

# **Query formulation**

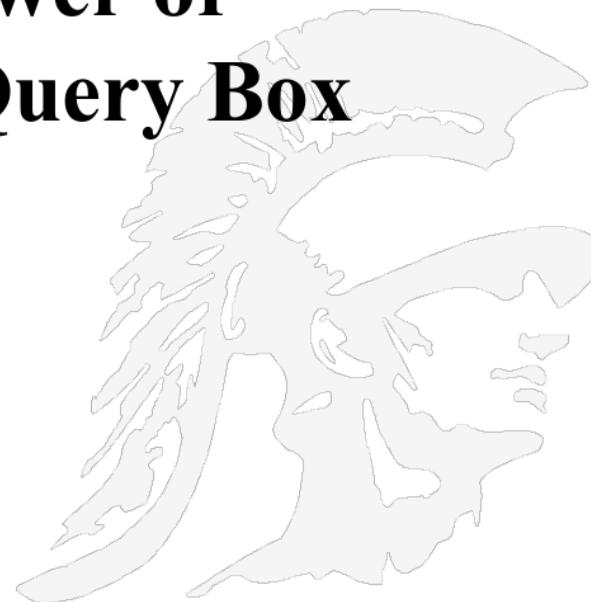
## **how to ask 'properly'**

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# The Power of Google's Query Box

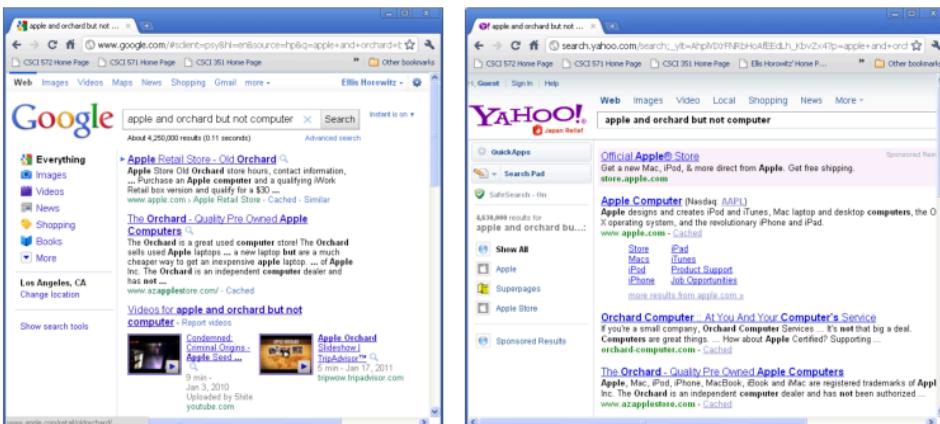


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**Traditional Boolean Queries in a Search Box Don't Work As Expected**

Query: “apple AND orchard BUT NOT computer” still returns Apple Computer results



Google search results for "apple and orchard but not computer".

Yahoo search results for "apple and orchard but not computer".

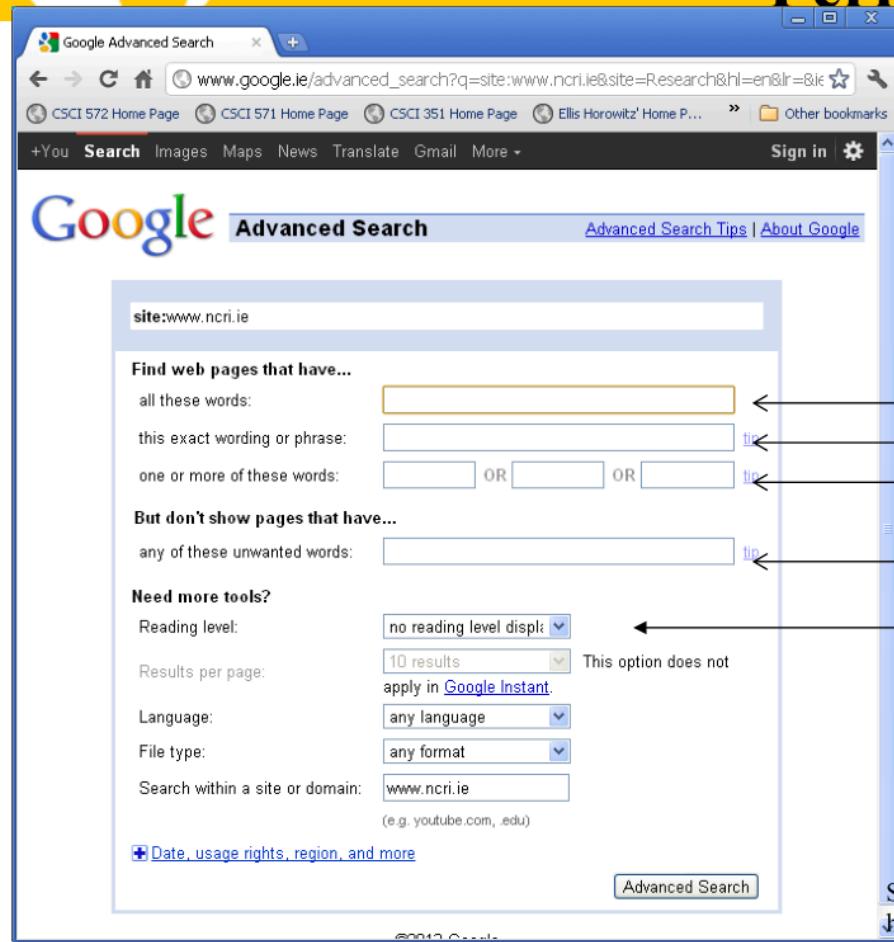
Bing search results for "apple and orchard but not computer".

Notice Related searches

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## But Google Advanced Search Permits Boolean Queries



The screenshot shows the Google Advanced Search interface. At the top, there's a search bar with the query "site:www.ncri.ie". Below it, there are sections for specifying search criteria:

- Find web pages that have...**
  - "all these words": An input field containing "site:www.ncri.ie".
  - "this exact wording or phrase": An input field.
  - "one or more of these words": An input field followed by "OR" and two empty fields.
- But don't show pages that have...**
  - "any of these unwanted words": An input field.
- Need more tools?**
  - "Reading level": A dropdown menu set to "no reading level disp".
  - "Results per page": A dropdown menu set to "10 results". A note says "This option does not apply in Google Instant."
  - "Language": A dropdown menu set to "any language".
  - "File type": A dropdown menu set to "any format".
  - "Search within a site or domain": An input field set to "www.ncri.ie". A note says "(e.g. youtube.com, .edu)".

At the bottom right of the search form is a "Advanced Search" button.

Search engines typically offer an “Advanced Search” page where users **can enter**, in effect, a Boolean query; e.g. Here is Google’s “advanced search” screen

ANDing a set of words

Exact phrase

ORing a set of words

NOT words

reading level

language  
file type

etc

See also  
<https://help.bing.microsoft.com/#apex/bing/en-US/10002/-1>



# Advanced Search Works Properly

Google Advanced Search [https://www.google.com/advanced\\_search](https://www.google.com/advanced_search)

apple orchard -computer

Advanced Search

Find pages with...

all these words:

this exact word or phrase:

any of these words:

none of these words:

numbers ranging from:  to

Then narrow your results by...

language:

region:

last update:

site or domain:

terms appearing:

SafeSearch:

file type:

usage rights:

[Advanced Search](#)

apple orchard -computer

All Maps Images Videos News More Tools

About 66,700,000 results (0.76 seconds)

**Apple Orchard -Computer**



Rating Hours

**Little Orchard Music**  
5.0 ★★★★★ (3) · Orchard  
Topanga, CA · (310) 455-2950  
Great place.I enjoyed the Little Orchard Music!!!

**Apple Farm Collections**  
No reviews · Farm  
Sherman Oaks, CA · (818) 788-1529

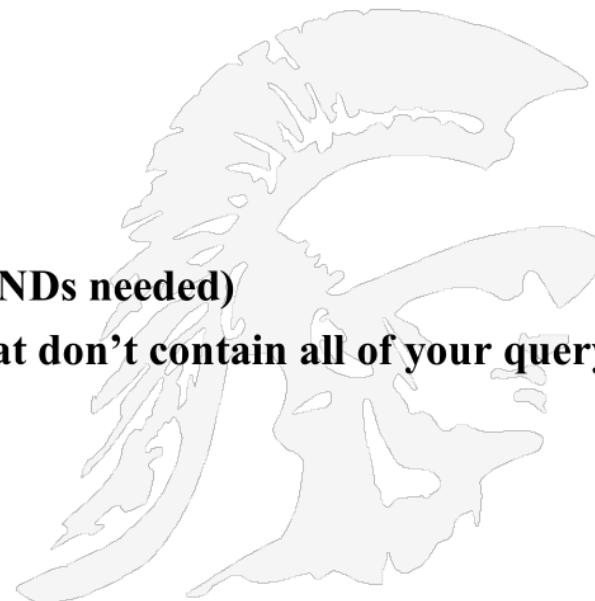
**Whalley's Orchard**  
4.4 ★★★★★ (50) · Produce market  
Littlerock, CA · (661) 480-6454  
Open · Closes 5PM  
They also have the best Pluots, grapes, apples, and peaches.\*

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## Query Box Default is AND

- If you search for more than one keyword at a time, Google/Bing will automatically search for pages that contain ALL of your keywords
  - This is called “implicit AND”
- A search for  
**disney disneyland pirates**  
is the same as searching for  
**disney AND disneyland AND pirates**  
(without the ANDs needed)
- Google sometimes returns pages that don't contain all of your query terms



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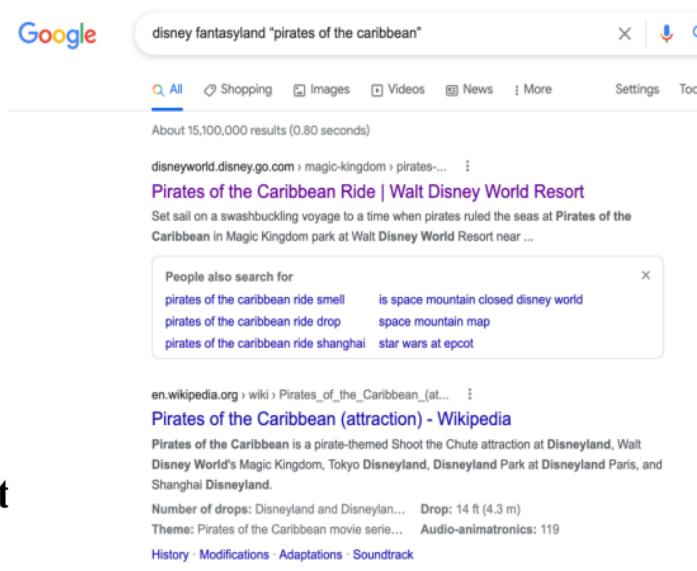
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# V USC Viterbi School of Engineering Put Exact Phrases in Quotes

- To search for phrases, just put your phrase in quotes.
- For example,

**disney disneyland “pirates of the caribbean”**

- This would show you all the pages in Google’s index that contain the word **disney** AND the word **disneyland** AND the exact phrase “**pirates of the Caribbean**” (of course, without the quotes)



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## Differences With/Without Quotes Query: general principles of electricity

Google search results for "general principles of electricity":

All Videos News Images Shopping More Settings Tools

About 189,000 results (0.55 seconds)

[PDF] General principles of electricity supply systems

[www.idc-online.com/.../pdfs/.../General\\_principles\\_of\\_electricity\\_supply\\_systems.pdf](https://www.idc-online.com/.../pdfs/.../General_principles_of_electricity_supply_systems.pdf) ▾  
The generator consists of a prime mover and a magnetic field excitor. The magnetic field is produced electrically by passing a direct current (d.c.) through a winding on an iron core, which rotates inside three-phase windings on the stator of the machine. The magnetic field is rotated by means of a prime mover which may be ...

General principles of electricity supply systems | EEP | Transmission ...

<https://www.pinterest.com/pin/35888128254768417/>  
Electric Power Substation ... Volts, alternating, amperage, blackout, built, cable, communications, connection, construction, current, danger, distribution, electrical, electricity, energies, equipment, factory, fuel, fuse, generation, generator, high, in, industry, insulation, insulators, iron, lines, link, metal, multi-generation, nobody, ...

articles - Mentor EBS

[www.mentor-ebs.si/ARTICLES](http://www.mentor-ebs.si/ARTICLES) ▾  
To give the answer to this question, we need knowledge of the general principles of electricity pricing in the electricity market. What we have in mind here is the market price of electricity, i.e. the price at which electricity is sold to suppliers by producers, not the rate in the end-user market. The latter, naturally, indirectly has to ...

Electricity - Guides.turnitin.com

[https://guides.turnitin.com/.../Prompt\\_Library/Secondary\\_Education](https://guides.turnitin.com/.../Prompt_Library/Secondary_Education) ▾  
Dec 19, 2017 - Prompt: Today you will research electricity and consider some of the methods used in science texts to support different purposes. First, you will read a passage that explains some general principles of electricity. Then you will read an article about what causes a short circuit. Finally, you will read an article ...

[PDF] C:\Physics Dept History\1965Curriculum.wpd

[blogs.mtu.edu/physics/files/2000/01/Curriculum1965.pdf](https://blogs.mtu.edu/physics/files/2000/01/Curriculum1965.pdf) ▾  
PH336, Electric and Magnetic Measurements. (0-3) s (alternate years) . . . . . 4. A continuation of work begun in PH316-317, intended for those who wish to pursue further the theory and practice of precise electric and magnetic measurements. Types of all the principal instruments used in modern electrical methods are ...

### With quotes

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Google search results for "general principles of electricity":

All Videos News Images Shopping More Settings Tools

About 2,120,000 results (0.60 seconds)

Even materials that conduct **electricity** resist the flow of electrons. The unit of **electrical** resistance is an ohm. The pressure needed to make one coulomb per second (one ampere) flow through a conductor having a resistance of one ohm is one volt. ... The quantity of **electric** charge is measured in coulombs.

The Principles of Electricity - Energizer

[www.energizer.com/science-center/the-principles-of-electricity](http://www.energizer.com/science-center/the-principles-of-electricity)

About this result Feedback

People also ask

- What is the law of electricity? ▾
- What is the basic principle of the electric generator? ▾
- What is the basic principle of magnetism? ▾
- What is the theory of electricity? ▾

Feedback

The Basic Principles of Electricity | Anixter

[https://www.anixter.com/en\\_us/resources/.../the-basic-principles-of-electricity.html](https://www.anixter.com/en_us/resources/.../the-basic-principles-of-electricity.html) ▾  
The Volt. The pressure that is put on free electrons that causes them to flow is known as electromotive force (EMF). The volt is the unit of pressure, i.e., the volt is the amount of electromotive force required to push a current of one ampere through a conductor with a resistance of one ohm.

The Principles of Electricity - Energizer

[www.energizer.com/science-center/the-principles-of-electricity](http://www.energizer.com/science-center/the-principles-of-electricity) ▾  
Even materials that conduct **electricity** resist the flow of electrons. The unit of **electrical** resistance is an ohm. The pressure needed to make one coulomb per second (one ampere) flow through a conductor having a resistance of one ohm is one volt. ... The quantity of **electric** charge is measured in coulombs.



### Without quotes

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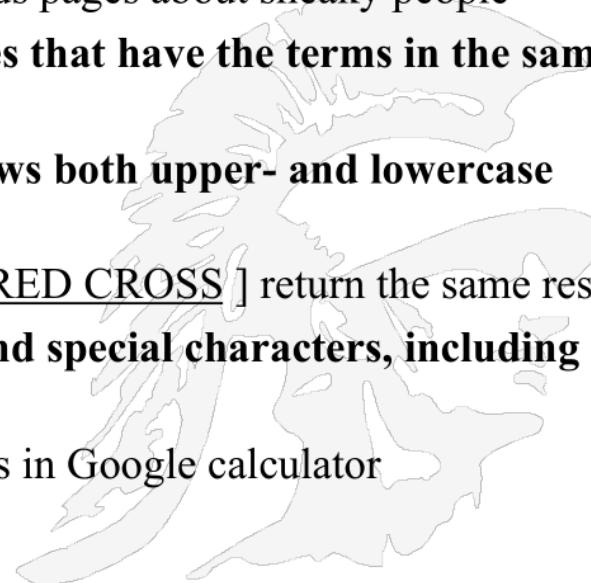
- The query [ **child bicycle helmet**] finds pages that contain words that are similar to some or all of your search terms,
  - e.g., “child,” “children,” or “children's,” “bicycle,” “bicycles,” “bicycle's,” “bicycling,” or “bicyclists,” and “helmet” or “helmets.”
  - Google calls this feature *word variations* or *automatic stemming*
- **Google will often ignore Stop Words**
  - However, a query with only Stop Words, e.g. [the who] gets treated as significant, returning pages for the Rock Group, the Who
- **Google limits queries to 32 words**
  - Google will return nonsense results for this nonsense query
  - aardvark aback abacus abalone abandon abashed abbey abbreviate abdicate abdomen abduct aberration abhor abide ability abject able abnormal aboard abode abolish abolitionist abort about above abrade abridge abroad abrupt abscond absent absinthe

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## Other Google Query Rules

- **Google favors results that have your search terms near each other**
  - The query [snake grass] finds pages about plants;
  - The query [snake in the grass] finds pages about sneaky people
- **Google gives higher priority to pages that have the terms in the same order as in your query**
- **Google is NOT case sensitive; it shows both upper- and lowercase results**
  - [ Red Cross ], [ red cross ], and [ RED CROSS ] return the same results.
- **Google ignores some punctuation and special characters, including ! ? , . ; [ ] @ / # < >**
  - Exceptions: C++, or math symbols in Google calculator





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# Capitalization Does NOT Matter (but there are exceptions)

The image displays two Google search results side-by-side, illustrating that capitalization does not affect search results. Both searches yield approximately 474,000,000 results.

**Search 1: bush**

- Result 1:** [bushofficial.com](https://bushofficial.com) - BUSH Official Website
- Result 2:** [georgewbush.com](http://georgewbush.com) - George W. Bush
- Result 3:** FOX NEWS - Trump mocks Bush, Liz Cheney with bizarre photoshopped image
- Result 4:** yahoo/news - Donald Trump needles George W. Bush, this time over Bush's support for Liz Cheney
- Result 5:** THE HILL - Trump rips Bush for backing Cheney | TheHill

**Search 2: Bush**

- Result 1:** [bushofficial.com](https://bushofficial.com) - BUSH Official Website
- Result 2:** [georgewbush.com](http://georgewbush.com) - George W. Bush
- Result 3:** FOX NEWS - Trump mocks Bush, Liz Cheney with bizarre photoshopped image
- Result 4:** yahoo/news - Donald Trump needles George W. Bush, this time over Bush's support for Liz Cheney
- Result 5:** THE HILL - Trump rips Bush for backing Cheney | TheHill

bush and Bush yield the same results  
as does “apple” and “Apple”

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# More Exceptions

Two screenshots of Google search results for "disney".

**Left Screenshot:** A search for "disney" on Google. The results page shows various Disney-related links and news stories. Key snippets include:

- Disney+**: Start Streaming
- Disney+**: Classic favorites. New releases. Disney Channel throwbacks. Exclusive Original series. From classics to new releases, get access to stories you can't stream anywhere else.
- Disney+**: Entretenimiento Sin Fin Suscibe Ahora
- Disney+, Hulu, and ESPN+**: The Ultimate Streaming Trio There's something for everyone.
- Marvel Movie Home**: Captain America, Thor, and More! Stream Your Favorites Today!
- Stream Disney Throwbacks**: The Vault is Wide Open. Your Disney Favorites Await.
- https://www.disney.com**: Disney.com | The official home for all things Disney
- Walt Disney World Resort in Orlando, Florida**: Welcome to Walt Disney World. Come and enjoy the magic of Walt Disney World Resort in Orlando, FL. Plan your family vacation and create memories for a ...

**Right Screenshot:** A search for "Disney" on Google. The results page shows various Disney-related links and news stories. Key snippets include:

- The Walt Disney Company**: Mass media company
- Disney.com**: Disney.com | The official home for all things Disney
- Walt Disney World Resort in Orlando, Florida**: Come and enjoy the magic of Walt Disney World Resort in Orlando, FL. Plan your family vacation and create memories for a lifetime.
- Top stories**:
  - THE VERGE**: Disney sues for control of key Marvel characters
  - The New York Times**: Disney Sues to Keep Complete Rights to Marvel Characters
  - THE WALL STREET JOURNAL**: Disney Isn't Investigating Handling of Sexual-Assault Allegations, After ABC News Boss Urge...
- Films produced**

disney

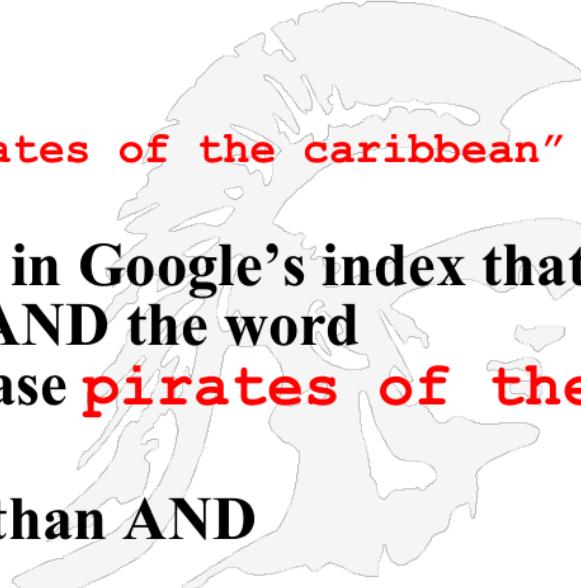
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Disney

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## Boolean OR

- The Boolean **OR** operator is acceptable in Google queries, placed between keywords, and **OR** is *always* in all caps
- For example,  
*disney disneyland OR "pirates of the caribbean"*
- This would show you pages in Google's index that contain the word **disney** AND the word (**disneyland** OR the phrase **pirates of the caribbean**)
- **OR** has higher precedence than **AND**



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## How Google/Bing Treat Queries with Boolean Operators

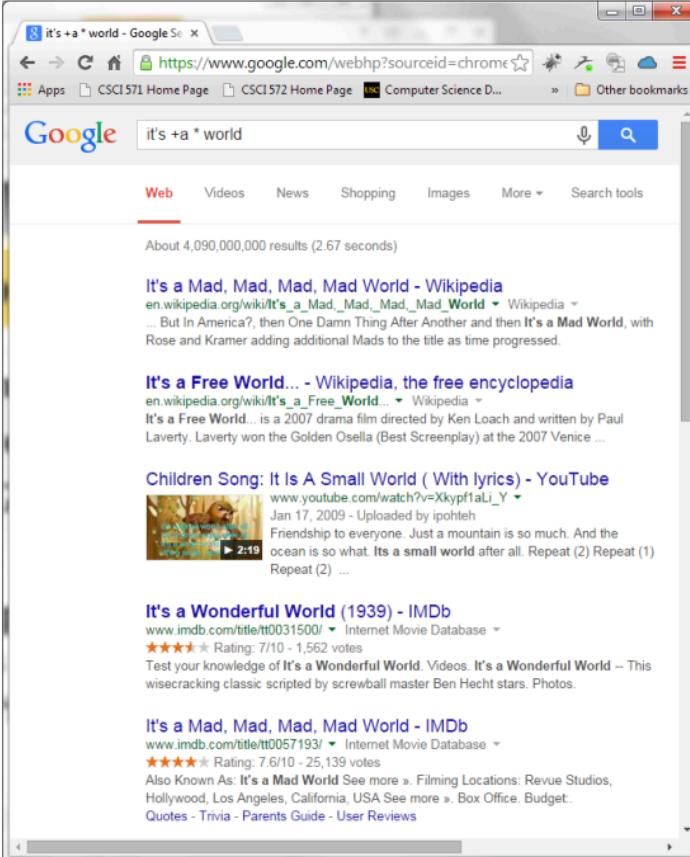
- All query terms are implicitly ANDed
- OR has higher precedence than AND
- Three examples (a, b, c stand for query terms):
  1. a b OR c d is treated as a AND (b OR c) AND d
  2. a OR b c OR d is treated as (a OR b) AND (c OR d)
  3. a OR “b c” d is treated as (a OR (“b c”)) AND d
- and see  
<https://support.google.com/websearch/answer/2466433?hl=en>
- <https://help.bing.microsoft.com/#apex/bing/en-US/10002/-1>

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# Google and Wildcards

- Google offers full-word wildcard queries
- For example, if you search Google for
  - **it's +a \* world,**
  - Google shows you all of the pages in its database that contain the phrase, e.g. “it's a small world” ... and “it's a nano world” ... and “it's a Linux world” ... and so on
  - The + before a is required because it is a stop word and would otherwise be ignored
  - This query works the same in Bing
  - There must be a space after the +a



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# Google Advanced Operators

**Query modifiers**

- **daterange:**
- **filetype:**
- **inanchor:**
- **intext:**
- **intitle:**
- **inurl:**
- **site:**

**Alternative query types**

- **cache:**
- **link:**
- **related:**
- **info:**

**Other information needs**

- **stocks:**

Search Service	Search Operators
Web Search	<a href="#">allinanchor:</a> , <a href="#">allintext:</a> , <a href="#">allintitle:</a> , <a href="#">allinurl:</a> , <a href="#">cache:</a> , <a href="#">define:</a> , <a href="#">filetype:</a> , <a href="#">id:</a> , <a href="#">inanchor:</a> , <a href="#">info:</a> , <a href="#">intext:</a> , <a href="#">intitle:</a> , <a href="#">inurl:</a> , <a href="#">link:</a> , <a href="#">related:</a> , <a href="#">site:</a>
Image Search	<a href="#">allintitle:</a> , <a href="#">allinurl:</a> , <a href="#">filetype:</a> , <a href="#">inurl:</a> , <a href="#">intitle:</a> , <a href="#">site:</a>
Groups	<a href="#">allintext:</a> , <a href="#">allintitle:</a> , <a href="#">author:</a> , <a href="#">group:</a> , <a href="#">insubject:</a> , <a href="#">intext:</a> , <a href="#">intitle:</a>
Directory	<a href="#">allintext:</a> , <a href="#">allintitle:</a> , <a href="#">allinurl:</a> , <a href="#">ext:</a> , <a href="#">filetype:</a> , <a href="#">intext:</a> , <a href="#">intitle:</a> , <a href="#">inurl:</a>
News	<a href="#">allintext:</a> , <a href="#">allintitle:</a> , <a href="#">allinurl:</a> , <a href="#">intext:</a> , <a href="#">intitle:</a> , <a href="#">inurl:</a> , <a href="#">location:</a> , <a href="#">source:</a>
Product Search	<a href="#">allintext:</a> , <a href="#">allintitle:</a>

[http://www.googleguide.com/advanced\\_operators\\_reference.html](http://www.googleguide.com/advanced_operators_reference.html)

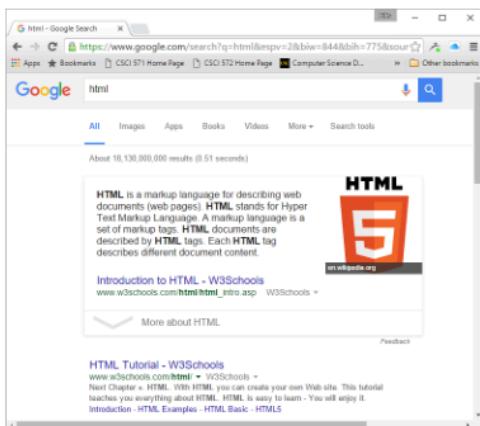
See also

<https://help.bing.microsoft.com/#apex/bing/en-US/10001/-1>

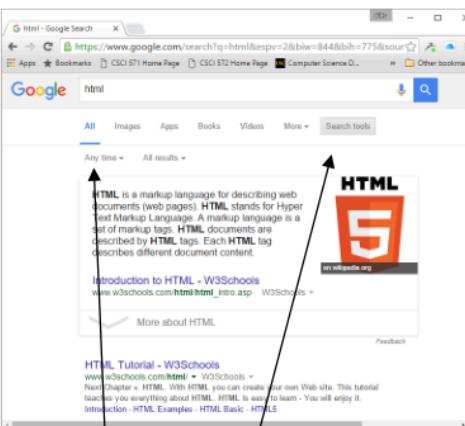
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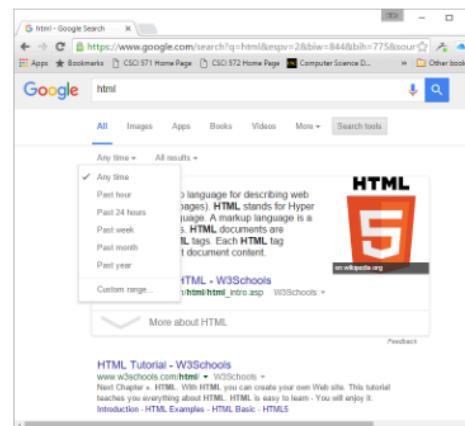
## Searching by Date



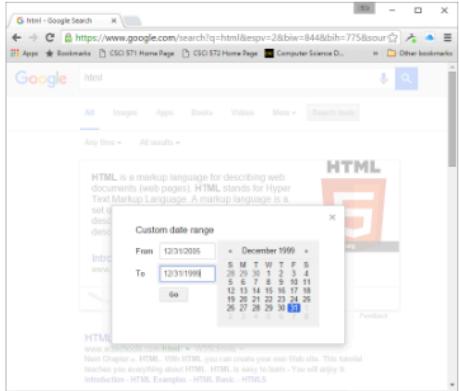
1. Google search for "html"



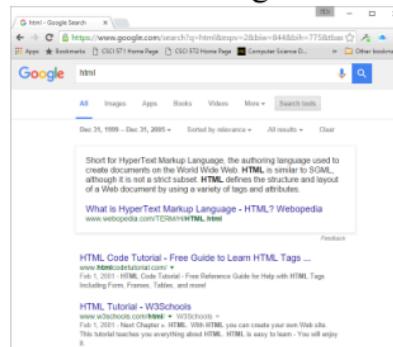
2. click on "Search Tools" and "Any Time" appears



3. click on Any Time and select Custom Range



4. calendar appears, enter dates



5. Final Result

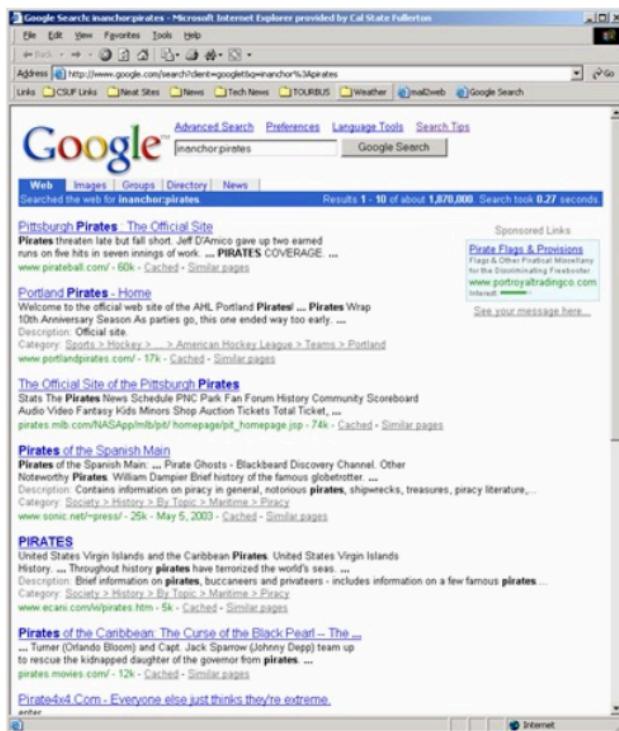
# filetype:



- **filetype:** restricts your results to files ending in a specific file suffix, e.g ".doc" (or .xls, .ppt. etc.), and shows you only files created with the corresponding program
- There can be no space between **filetype:** and the file extension
- The “dot” in the file extension – .doc – is optional
- filetype:doc will NOT return docx



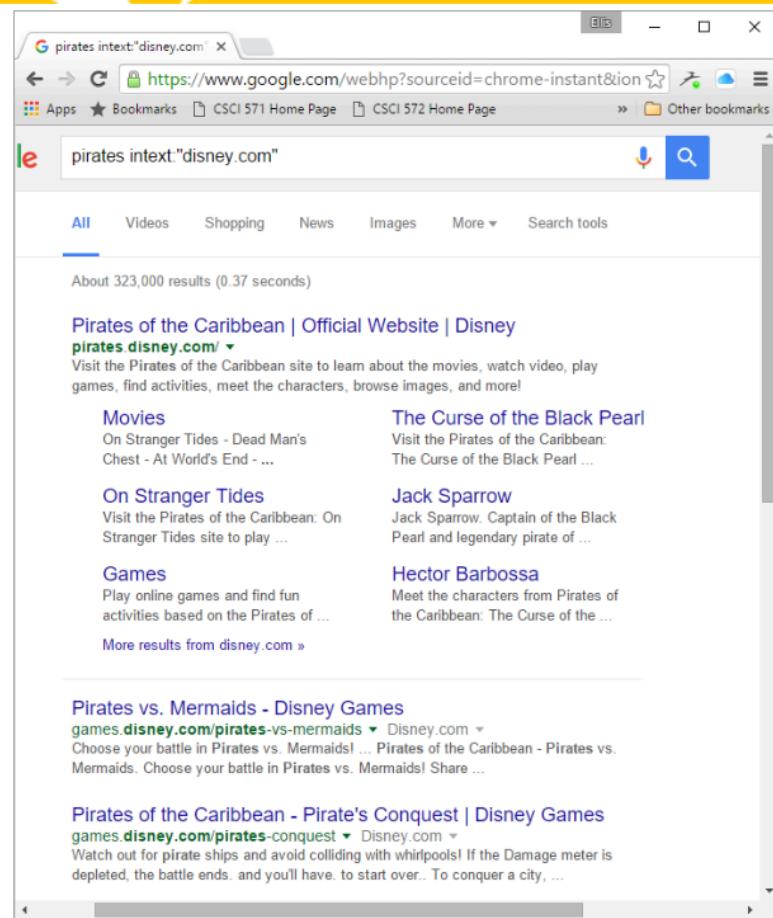
## inanchor:



- **inanchor:** will restrict the results to pages containing the query terms you specify in the anchor text or links to the page.
- For example,  
[ restaurants inanchor:gourmet ]
- will return pages in which the anchor text on links to the pages contain the word “gourmet” and the page contains the word “restaurants.”
- **allinanchor:** restricts results to pages containing all query terms you specify in the anchor text on links to the page.

For example, [ allinanchor: best museums sydney ] will return only pages in which the anchor text on links to the pages contain the words “best,” “museums,” and “sydney.”

## intext:



A screenshot of a Google search results page. The search query is "pirates intext:"disney.com"". The results show various links related to Disney's Pirates of the Caribbean franchise, such as the official website, movies, games, and specific game titles like "The Curse of the Black Pearl" and "Jack Sparrow". Below the main results, there are sections for "Pirates vs. Mermaids - Disney Games" and "Pirates of the Caribbean - Pirate's Conquest | Disney Games".

- **intext:** ignores link text, URLs, and titles, and only searches body text.
- **intext:** helps you avoid query words that are too common in URLs and links.
- **pirates intext:"Disney.com"** requires Disney.com to be within the body of the web page

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# intitle:

- **intitle:** restricts the results to documents containing a particular word in its title.
- You can also search for phrases. Just put your phrase in quotes
- **intitle:pirates**
- **Intitle:"pirates of the caribbean"**

https://www.imdb.com/title :  
**Pirates of the Caribbean: Dead Men Tell No Tales (2017) - IMDb**  
Captain Jack Sparrow is pursued by old rival Captain Salazar and a crew of deadly ghosts who have escaped from the Devil's Triangle.  
★★★★ Rating: 6.5/10 · 280,585 votes

https://www.imdb.com/title :  
**Pirates of the Caribbean: On Stranger Tides (2011) - IMDb**  
Jack Sparrow and Barbosa embark on a quest to find the elusive fountain of youth, only to discover that Blackbeard and his daughter are after it too.  
★★★★ Rating: 6.6/10 · 497,456 votes  
Missing: intitle:piratesofthecaribbean" | Must include: [intitle:piratesofthecaribbean"](#)

**inurl:**



- **inurl:** restricts the results to documents containing a particular word in its URL.
- **inurl:disney**

- Results include
- **Disney.go.com**
- **www.disney.de**

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The screenshot shows a Google search results page with the query "masters site:cs.usc.edu". The results are filtered to show only websites from the USC Viterbi School of Engineering domain. The first result is a link to the M.S. Program - USC Viterbi | Department of Computer Science page, which provides intensive preparation in concepts and techniques related to design, programming, and application. Subsequent results include links to the Computer Science (General), Intelligent Robotics, Data Science, and Software Engineering programs, each detailing their respective focuses and requirements.

- **site:** restricts the results to those websites in a domain.
- There can be no space between **site:** and the domain.
- Query is:
- **masters site:cs.usc.edu**

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## Using site:

- You can use **site:** in conjunction with another search term or phrase.  
**pirates site:disney.com**
- You can also use **site:** and negation to exclude sites.  
**pirates -site:disney.com**
- You can use **site:** to exclude or include entire top level domains (and, like with filetype, the dot is optional).

**pirates -site:com**  
**pirates site:edu**



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cache:

- **cache:url** shows the version of a web page that Google has in its cache.

This is Google's cache of <https://www.cs.usc.edu/>. It is a snapshot of the page as it appeared on Feb 15, 2022 08:53:41 GMT. The [current page](#) could have changed in the meantime. [Learn more](#).

[Full version](#)   [Text-only version](#)   [View source](#)

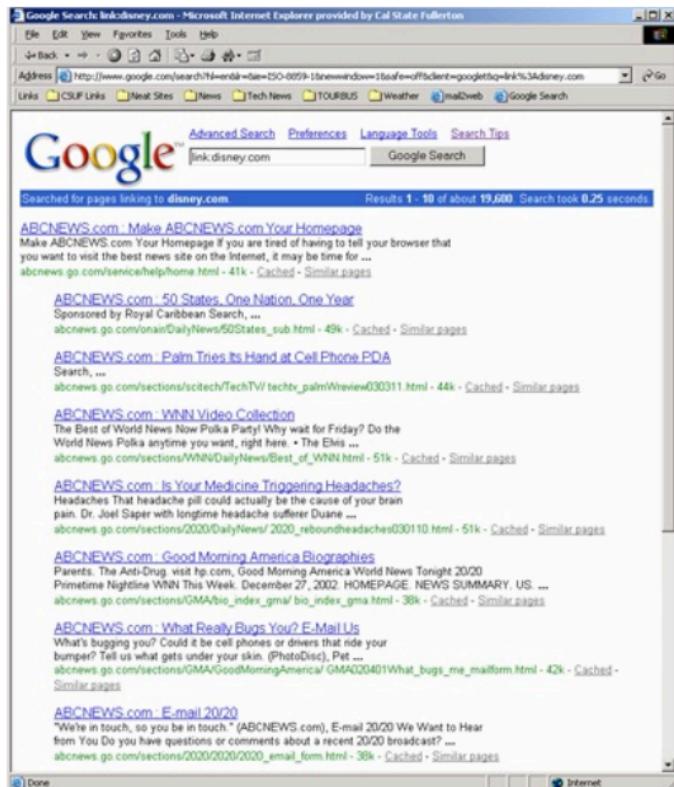
Tip: To quickly find your search term on this page, press **Ctrl+F** or **⌘-F** (Mac) and use the find bar.

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"Deepfaking the Mind" Could Improve Brain-Computer Interfaces for People with Disabilities

link:



- **link:** restricts the results to those web pages that have links to the specified URL.
- **link:Disney.com**
- Note: apparently the link operator only returns a sample of web pages pointing to the link

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related:

Google related:www.cs.usc.edu

All Images Maps Shopping More Search tools

About 45 results (0.21 seconds)

**CS | Computer Science**  
www.cs.ucla.edu/ ▾  
General information about the department and contacts.

**Department of Computer Science, Columbia University | Home**  
www.cs.columbia.edu/ ▾  
Established in 1979, the Department of Computer Science is located within the tree-lined Morningside campus on the Upper West Side of Manhattan.

**Donald Bren School of Information and Computer Sciences ...**  
www.ics.uci.edu/ ▾  
Department of Information and Computer Science. Teaching and research information.

**Computer Science - Computer Science**  
www.cs.ucdavis.edu/ ▾  
Course descriptions, course schedules, job positions, events, newsletter, and contact information.

**Stanford Computer Science**  
www-cs.stanford.edu/ ▾  
Stanford, California.

**Computer Science Department at Princeton University**  
https://www.cs.princeton.edu/ ▾  
The official website for Princeton University's Computer Science Department. Information on programs offered, news, events, and more.

**Computer Science and Engineering: Welcome to CSE @ UCR**  
www.cs.uci.edu/ ▾  
Department of Computer Science and Engineering (CSE)

**UCSB Computer Science**  
https://www.cs.ucsb.edu/ ▾  
General information about the department and contacts.

- **related:** lists web pages that are "similar" to a specified web page.
- There can be no space between **related:** and the URL.

Google related:disney.com

Results 1 - 10 of about 20. Search took 0.14 seconds

**Disney Online - Where the Magic Comes to You!**  
Disney Online - the magical place on the Internet where kids and their parents connect with their friends to play, to learn, and to explore.

**Yahoo!igans!**  
Yahoo!igans! Thursday March 20, 2003 Games Animals E-Cards Movies Jokes. Site Reference, Ask Earl News Spots Astrology Cool Sites... Parents' Guide... Description: Featuring comprehensive safe surfing, games, homework help, and many kid friendly activities.

**Nickelodeon Online at Nick.com**  
What should Brenda and Camille do while wearing HUGE underwear? Deliver the mail. Play with the boys from Recess. Get NickPants? Get e-Collectibles!

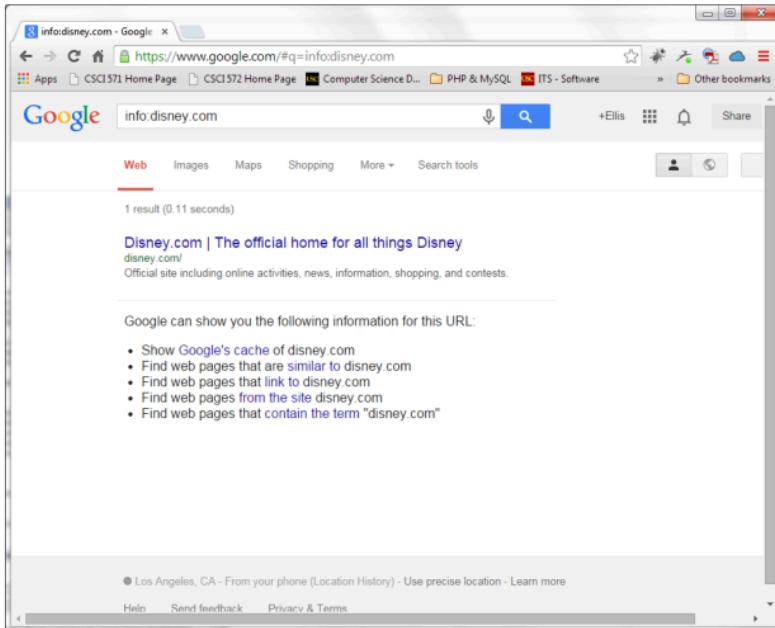
**Welcome to Discovery.com**  
Discovery Channel's Best-Kept TV Schedules | HD Theater | Newsletter / My Discovery | Discovery School | International Sites... Description: Discovery Online

**MGM New and Upcoming Movies Trailers**  
Category: Business > Major Companies > Publicly Traded > M... www.mgm.com/ 414 - Cached - Similar pages - Stock quotes - MGM

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 info:



- **info:** presents some information that Google has about a particular web page.

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stocks:

Google stocks:aapl

All News Videos Shopping Images More Tools

About 13,900,000 results (0.77 seconds)

Apple Inc. NASDAQ: AAPL Overview News Compare Financials

Market Summary > Apple Inc.

170.74 USD +1.85 (1.10%) ↑ today Feb 15, 10:36 AM EST • Disclaimer

1D 5D 1M 6M YTD 1Y 5Y Max

172  
170.83 USD 10:36 AM  
171  
170  
169  
168.88 Previous close 168.88

10:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM

Open	170.97	Mkt cap	2.79T	GDP.score	A-
High	171.45	P/E ratio	28.36	52-wk high	182.94
Low	170.25	Div yield	0.52%	52-wk low	116.21

About

apple.com + Follow

Apple Inc. is an American multinational technology company that specializes in consumer electronics, software and online services. [Wikipedia](#)

CEO: [Tim Cook](#) (Aug 24, 2011–)

Founded: April 1, 1976, Los Altos, CA

Headquarters: Cupertino, CA

Number of employees: 154,000 (2021)

Subsidiaries: Beddit, NextVR, Inc., Beats Electronics, [MORE](#)

Founders: Steve Jobs, Ronald Wayne, Steve Wozniak

Disclaimer

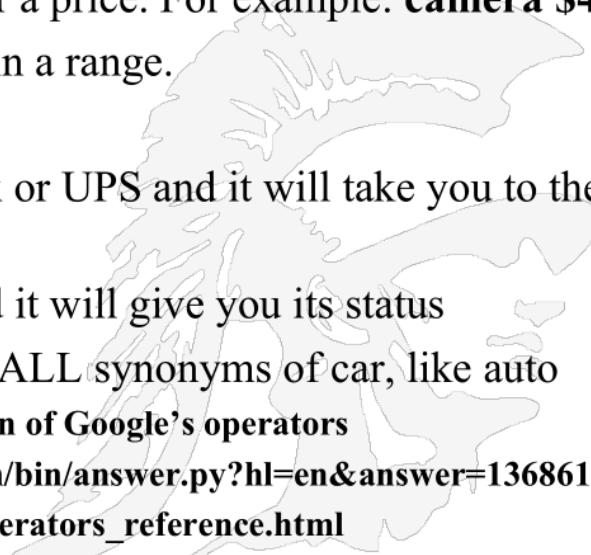
Financials

- If you begin a query with **stocks:** Google will treat the rest of the query terms as stock ticker symbols, and will link to a finance page showing stock information for those symbols.

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## Even More Special Features of the Google Query Box

- **Math expressions are evaluated:**  $12 + 34 + 10 * (150 / 7) = 260.285714$
- **Dictionary definitions:** define:antidisestablishmentarianism
- Put @ in front of a word to search social media. For example: @twitter.
- Put \$ in front of a number and search for a price. For example: camera \$400.
- Put .. between two numbers and search in a range.  
For example, camera \$50..\$100.
- Put a valid tracking number from FedEx or UPS and it will take you to the tracking site
- Put a valid airline and flight number and it will give you its status
- Put a tilde, ~car repair and it queries on ALL synonyms of car, like auto
  - See the following links to further discussion of Google's operators
  - <http://www.google.com/support/websearch/bin/answer.py?hl=en&answer=136861>
  - [http://www.googleguide.com/advanced\\_operators\\_reference.html](http://www.googleguide.com/advanced_operators_reference.html)
  - <http://searchengineland.com/google-power-user-tips-query-operators-48126>



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# Even More Things One Can Do with Google

Google search results for the query "53493439531=english". The results page shows the number 53 493 439 531 followed by its verbal representation: "fifty-three billion four hundred ninety-three million four hundred thirty-nine thousand five hundred thirty-one".

## Speaking/writing out a number

Google search results for the query "mortgage calculator". The results page displays a mortgage calculator tool. The input fields show a mortgage amount of \$100,000, an interest rate of 3.92%, and a mortgage period of 30 years. The output fields show a total cost of mortgage of \$170,213 and monthly payments of \$473.

## Mortgage calculator

Google search results for the query "what's my ip". The results page shows the IP address 172.248.32.30 listed as "Your public IP address".

## What is my IP address

Google search results for the query "spinner". The results page displays a spinner tool with five numbered segments (1, 2, 3, 4, 5) and a "SPIN" button. There is also a "Number" toggle switch and a "Fidget" option.

## Spinners for Games

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## A Failed Google Experiment - phonebook: operator

A screenshot of a Microsoft Internet Explorer browser window displaying the 'Google Web Search Features' page. The page is titled 'PhoneBook'. It explains that Google has added the convenience of US street address and phone number lookup to its search results. It provides examples for searching US businesses and residences using various combinations of name, city, state, and area code. A section on 'Similar Pages (GoogleScout)' is also visible at the bottom.

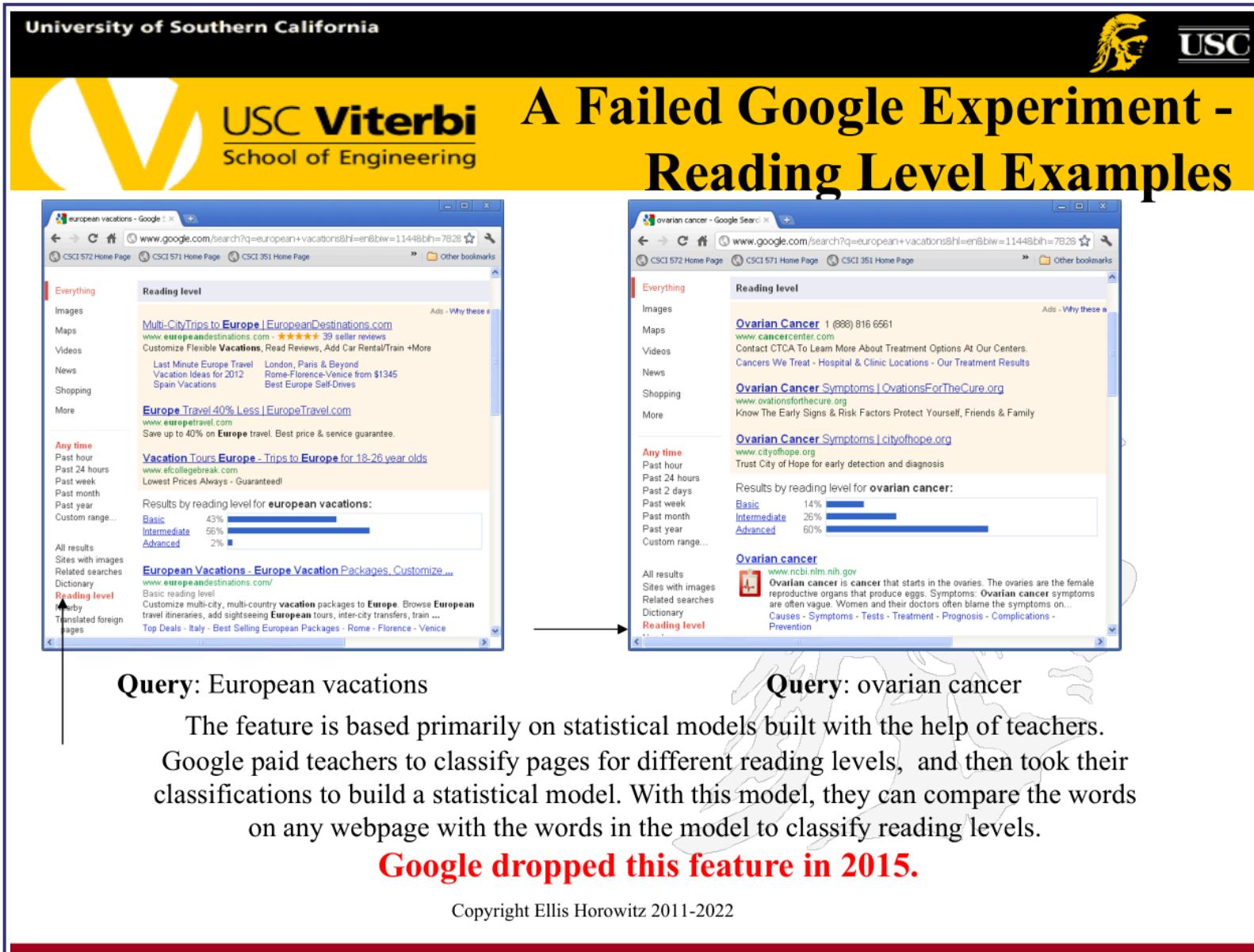
- There were actually three different Google phonebook operators.
- **phonebook:** searches the entire Google phonebook.
- **rphonebook:** searches residential listings only.
- **bphonebook:** searches business listings only

As of 2010, Google's phone book feature has been officially retired.  
Both the phonebook: and the rphonebook: search operator have both been dropped due to many complaints about privacy violations

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# A Failed Google Experiment - Reading Level Examples



The figure consists of two side-by-side screenshots of Google search results. Both screenshots show a 'Reading level' filter on the left side of the search results.

**Query: European vacations**

The results for 'European vacations' include:

- Multi-CityTrips to Europe | EuropeanDestinations.com
- Last Minute Europe Travel London, Paris & Beyond Vacation ideas for 2012 Rome-Florence-Venice from \$1345 Spain Vacations Best Europe Self-Drives
- Europe Travel 40% Less | EuropeTravel.com Save up to 40% on Europe travel. Best price & service guarantee.
- Vacation Tours Europe - Trips to Europe for 18-26 year olds www.ecollegebreak.com Lowest Prices Always - Guaranteed!

Results by reading level for **European vacations**:

Reading Level	Percentage
Basic	43%
Intermediate	56%
Advanced	2%

**Query: ovarian cancer**

The results for 'ovarian cancer' include:

- Ovarian Cancer 1 (888) 816 6561 www.cancercenter.com Contact CTCAs To Learn More About Treatment Options At Our Centers. Cancers We Treat - Hospital & Clinic Locations - Our Treatment Results
- Ovarian Cancer Symptoms | OvariesForTheCure.org www.ovariofthecure.org Know The Early Signs & Risk Factors Protect Yourself, Friends & Family
- Ovarian Cancer Symptoms | cityofhope.org www.cityofhope.org Trust City of Hope for early detection and diagnosis

Results by reading level for **ovarian cancer**:

Reading Level	Percentage
Basic	14%
Intermediate	26%
Advanced	60%

**Text:**

The feature is based primarily on statistical models built with the help of teachers. Google paid teachers to classify pages for different reading levels, and then took their classifications to build a statistical model. With this model, they can compare the words on any webpage with the words in the model to classify reading levels.

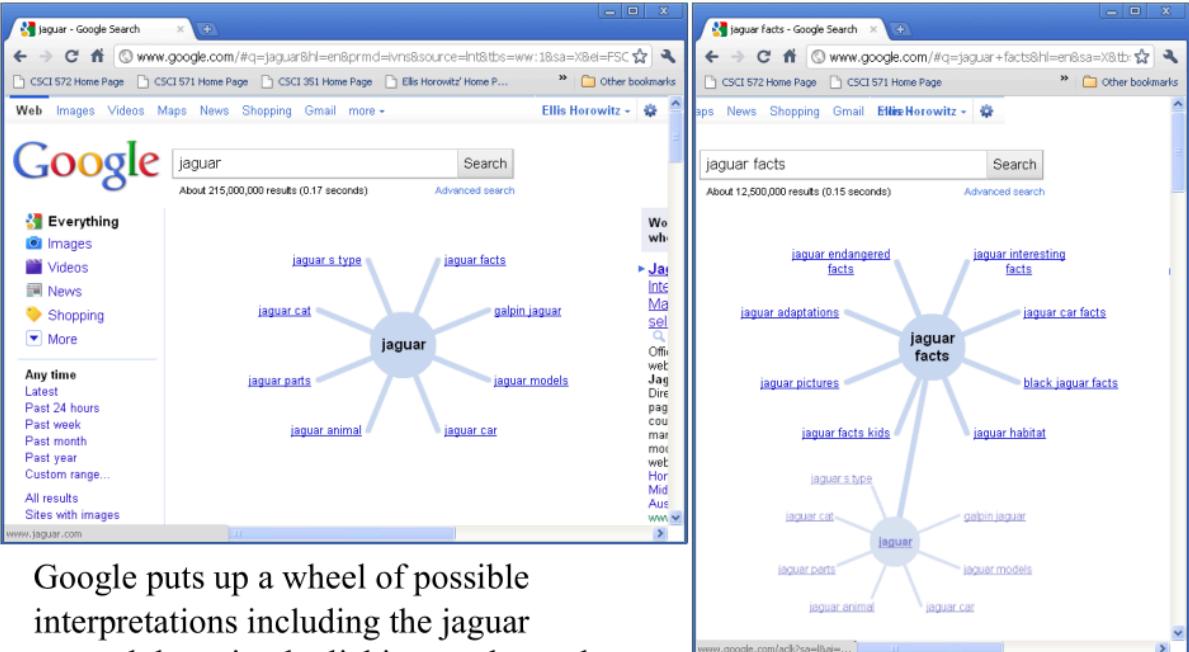
**Google dropped this feature in 2015.**

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## A Failed Google Experiment - The Wonder Wheel



Google puts up a wheel of possible interpretations including the jaguar car and the animal; clicking on the spokes of the wheel bring up a refined wheel which eventually lead to a modified query

In 2011 Google removed the Wonder Wheel

**In 2009** Google introduced the Wonder Wheel, a flash-based interface

**In 2011** Google removed the Wonder Wheel but provided no concrete explanation for why it did so;

**In 2012** Google restored the wonder wheel, renaming it the Contextual Targeting Tool

**In 2014** it was re-focused to help advertisers chose their keywords

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# A Failed Google Experiment - Google Code Search

## Google Code Search

From Wikipedia, the free encyclopedia

*Not to be confused with [Google Code](#).*

**Google Code Search** was a free [beta](#) product from [Google](#) which debuted in [Google Labs](#) on October 5, 2006, allowing web users to search for open-source code on the Internet. Features included the ability to search using operators, namely `lang:`, `package:`, `license:` and `file:`.

The code available for searching was in various formats including `.tar.gz`, `.tar.bz2`, `.tar`, and `.zip`, [CVS](#), [Subversion](#), [git](#) and [Mercurial](#) repositories.

### Contents [hide]

- 1 Regular expression engine
- 2 Discontinuation
- 3 See also
- 4 References
- 5 External links

Google Code Search	
 labs	
Developer(s)	Google
Initial release	October 5, 2006
Development status	Discontinued
Operating system	Any (web-based application)
Type	Code search engine
Website	<a href="http://www.google.com/codesearch">www.google.com/codesearch</a>

### Regular expression engine [edit]

The site allowed the use of [regular expressions](#) in queries, which at the time was not offered by any other search engine for code.<sup>[citation needed]</sup> This makes it resemble [grep](#), but over the world's public code. The methodology employed combines a [trigram index](#) with a custom-built, [denial-of-service](#) resistant regular expression engine.<sup>[1]</sup>

In March 2010, the code of [RE2](#), the regular expression engine used in Google Code Search, was made open source.<sup>[2]</sup>

Google Code Search supported POSIX extended regular expression syntax, excluding back-references, collating elements, and collation classes.

Languages not officially supported could be searched for using the `file:` operator to match the common file extensions for the language.

### Discontinuation [edit]

In October 2011, Google announced that Code Search was to be shut down along with the Code Search API.<sup>[3]</sup> The service remained online until March 2013,<sup>[4]</sup> and it now returns a [404](#).

In January 2012, Russ Cox published an overview of history and the technical aspects of the tool, and open-sourced a basic implementation of a similar functionality as a set of standalone programs that can run fast indexed regular expression searches over local code.<sup>[5]</sup>

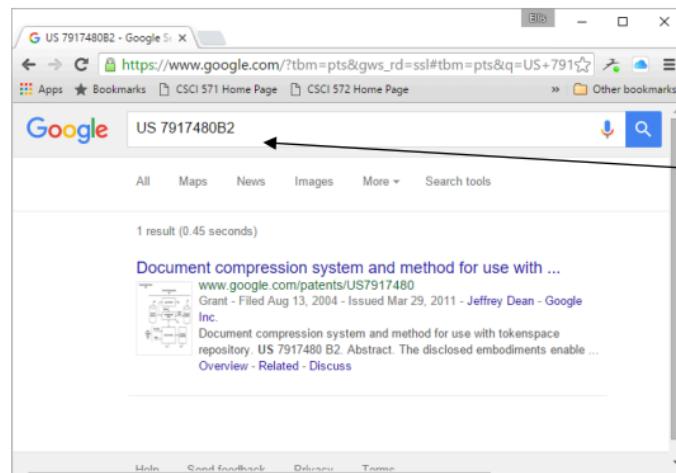
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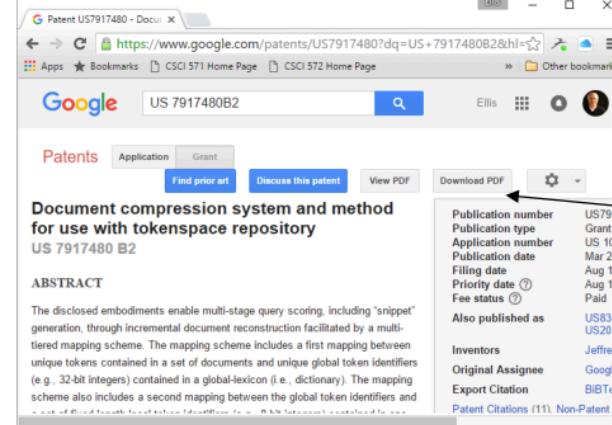
# Special Content Search Engines Google Patents



Initial Google Patents Page



patent query using patent number



Sample patent results page;  
Note download

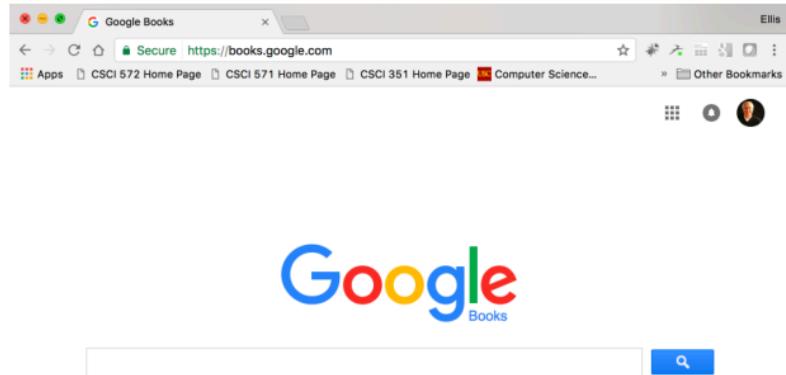
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## Special Content Search Engines Google Books

 A screenshot of a web browser showing the Google Books homepage. The address bar shows "Secure https://books.google.com". The page features the Google Books logo and a search bar. Below the search bar is the text "Search the world's most comprehensive index of full-text books." and a "My library" link.

**Google Books** is a service that searches the full text of books and magazines that Google has scanned, converted to text using optical character recognition (OCR), and stored in its digital database

**Books are provided** either by

- publishers and authors, through the Google Books Partner Program, or by
- Google's library partners, through the Library Project.

**Controversy:**  
Google has been criticized for potential copyright violations, and lack of editing to correct the many errors introduced into the scanned texts by the OCR process.

As of October 2015, the number of scanned book titles was over 25 million.

Google estimated in 2010 that there were about 130 million distinct titles in the world, and stated that it intended to scan all of them

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# What You See on Google Books

**Full View**

You can see books in Full View if the book is out of copyright, or if the publisher or author has asked to make the book fully viewable. The Full View allows you to view any page from the book, and if the book is in the public domain, you can download, save and print a PDF version to read at your own pace.



**Limited Preview**

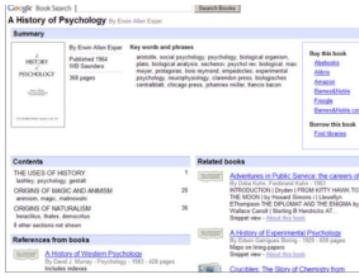
If the publisher or author has given us permission, you can see a limited number of pages from the book as a preview.



**Full View**

**Snippet View**

The Snippet View, like a card catalog, shows information about the book plus a few snippets – a few sentences to display your search term in context.



**Snippet View**

<https://www.google.com/googlebooks/library/screenshots.html#books-fullview>

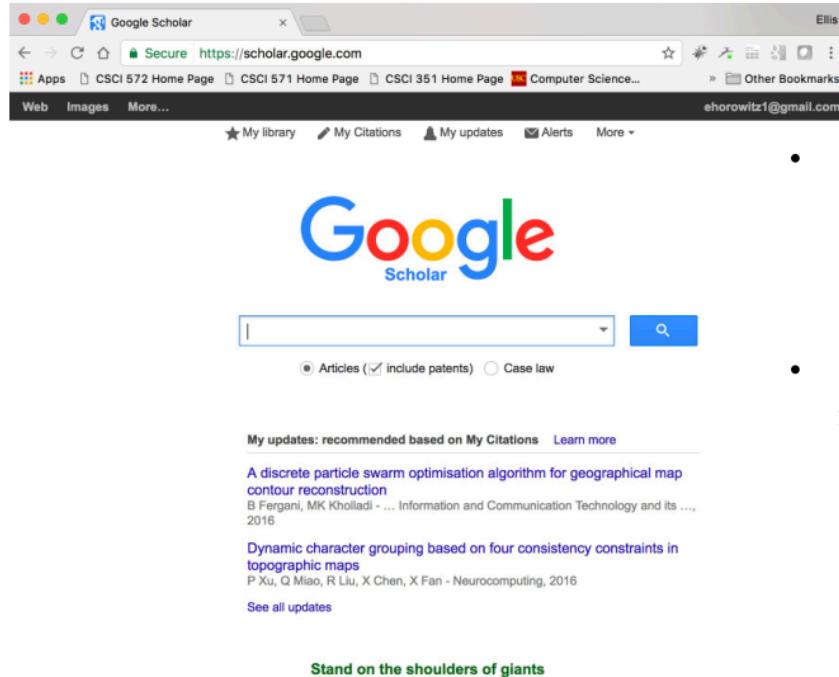
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## Special Content Search Engines Google Scholar



- **Google Scholar** is a freely accessible search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines.
- The Google Scholar index includes most peer-reviewed online academic journals and books, conference papers, theses, dissertations, etc

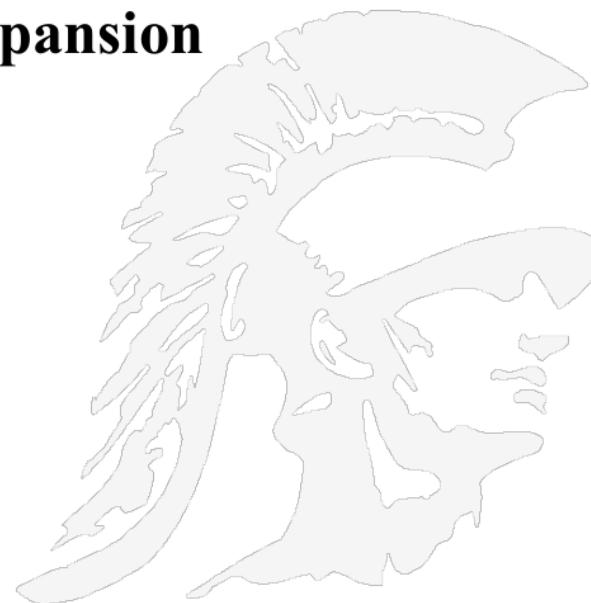
Stand on the shoulders of giants

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## Relevance Feedback & Query Expansion



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# Relevance Feedback

- After initial retrieval results are presented, allow the user to provide feedback on the relevance of one or more of the retrieved documents
  - Google offers this but not very prominently (see 10 related searches below)

The screenshot shows two side-by-side Google search results pages. Both pages have the search term "peer-to-peer processing" in the search bar and show approximately 53,500,000 results.

**Left Window:**

- Search:** About 53,500,000 results (0.20 seconds)
- Everything:** Introduction to Windows Peer-to-Peer Networking, A Peer-To-Peer Work Processing App With WCF, What is peer-to-peer process, Storage Device Evolution: General-Purpose Peer Processing ...
- Related searches:** peer-to-peer query processing, peer-to-peer service, peer-to-peer production, peer-to-peer developing, peer-to-peer manufacturing, peer-to-peer networking

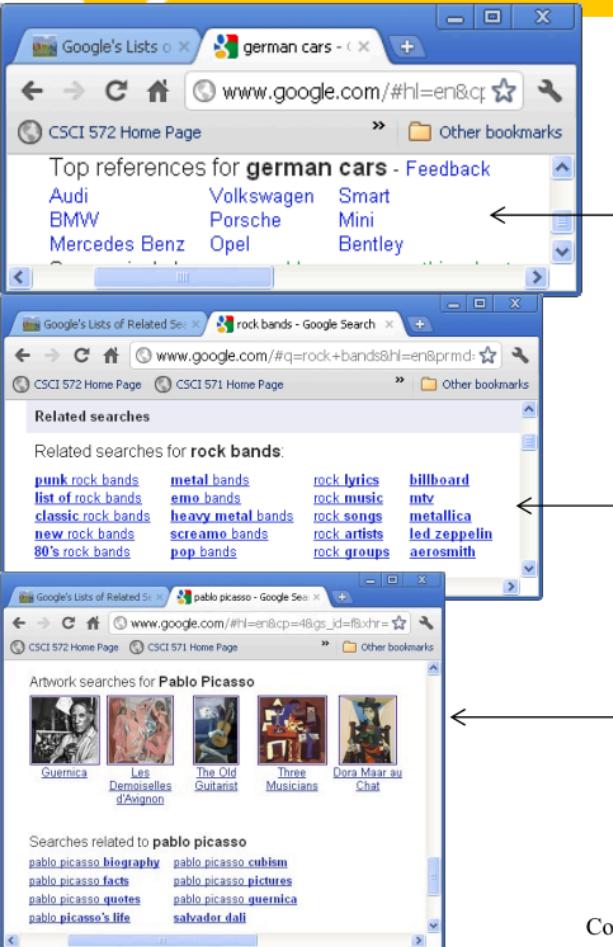
**Right Window:**

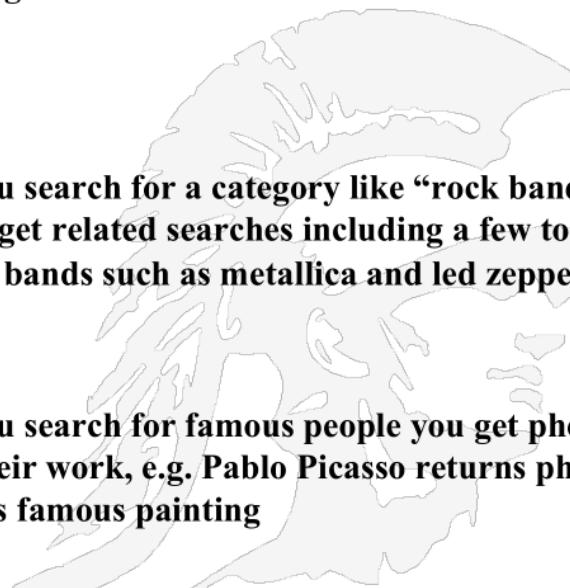
- Search:** About 53,500,000 results (0.19 seconds)
- Everything:** Introduction to Windows Peer-to-Peer Networking, A Peer-To-Peer Work Processing App With WCF, What is peer-to-peer process
- Related searches:** peer-to-peer query processing, peer-to-peer service, peer-to-peer production, peer-to-peer developing, peer-to-peer manufacturing, peer-to-peer networking
- Any time:** Past hour, Past 24 hours, Past week, Past month, Past year, Custom range...
- All results:** All results, Sites with images, Related

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# Google Related Searches



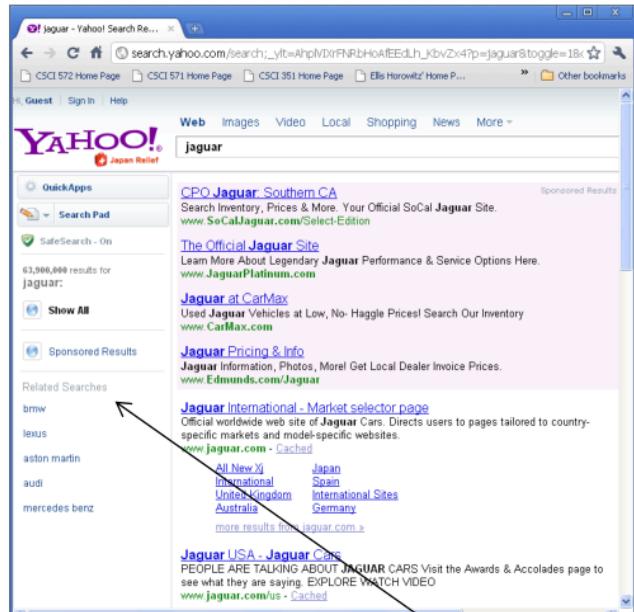
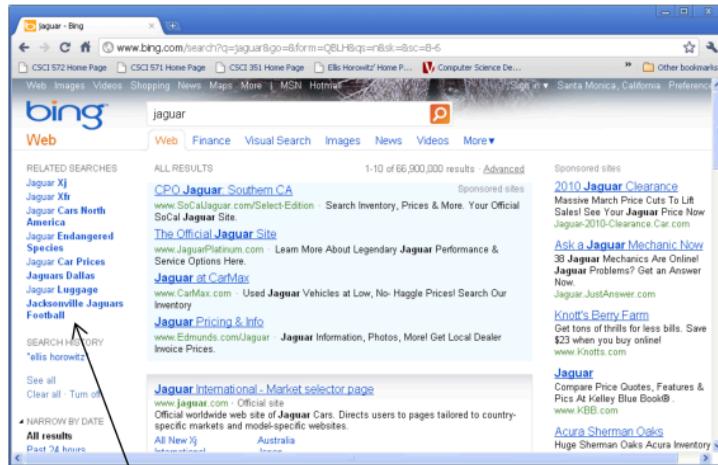
- Google has enhanced their related searches, e.g.
- If you search for the name of a category, Google will show the most popular members, e.g. “german cars”
- If you search for a category like “rock bands” You get related searches including a few top rock bands such as metallica and led zeppelin
- If you search for famous people you get photos of their work, e.g. Pablo Picasso returns photos of his famous painting

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# Search Engines and Relevance Feedback



On the query “jaguar” yahoo’s 3rd result is the animal; Bing’s 2<sup>nd</sup> result is the animal; all have extensive ads for the car at the top and side indicating that the query for the animal is far rarer; Bing, on the left, puts up alternatives, e.g. Jaguar Luggage, Jacksonville Jaguars; Yahoo also provides related searches but only for the car: bmw, lexus, etc

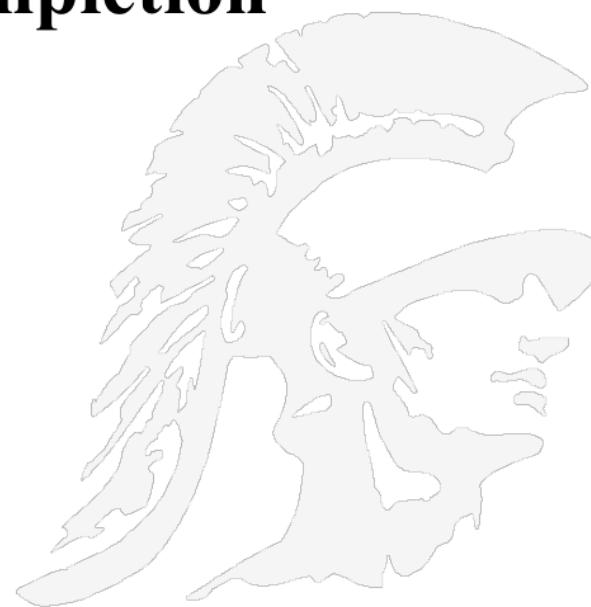
Bing and Yahoo clearly mark Related Searches

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# Auto-Completion

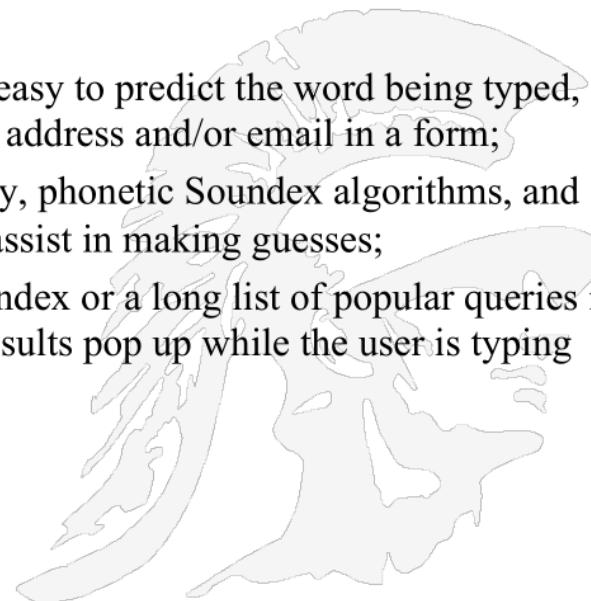


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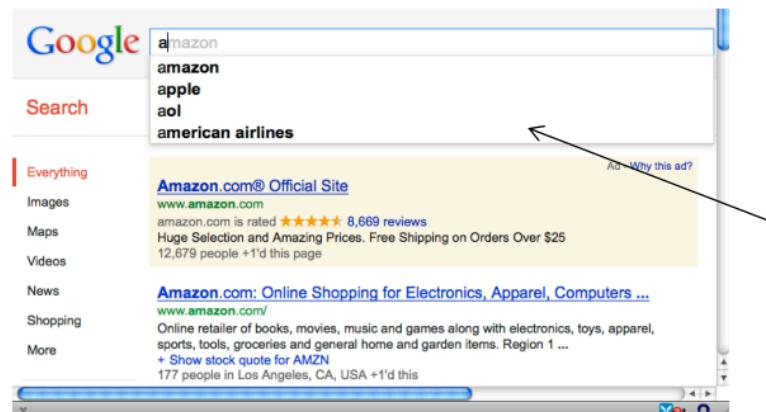
..

## Auto-Completion

- ***Auto-completion* is the process of predicting a word or phrase that the user wants to type in without the user actually typing it in completely**
- **Auto-completion is a form of relevance feedback**
  - This feature is effective when it is easy to predict the word being typed, e.g. when a browser fills in your name, address and/or email in a form;
  - Search engines may use past history, phonetic Soundex algorithms, and spelling corrections algorithms to assist in making guesses;
  - The challenge is to search a large index or a long list of popular queries in a very short amount of time so the results pop up while the user is typing



## Google Auto-Completion



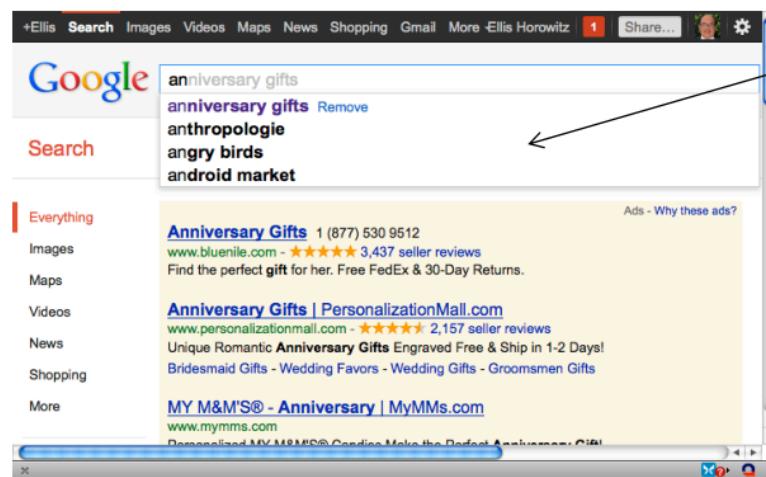
Google Search

Everything Images Maps Videos News Shopping More

amazon  
amazon  
apple  
aol  
american airlines

[Amazon.com® Official Site](#)  
www.amazon.com  
amazon.com is rated ★★★★☆ 8,669 reviews  
Huge Selection and Amazing Prices. Free Shipping on Orders Over \$25  
12,679 people +1'd this page

[Amazon.com: Online Shopping for Electronics, Apparel, Computers ...](#)  
www.amazon.com  
Online retailer of books, movies, music and games along with electronics, toys, apparel, sports, tools, groceries and general home and garden items. Region 1 ...  
+ Show stock quote for AMZN  
177 people in Los Angeles, CA, USA +1'd this



Google Search

+Ellis Search Images Videos Maps News Shopping Gmail More ·Ellis Horowitz 1 Share... Settings

Everything Images Maps Videos News Shopping More

anniversary gifts  
anniversary gifts Remove  
anthropologie  
angry birds  
android market

[Anniversary Gifts](#) 1 (877) 530 9512  
www.bluenile.com - ★★★★☆ 3,437 seller reviews  
Find the perfect gift for her. Free FedEx & 30-Day Returns.

[Anniversary Gifts | PersonalizationMall.com](#)  
www.personalizationmall.com - ★★★★☆ 2,157 seller reviews  
Unique Romantic Anniversary Gifts Engraved Free & Ship in 1-2 Days!  
Bridesmaid Gifts - Wedding Favors - Wedding Gifts - Groomsmen Gifts

[MY M&M'S® - Anniversary | MyMMs.com](#)  
www.mymms.com  
Personalized MY M&M'S® Candy Make the Perfect Anniversary Gift!

- Google has been offering auto-completion since 2008, though it was an experimental feature as far back as 2004.
- Google does automatic completion even after the user enters just the first character
- When the second character is entered a totally different set of possibilities may be offered



## Google Auto-Completion

- By the time the fourth character is entered Google has already guessed that the word has been misspelled, and shows this by the squiggly red line; so auto-completion and spelling correction are intertwined

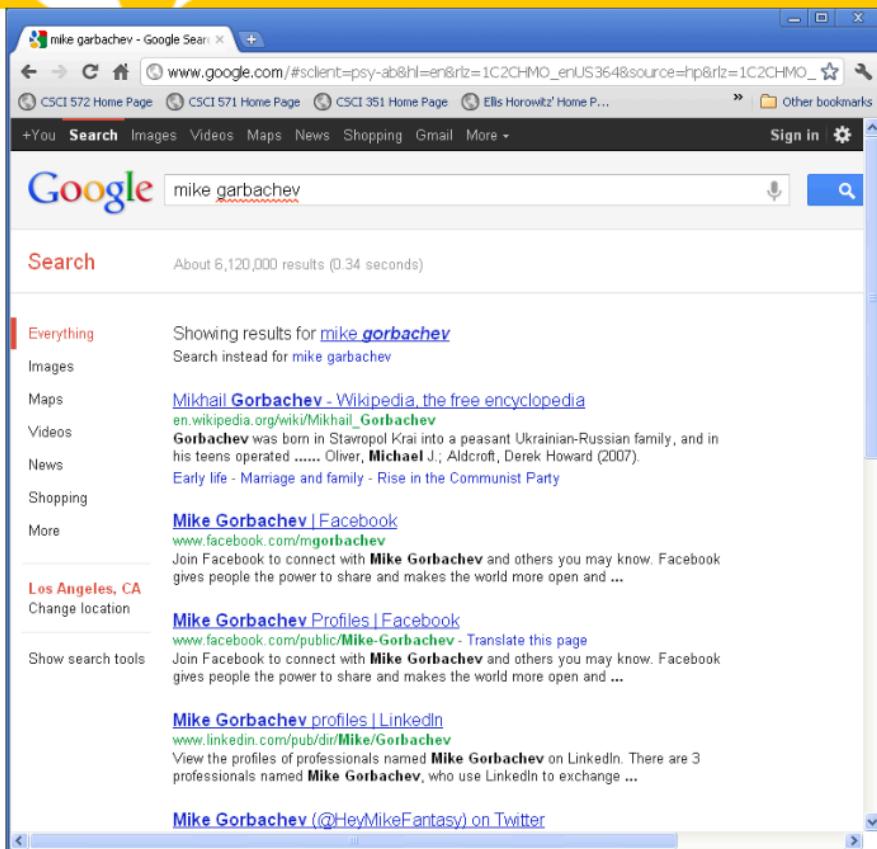
The image contains two side-by-side screenshots of a Google search interface. Both screenshots show the search bar at the top with the text 'anaheim ducks' and a dropdown menu below it listing suggestions: 'anaheim ducks', 'anaheim', 'analytics', and 'anagram'.  
  
The left screenshot shows the search results for 'anaheim ducks'. It includes links for 'Anaheim Ducks Tickets - Buy Ducks Hockey Tickets Today.' and '714Tickets Ducks Tickets - Across from Honda Center'. Below these, there is a link to the 'Anaheim Ducks' official site.  
  
The right screenshot shows the search results for 'anaz'. A red squiggly underline is under the letter 'a' in 'anaz', indicating a misspelling. The dropdown menu suggests 'amazon' as a correction. The search results for 'amazon' are displayed, including the 'Amazon.com® Official Site' and a link to 'Amazon.com: Online Shopping for Electronics, Apparel, Computers ...'.  
  
A large, faint watermark of a Trojan horse is visible across both screenshots.

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## Google Combines Spelling Correction and Auto Completion



After hitting Enter, Google will display results for “Mikhail Gorbachev”, but also provide a link if instead the user actually wanted to search for “mike garbachev”

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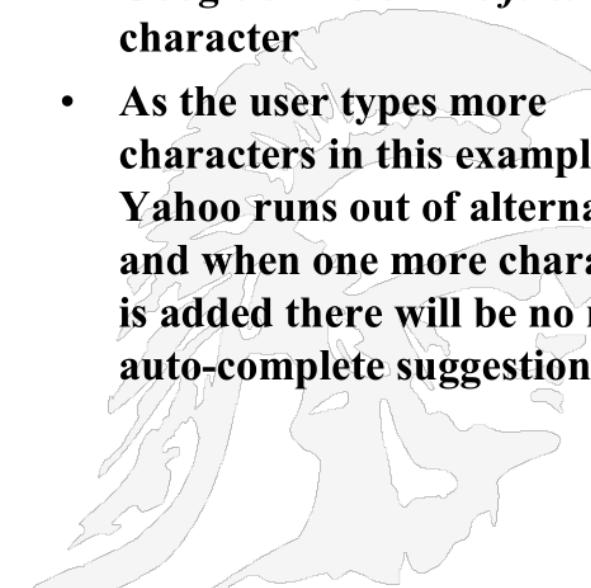
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# Yahoo Auto-Completion



- **Yahoo does auto-completion though it starts after typing the *third* character, whereas Google starts on the *first* character**
- **As the user types more characters in this example Yahoo runs out of alternatives and when one more character is added there will be no more auto-complete suggestions**

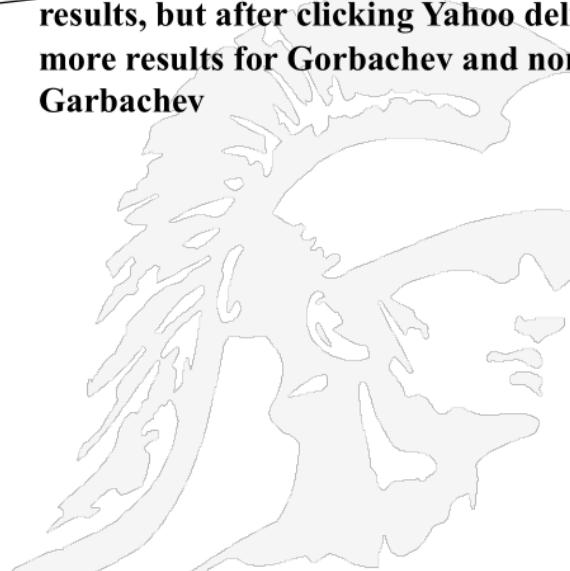


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## Yahoo Also Offers Spelling Correction

After hitting Enter, Yahoo does offer the correct spelling of “Gorbachev” and returns many results; in case the user actually wanted to search for “garbachev” it provides a link to produce those results, but after clicking Yahoo delivers more results for Gorbachev and none for Garbachev



mike garbachev - Yahoo! Search Results

mike garbachev - search.yahoo.com/search...\_ylt=AheyPpZ9IWlWBxoaByKKWt...

Hi, Guest | Sign In | Help

**YAHOO!** mike garbachev

WEB IMAGES VIDEO SHOPPING APPS BLOGS MORE

We have included [michael gorbachev](#) results - Show only [mike garbachev](#)

Mikhail Gorbachev - Wikipedia, the free encyclopedia  
[Early life](#) | [Marriage and...](#) | [Rise in the...](#) | [General Secretary...](#)  
 Archie Brown, in The Gorbachev Factor, uses the memoirs of many people around ...  
 Retrieved 2 April 2009. ^ Oliver, Michael J., Aldcroft, Derek Howard (2007).  
[en.wikipedia.org/wiki/Mikhail\\_Gorbachev](#) - Cached  
 More results from en.wikipedia.org »

Mikhail Gorbachev: Biography from Answers.com  
 McFaul, Michael. (2001). Russia's Unfinished Revolution: Political Change from Gorbachev to Putin. Ithaca, NY: Cornell University Press. Matlock, Jack F., Jr. (1995).  
[www.answers.com/topic/mikhail-gorbachev](#) - Cached  
 More results from answers.com »

Mike Gorbachev - Image Results  


Michael Gorbachev | Facebook  
 Michael Gorbachev is on Facebook. Join Facebook to connect with Michael Gorbachev and others you may know. Facebook gives people the power to share and makes the ...  
[www.facebook.com/people/Michael-Gorbachev/100002373955597](#) - Cached  
 More results from facebook.com »

My Country and the World, by Michael Gorbachev  
 A two-page summary of Gorbachev's evaluation of Russian and Soviet history dating back to 1917.  
[www.fsmitha.com/review/r-gorb.htm](#) - Cached

Mikhail Gorbachev - Biography - Nobelprize.org  
 Why Gorbachev Happened: His Triumphs and his Failures. New York: Simon & Schuster, 1991. Miller, John. Mikhail Gorbachev and the End of Soviet Power ...  
[www.nobelprize.org/lalaureates/1990/gorbachev-bio.html](#) - Cached

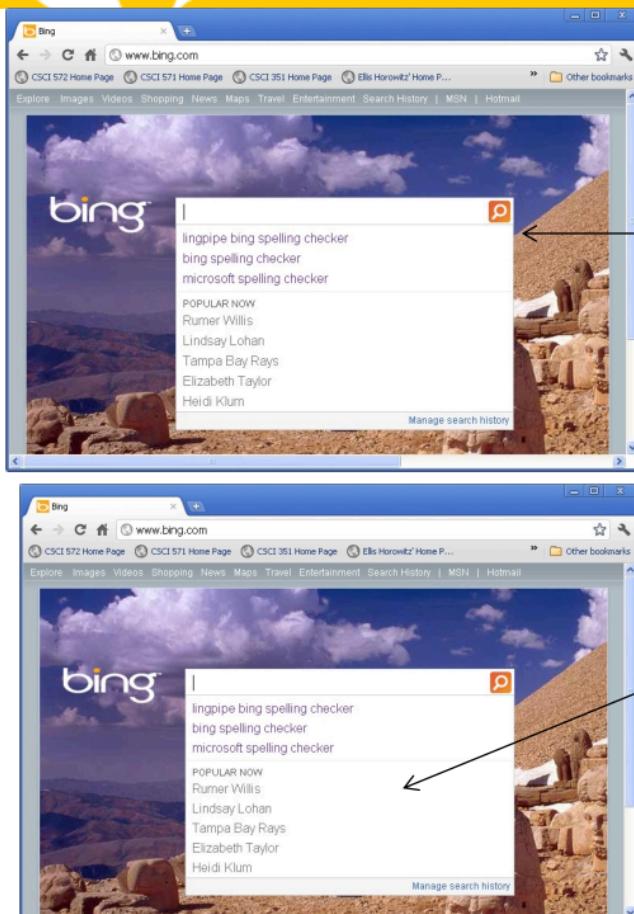
michael gorbachev | crazymonk.org  
 Part II of Errol Morris day. (Re-watch this Morris short, which played during the 2002

<http://shopping.yahoo.com/search...rbachev&fr=yfp-t-701&fr=plv-web>

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## Bing Auto-Completion



The image contains two side-by-side screenshots of a web browser displaying the Bing search engine. Both screenshots show the same search bar with the prefix "mike garbac" typed into it. Below the search bar, a dropdown menu lists several suggestions: "lingpipe bing spelling checker", "bing spelling checker", and "microsoft spelling checker". Below these suggestions, a "POPULAR NOW" section lists names: Rumer Willis, Lindsay Lohan, Tampa Bay Rays, Elizabeth Taylor, and Heidi Klum. The background of the browser window shows a scenic landscape with mountains and a clear sky.

- On the other hand, Bing does not even wait for the first character to be entered, as seen on the left they make use of previous queries and enter some possibilities before the user even types a single character
- After entering “mike garbac” bing finally comes up with the correct spelling, see below

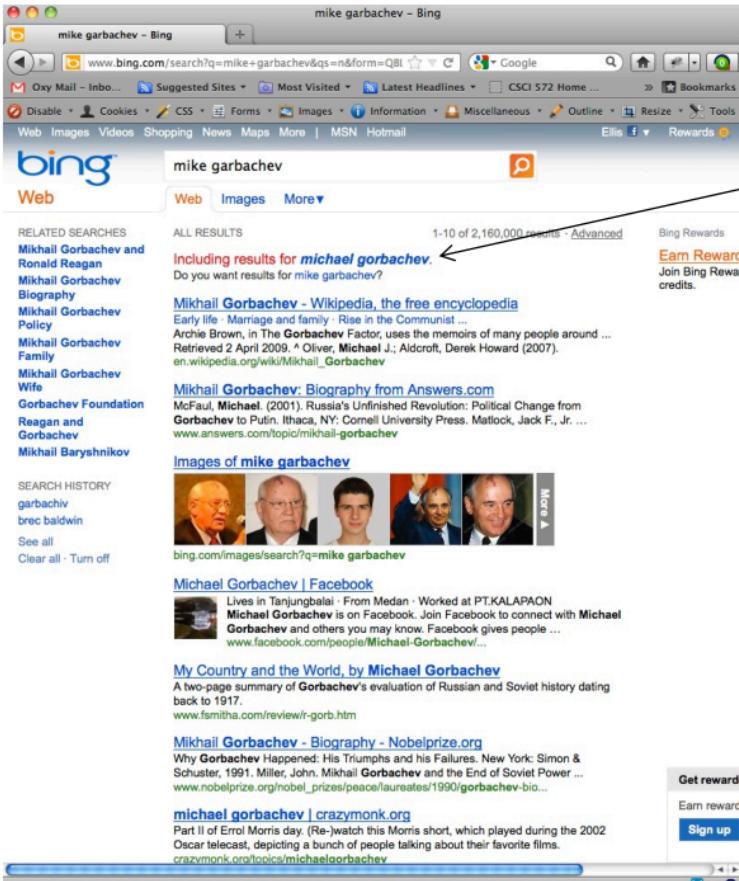
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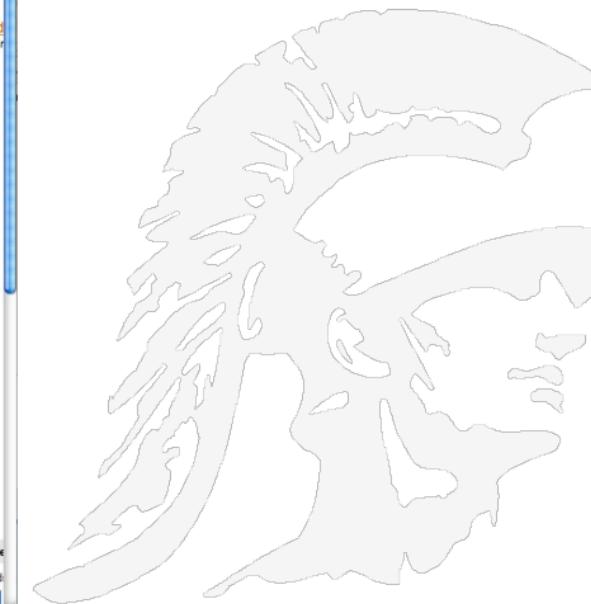
University of Southern California  USC

# Bing Final Result with Spelling Corrected

As with Google and Yahoo, Bing will offer results using the corrected spelling and include a link for the user spelling



The screenshot shows a Bing search results page for the query "mike garbachev". The search bar at the top contains "mike garbachev". Below the search bar, there are tabs for "Web", "Images", and "More". The main search results area starts with a link to "mikhail Gorbachev - Wikipedia, the free encyclopedia". A red arrow points from the text "Including results for michael gorbachev." to this link. The page also includes a sidebar with related searches like "Mikhail Gorbachev and Ronald Reagan", "Biology", and "Policy". On the right side, there are "Bing Rewards" options and a "Get reward" button.



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## Judging the Quality of Answers: Mean Reciprocal Rank (MRR) Scoring

- The mean reciprocal rank is a statistical measure for evaluating any process that produces a list of possible responses to a sample of queries, ordered by probability of correctness.
- The **reciprocal rank** of a query response is the multiplicative inverse of the **rank** of the first correct answer
- The mean reciprocal rank is the average of the reciprocal ranks of results for a sample of queries

$$\text{MRR} = \frac{1}{|Q|} \sum_{i=1}^{|Q|} \frac{1}{\text{rank}_i}.$$

- For example, suppose we have the following three sample queries for a system that tries to translate English words to their plurals. In each case, the system makes three guesses, with the first one being the one it thinks is most likely correct:

Query	Results	Correct response	Rank	Reciprocal rank
cat	catten, cati, <b>cats</b>	cats	3	1/3
tori	torii, <b>tori</b> , toruses	tori	2	1/2
virus	<b>viruses</b> , virii, viri	viruses	1	1

the mean reciprocal rank as  $(1/3 + 1/2 + 1)/3 = 11/18$  or about 0.61.