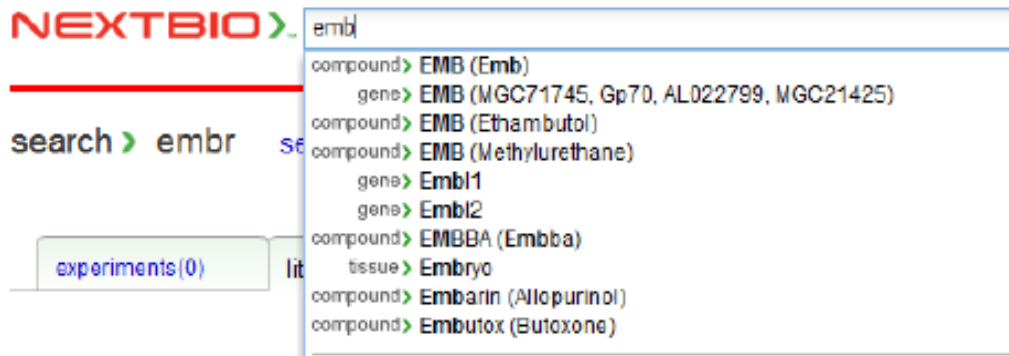


[Women in Boats nea...](#)
[circa 1790](#)

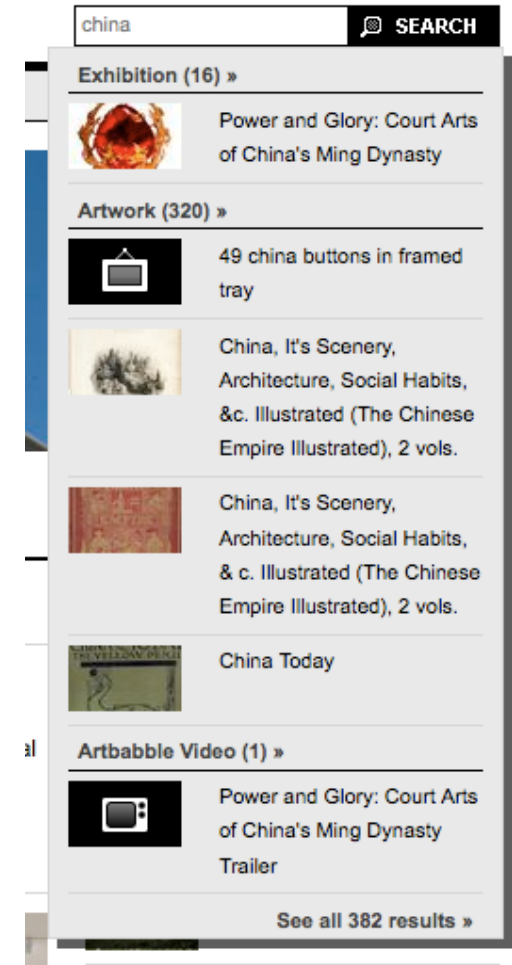


[Children's Pastime...](#)
[circa 1820](#)

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**

“Natural” Interfaces

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

 **stackoverflow**

log in | careers | about | faq

QuestionsTagsUsersBadgesUnanswered

Recent Questions

active107featuredhotweekmonth

0 votes3 answers10 views

How do I prevent a char pointer buffer overflow?

cpointersarraysreference

9s ago sizzzlerz 33

0 votes2 answers12 views

How to get an object of the window which is opened by clicking the link?

javascriptjqueryhtml

19s ago Nick Craver 37.2k

0 votes0 answers29 views

Asynchronous daemon processing / ORM interaction with Django

djangodjango-ormdjango-modelspython

28s ago perrierism 286

1 vote1 answer14 views

XPath selection from path in XML content

xsltxmlxpathxsl

1m ago Dimitre Novatchev 10.7k

15 votes16 answers273 views

How can I improve my logical and analytical thinking skills so as to become an awesome programmer ?

beginnerprogramminglogicalthinking

1m ago Norman Ramsey 46.3k

0 votes5 answers17 views

PHP 'Years' array

arrayphpdateyear

1m ago Ben Rowe 1,012

A recent example: keywords failed

rca-3 male two female

Search

About 649,000 results (0.25 seconds)

[Advanced search](#)

[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 - [mysavingsshop.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/rcastereoplug.html](#) - [Cached](#) - [Similar](#)

Reworded as I would have said it:

how do I connect wii and dvd to my tv

Search

About 1,650,000 results (0.22 seconds)

[Advanced search](#)

[Nintendo - Customer Service | Wii - Connecting to the TV or VCR](#)

Connecting to a VCR, DVD-R, Cable Box, etc. In order to **connect** a video game ... Once the cables are inserted and the **Wii** is powered on, put your **TV** on the ...

[www.nintendo.com/consumer/systems/wii/en.../setupAV.jsp](#) - [Cached](#) - [Similar](#)

[How do you **Connect** your **Wii** to HDMI Input on LCD TV?](#)

Jul 16, 2010 ... A Review of **My DVDs**. Related Links ... I too wanted to **connect my Wii** to my HD **TV** with something better than the standard cable. ...

[www.brighthub.com/electronics/home-theater/.../35555.aspx](#) - [Cached](#) - [Similar](#)

[How can I **connect my DirecTv, DVD player & Wii** to the same flat TV ...](#)

Mar 16, 2009 ... that did not work. It has several holes for me to **connect**, yet it does not read. It can either do the **DVD** or the **Wii**. Hence I need to keep moving ...

[www.answerbag.com/q_view/1124602](#) - [Cached](#) - [Similar](#)

[Zolved - **Connecting the Wii** console to a **TV** or **VCR**](#)

You are supplied with an AV Multi Out plug with the **Wii** console. This cable allows you to **connect** to a **TV/VCR/Cable Box/DVD** player etc. ...

[www.zolved.com/synapse/view_content/19706](#) - [Cached](#)

[Nintendo **Wii: Connecting to a TV, VCR, HiFi**](#)

Connecting to a **Television**. Insert the AV Multi Out plug on the **Wii** AV ... to **connect** a video game system through a device such as a VCR, **DVD** recorder, ...

[wii.nintendo-europe.com/57.html](#) - [Cached](#) - [Similar](#)

[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](#)

Got an answer!



Michael

Resolved Question

[Show me another »](#)

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

[Report Abuse](#)



Stephen M

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.

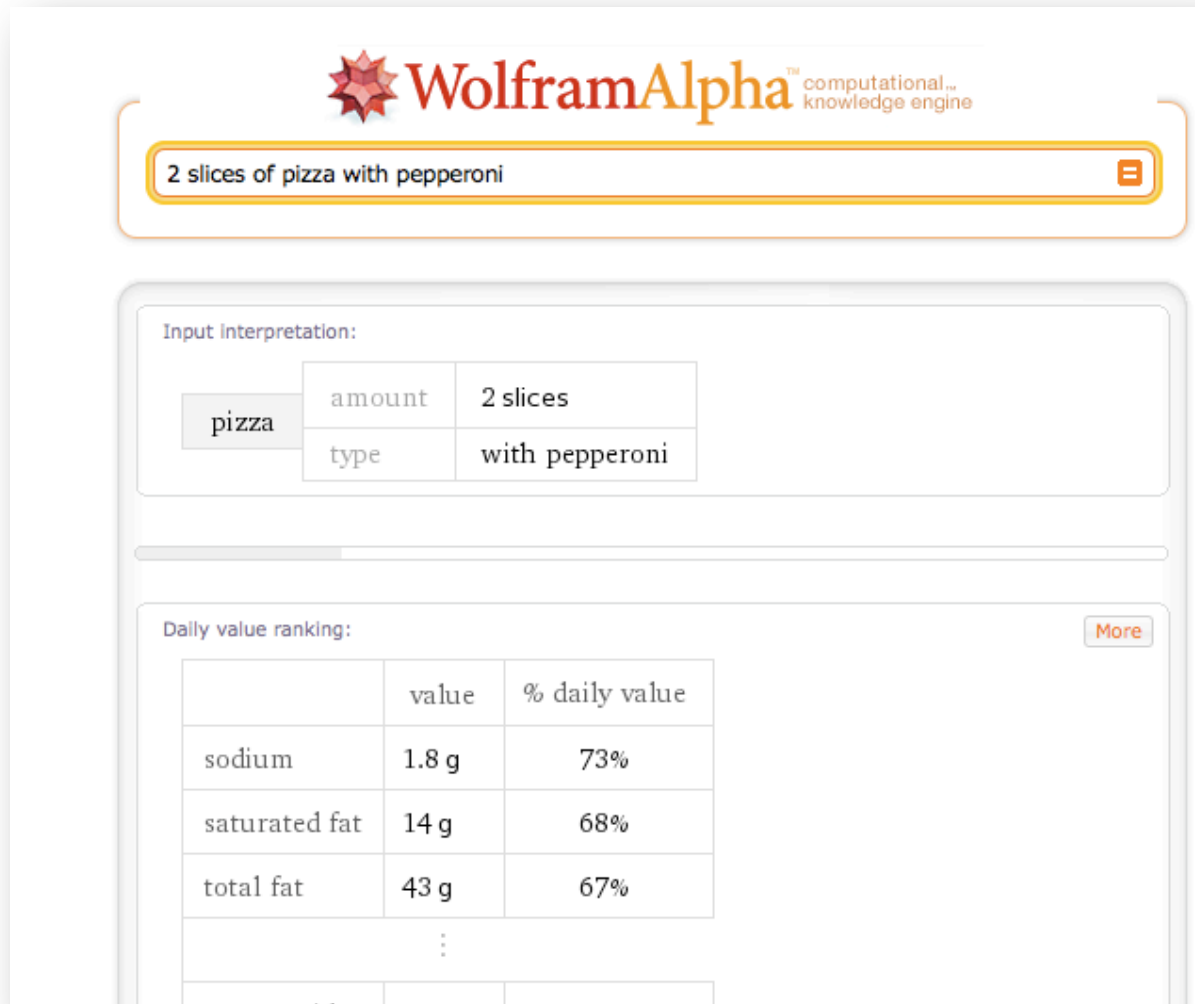
So, no, you can not plug the Wii into the cable box because the cable box has the same color "holes" because what you would be doing is plugging the Wii output into a cable box output.

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



The screenshot shows the WolframAlpha interface. At the top is the WolframAlpha logo with the tagline 'computational knowledge engine'. Below the logo is a search bar containing the text '2 slices of pizza with pepperoni'. Below the search bar is a section titled 'Input interpretation:' which contains a table with the following data:


	amount	
pizza	2 slices	
	with pepperoni	

Below this table is a horizontal progress bar. Below the progress bar is a section titled 'Daily value ranking:' which contains a table with the following data:

	value	% daily value
sodium	1.8 g	73%
saturated fat	14 g	68%
total fat	43 g	67%
	⋮	

To the right of the 'Daily value ranking:' section is a 'More' button.

Sloppy Commands + Rich Data

 **WolframAlpha**[™] computational...
knowledge engine

2 pieces of pizza with pepperoni

Using closest Wolfram|Alpha 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: Individual nutrition facts

serving sizes (total: 479 g)
pie: 2 pieces (234 g)
pepperoni: 245 g

Sloppy Commands + Rich Data

**WolframAlpha**[™] computational...
knowledge engine

2 pieces of pizza with pepperoni

☆

Examples Random

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: [Individual nutrition facts](#)

serving sizes (total: 530 g)	
pizza: 2 pieces (285 g)	
pepperoni: 245 g	
<hr/>	
total calories 1993	fat calories 1293
<hr/>	
% daily value*	
<hr/>	





Trend: Spoken Input

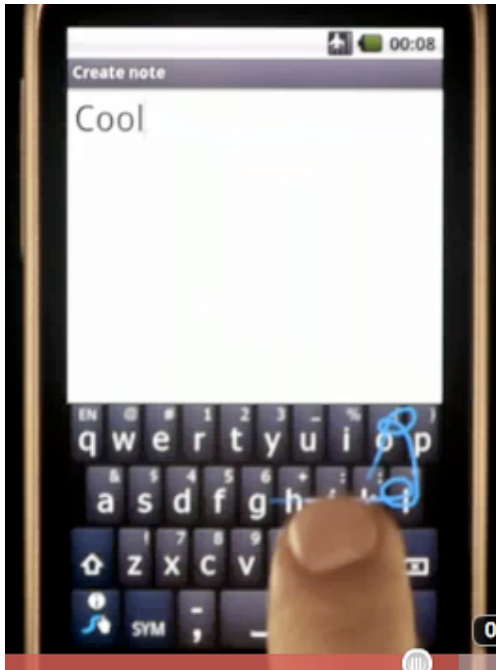
Why Spoken Input?

- 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?

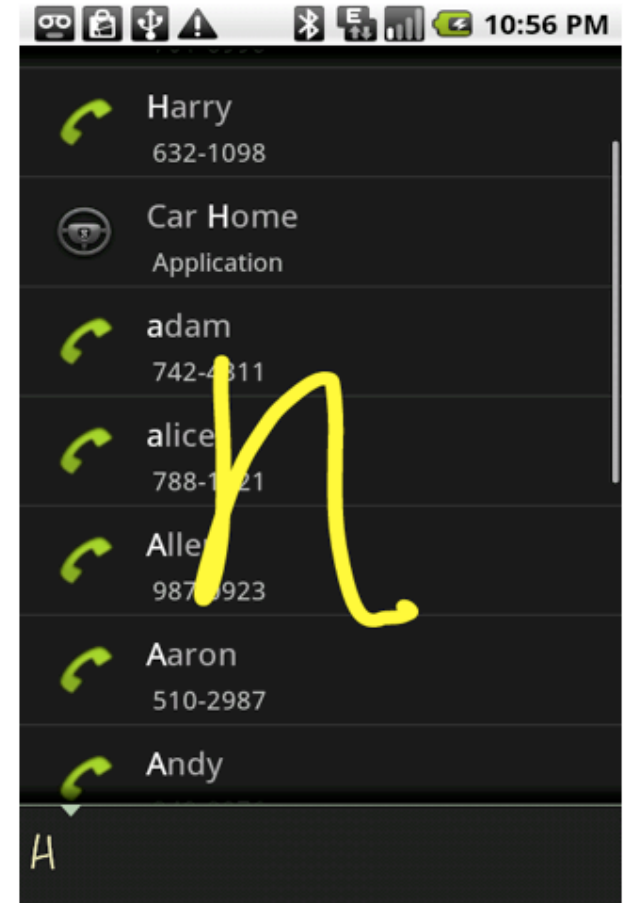
We need a “cone of silence”



Alternative text entry



swype.com



Search as you write.



Gesture search, Li 2010

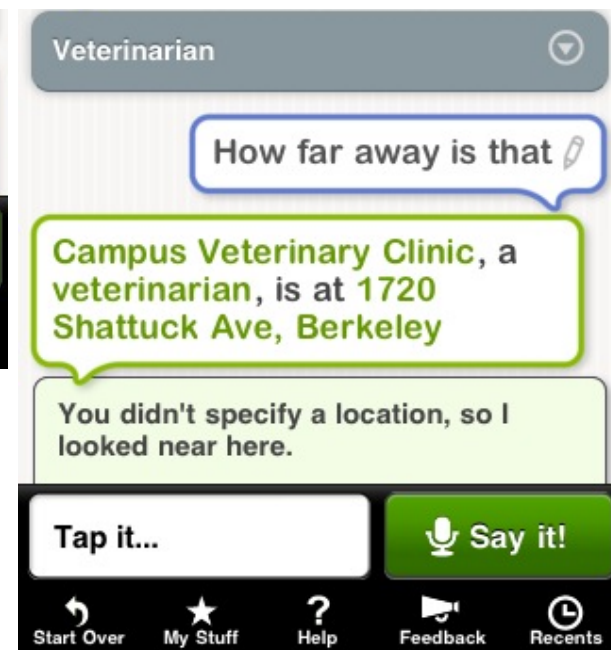
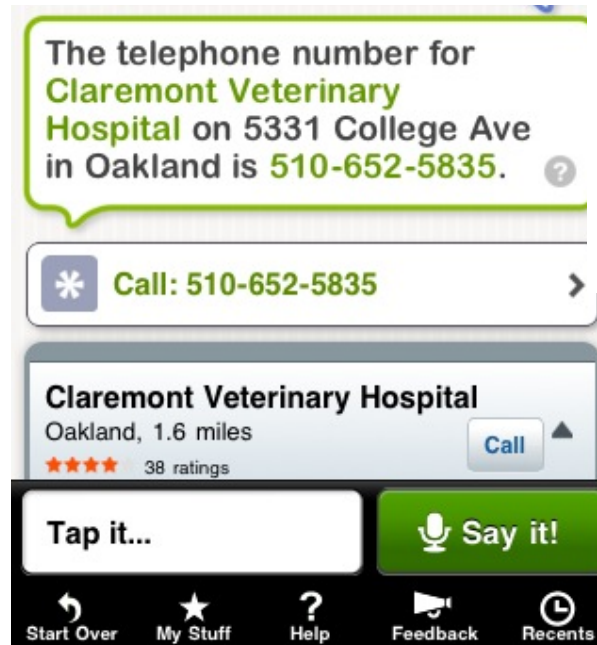
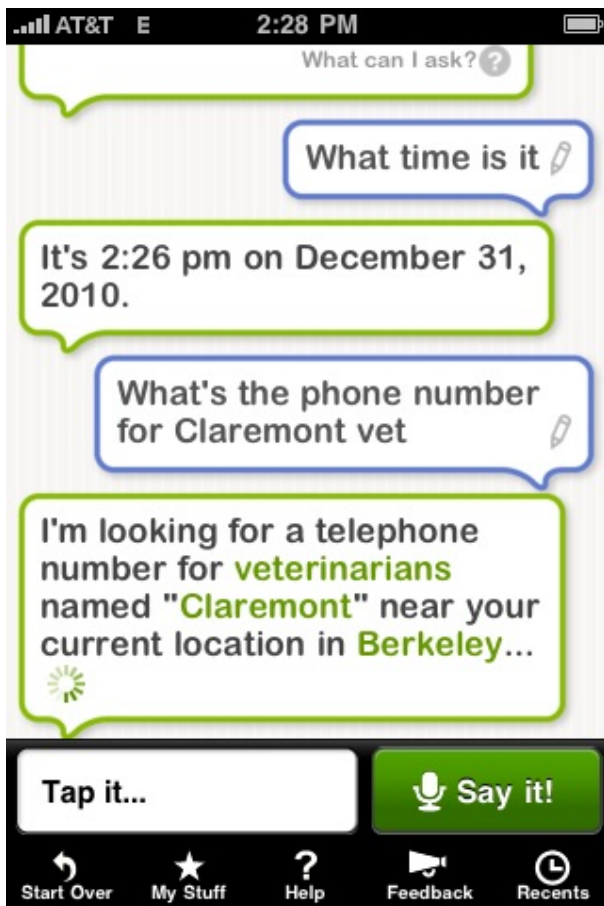
Speaking leads to conversation

- 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





Cultural Preferences

Novels

Movies



Marketing text

Marketing podcasts



Textbooks

Video lectures



Web news text

Web news videos



Screenshot tutorials

Video tutorials





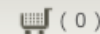
Images

Videos

Music

Resources

My account



☒ New search ☐ Search within

slates

Search

slates (media equipment - slate)
slates (metamorphic rock - slate)
film slates

☐ Creative stock images

☒ Rights-managed (RM)
☒ Royalty-free (RF)

☒ Photography
☒ Illustration
☐ Vector

☐ Editorial images

All Editorial

Any date

☒ Video

☒ Creative: Rights-ready (RR)
☒ Creative: Royalty-free (RF)
☒ Editorial: Raw
☒ Editorial: Produced

Available formats

Standard definition (341)
High-definition (131)

People

Number of people

No People (214)
One Person (45)
Two People (23)
Implied People (5)
Group Of People (5)

See all...

Age

Gender

Ethnicity

Specific people

Entertainment Group (2)
Dwight Eisenhower (2)
Marilyn Monroe (1)
Albert Einstein (1)
Salvador Dali (1)

Keywords

Concept

"slates"

☐ Slate (Media Equipment) ☐ Slate (Metamorphic Rock)

Search again ☐ Turn clarification off

" slates " (341 results)

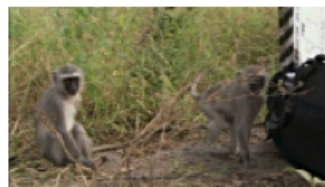
Display: 60 | Details: Default

Page 1 of 6



Video (RR)
#99817757

HD



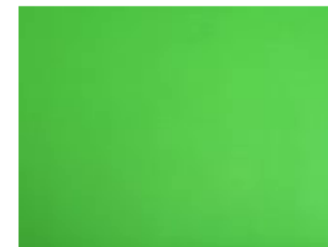
Video (RR)
#129935416

HD



Video (RR)
#mr_00078183

HD



Video (RF)
#92518663

HD

Trend: Social Search



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

▼ filter by slashtags

/likes 

/reviews

/movie-reviews

/videogames

/shop

/date

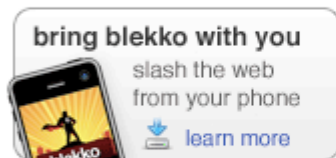
/flickr

/youtube

find slashtags

 create a slashtag

slashtag of the day
/health
➤ search "tuberculosis"



file bugs here

dog pacing

search 

Did you mean **dog racing**?

1 to 20 of 315K web results for **dog pacing**

/relevance | /date 

Establishment of a **canine** model of cardiac memory using endocardial

[like](#) | [seo](#) | [links](#) | [cache](#) | [ip](#) | [info](#) | [spam](#)

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**

[like](#) | [seo](#) | [links](#) | [cache](#) | [ip](#) | [adsense](#) | [info](#) | [spam](#)

Sign in free and see. Sign-in for full Details. Sign-in free and Explore the Exciting World of BiomedExperts. More than 3,500 Organizations worldwide. State of the Art Network
biomedexperts.com/.../Left_ventricular_septal_and_apex_pacin...

Bloat Article

[like](#) | [seo](#) | [links](#) | [cache](#) | [ip](#) | [spam](#)

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

[like](#) | [seo](#) | [links](#) | [cache](#) | [ip](#) | [spam](#)

Physical and Physiological Changes in the Older **Dog**. Behavior Problems of the Geriatric **Dog**. **Pacing** - seizures - restlessness - decreased mental alertness - geriatric onset
westwoodanimalhospital.com/BhvArticles/GeriatDogBhvProb.htm

Understanding **Canine** Dementia

[like](#) | [seo](#) | [links](#) | [cache](#) | [ip](#) | [spam](#)

Social Search: Seeing what people you know have seen

- Yahoo MyWeb, circa 2006

The screenshot shows the Yahoo MyWeb interface. At the top, there's a navigation bar with links: Home, My Bookmarks, Invite, and Contacts. The main header area displays 'MyWeb BETA' and a search bar containing the word 'visualization'. Below the search bar, there's a row of tabs: 'See' (highlighted), 'All Results', 'My Results', 'My Contacts' Results', and 'Everyone's Results'. The main content area shows 'Search Results: My Contacts' Bookmarks (40 Results)'. There are three search results listed, each with a title, a description, tags, save information, and a URL. Each result has a 'Save this!' button with a download icon.

MyWeb ^{BETA} Home - My Bookmarks - Invite Contacts -

visualization My W

See All Results | My Results | My Contacts' Results | Everyone's Results

Search Results: **My Contacts' Bookmarks** (40 Results)

1. [ahhhhhh visualization](#)  Save this!
A dot plot **visualization** that conveys the number of results obtained from Google search queries for words of the form $a\{n\}h\{m\}$.
Tags: [infoviz](#), [language](#), [search](#), [statistics](#), [technology](#), [more...](#)
Saved by: [Ryan Shaw](#) on 7/11/2006 at 8:34 AM - [Details](#)
http://infosthetics.com/archives/2006/07/ah_ahhhhhh_dot_plot_data_visualization.html
2. [SIMS 247: Information Visualization and Presentation](#)  Save this!
Tags: [visualization](#), [imported delicious](#)
Saved by: [zephoria](#) on 7/26/2005 at 1:58 PM - [Details](#)
<http://www.sims.berkeley.edu/courses/is247/s04/projects.html>
3. [surreal penguin visualization of LJ](#)  Save this!
Tags: [blogging](#), [livejournal](#), [visualization](#), [imported delicious](#)
Saved by: [zephoria](#) on 7/26/2005 at 1:58 PM - [Details](#)
<http://surrealpenguin.com/projects/ljnet/>

Google's Social Search, 2012



obama daily show

Search

About 49,400,000 results (0.66 seconds)

[Advanced search](#)

- Everything
- Images
- Videos
- News
- Shopping
- More

Any time

- Latest
- Past 24 hours
- Past week
- Past month
- Past year
- Custom range...

All results

Social

[More search tools](#)

[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](#)

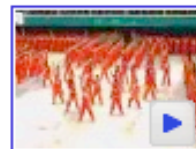


[Obama On 'Daily Show':](#)

[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](#)

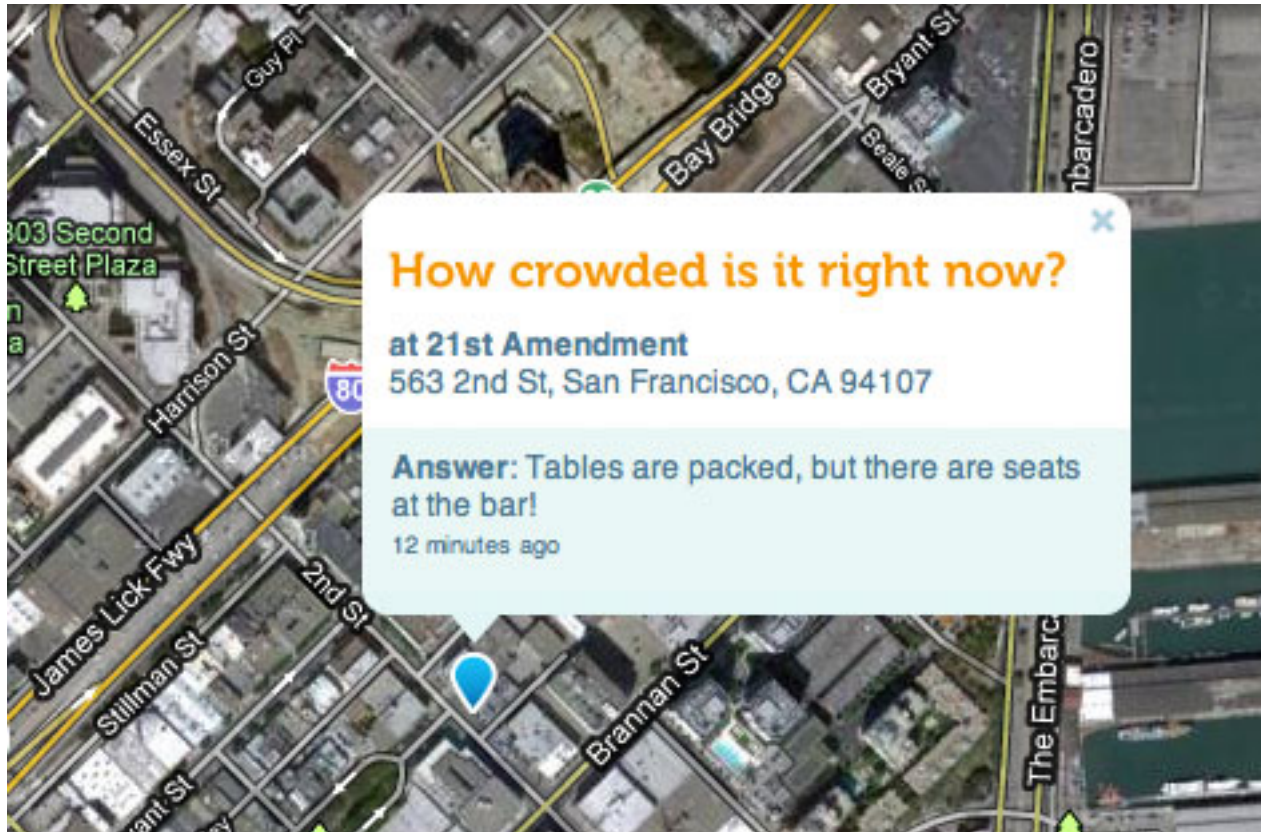
Social Search: Asking for Answers

What do people ask of their social networks?

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

Morris et al., CHI 2010

Context-Aware Mobile Search

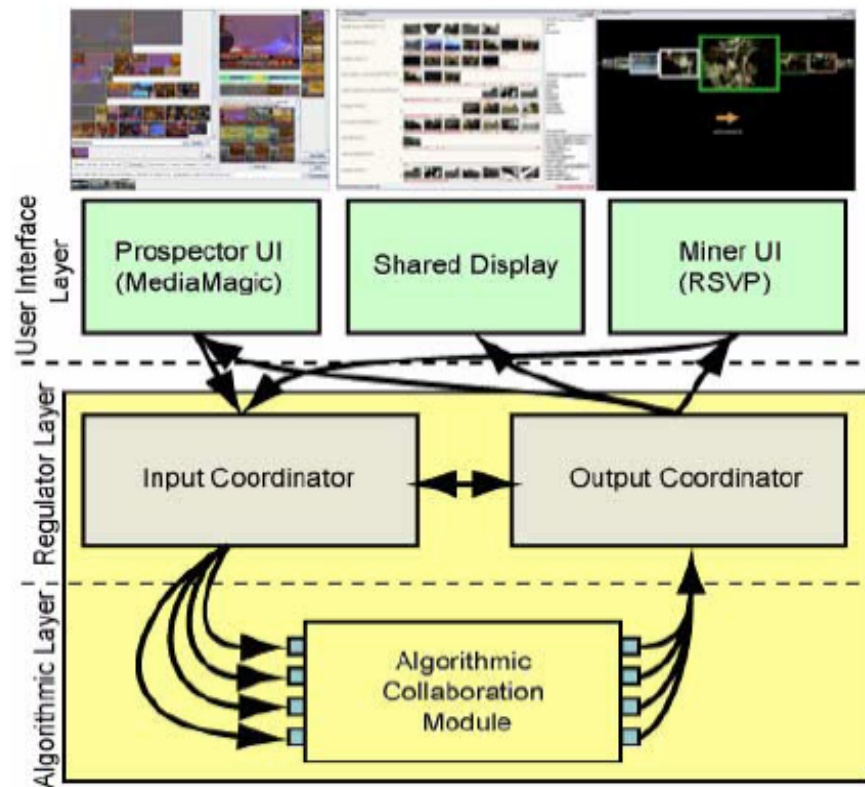


<http://www.localmind.com/>

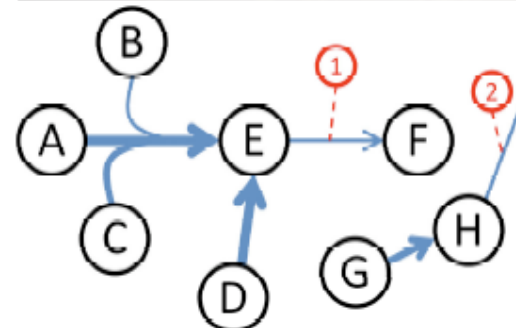
Social Search: People Collaborating



Social Search: People Collaborating



Social Search: People Collaborating

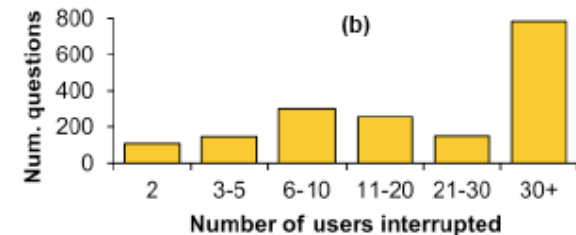
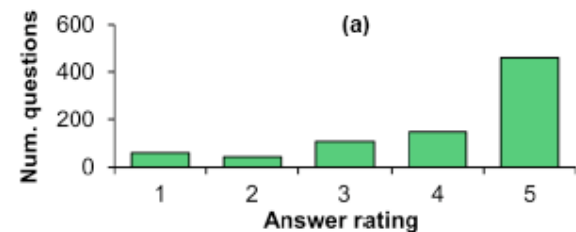
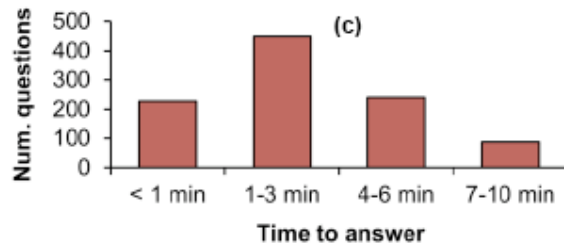
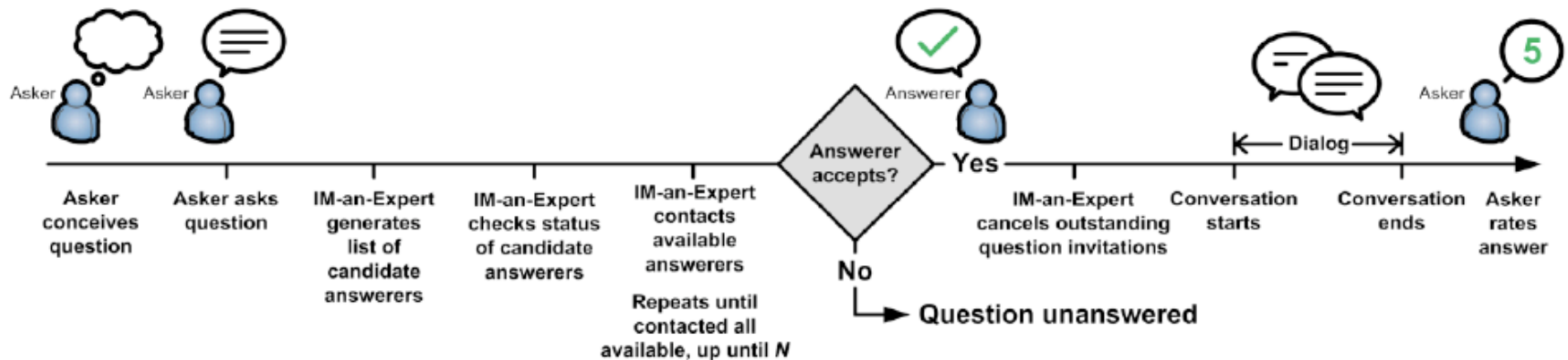


Expression 1:
E AND ((A OR B OR C)
AND D)

Expression 2:
G AND H

Social Search: Asking for Answers

Asking experts in a social network



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.