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Intro to Facebook Search

By Akhil Wable on Tuesday, March 16, 2010 at 9:31am

Connecting and sharing with others is Facebook's primary value. That value necessitates having the ability to easily and efficiently find the people and information we care about. The search team at Facebook is focused on building a search product to enable our more than 400 million users to quickly find what they're looking for.

In July 2007 we [explained](#) the complexities of serving one of the largest user bases in the world and the reasons for building our own in-house search service. Serving more than 150 million queries a day, and supporting a user base that has grown by more than 10x since then reinforces that decision.

The Role of Search on Facebook

We know that engagement on Facebook has a lot to do with how many connections someone has, especially for new users. Since people heavily rely on search to create and navigate their social graphs, their success/failure to do so is a success/failure of search.

Facebook search success means that you can find a specific "Bob" without knowing his last name, or find that awesome-but-not-yet-popular-band your friend just told you about. Enabling this means catering the results specifically to you, since the worst result for one person might be the best result for another.

Relevance Indicators

Personal Context: Unlike most search engines, every Facebook search involves two key elements - a query and a querier. Just as we need to understand the query, it's as essential to understand the person behind the query. People are more likely to be looking for things located in their own city/country or for people who share the same college/workplace. We consider this information and much more when ranking results. The more we know about you, the better your search results will be.

Social Context: An important subset of personal context, social context refers to the people one knows and cares about. The "Jose Gonzales" with whom you have 5 mutual friends is a better result than those with no friends in common. Note that the better job search does at helping you find and connect, the better your search results will be going forward. While personal context makes use of things you care about, social context deals with the things your friends care about. Since calculating social context for every query is technically complex, we built a separate service for it. We will cover the details of this service in a future blog post.

The Query: We tokenize the query based on the suspected language (Chinese tokenized on characters, English on spaces), correct potential spelling mistakes, find "Elizabeth Jones" even though you typed in "Liz Jones," etc. We also prioritize results based on how they matched the query; e.g we rank entities with "chicago" in their title differently from those located in Chicago. We've made good progress in understanding queries, but have a lot more left to do.

Global Popularity: An entity popular amongst a large audience deserves high ranking. Someone searching "Michael Jackson" is more likely to want the pop star than a friend of a friend by the same name. To determine global popularity we look at how many people are connected to an entity as well as how engaged they are -- a Poker application with a few frequent users might be more relevant than one with several infrequent users.

Complexities of User-Centric Search

Our emphasis on personal and social context leads to some interesting technical challenges

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which make it different from the traditional search problem.

Ranking on the critical path: Since our most important ranking features depend on who the searcher is, all our feature generation and ranking happens as a part of the query execution workflow i.e. our indices can't store pre-ranked results to optimize lookups. . Instead, we have to generate ranking features like `is_same_high_school` and `num_mutual_connections` on the fly for every potential result, and run them through our ranking model to find the best results. Making this model better and faster is a major focus for the team this year.

No query cache: Caching allows a service to compute results once and reuse them across multiple requests. Usually a small number of unique queries make up a large portion of all requests (see [Zipf's Law](#)), so most search engines can cache the best results for their most popular queries. Good caching strategies can give you a 50-60% cache hit-rate - at a large scale, this means millions of dollars of savings and much improved performance.

Facebook search can't use this huge optimization because the request is [user, query] and not [query]. We rarely see the same [user, query] more than once a day, rendering traditional caching models useless. Unlike most fast food chains, we wait till you order before we start cooking. Identifying novel caching opportunities is another key focus of our search team.

Large hot index: Another way search engines usually reduce work is to create a much smaller 'hot' index comprised of high quality documents. Enough results from the hot index means never having to hit the slower cold index. This works when the hot index contains the set of documents that have a high likelihood of being the best or 'good enough' for most queries. Unfortunately, there is no such thing as good-enough when you're looking for a specific person on Facebook, rendering most of our index 'hot.'

Live updates: People on Facebook are constantly changing their profile info and connecting to new friends, pages and applications. Since this information determines search relevance, we update our index within seconds of any change. Our index data structures need to manage thousands of concurrent reads and writes for months on end without disastrous fragmentation. We'll share more about our indexing, live updates, and data structures in future posts.

The Product

While searching for people is still the predominant use for Facebook search, an increasing number of users are starting to use search to connect with bands, restaurants, celebrities, and discover applications. Additionally, a few months ago we enabled users to search through recent public content and content produced by their friends. Indexing the massive amount of content our users produce with the ability to filter to just friends' content required building infrastructure with its very own unique and challenging problems.

Having shared the 'what' of Facebook search, we look forward to sharing more of the 'how' over the next few weeks. If you're interested in helping, check out the [jobs](#) page.

Akhil Wable, an engineer at Facebook, is still trying to figure out a good way to use 'cache' as a pun

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吳沛樂, Jiyoung Kim, Yannan Wang and 262 others like this.

4 shares

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Nate Harada I can't imagine a scripting language (PHP?) and SQL is fast enough to accomplish this for the entire user base. How do you get such high level of performance?

April 6, 2010 at 8:25pm · 1



Jussi Arto FB – Dysfunctional seems only the second case, Sun. . New messages are sent limping badly with feeling. .

Yesterday I put kotein – ny Aske – But Not tainnu go strife. [See More](#)

April 7, 2010 at 1:09am



Nawaraj Paudel utilize properly

April 7, 2010 at 11:26am



Arghavan Ansari i wanna write sth but i ant write on ur wall and this about privasy setting.. before this new privacy setting we could set who are friends can see our friends list and who cant , becuz sometime I dont wanna some my friends know my other friends or family .. give back that privacy ,
April 9, 2010 at 1:49am



Ayodeji Abosede i like this sites. kudos
April 9, 2010 at 2:34am



Michael Matheis HEY, THIS STINKS!
April 9, 2010 at 6:26pm



Jason Tracy Not sure whats up with your system today Facebook, but I'm getting automatically logged out and have trouble navigating. I havent changed a thing on my end and I can get on every other website just fine.
April 9, 2010 at 8:50pm



Giancarlo Simula I Have a problem: i can't use the application groups. Could you help me?
April 12, 2010 at 9:34am



Beth Thomas TO FACEBOOK MANAGEMENT: The person that made the suggestion to group all Similar Posts together deserves a promotion.....right to the unemployment line! If you want us to play games and be social you have to let us help each other. This is impossible to do now! Whoever agrees Copy and Paste to let them know 3 minutes ago · Comment · Like · Unlike
April 14, 2010 at 6:38am



Popo Missaoui add me to your mafia.level300
April 20, 2010 at 9:24am



Popo Missaoui add me to your mafia.level300
April 20, 2010 at 11:07am



Aryeh Ohayon On the "What your friends can share about you through applications and websites" It doesn't say whether to check the boxes or not to achieve a certain outcome. Is this by design by facebook to help invade the users privacy?
April 23, 2010 at 1:48pm



David Putman Facebook find a friend needs help! I enter a long-ago friend's name and I get over two hundred matches. The last I knew he lived in California thirty years ago – but I cannot try to reduce the number of hits by filtering on the state. Instead the location forces me to select one of the pre-defined cities in California. Get the hint! I don't know what city.
April 28, 2010 at 5:34pm · 2



Giovanni Castellani Tarabini <http://www.facebook.com/group.php?gid=114540295231738&ref=ts>
May 19, 2010 at 4:07am



Giovanni Castellani Tarabini <http://www.facebook.com/NBCLoveBites...>
May 19, 2010 at 4:09am



Aslan Ege Please help me make a mistake, I'm sorry but my other address has been canceled for this very upset and we apologize to our other address, activate the I beg the people making the same mistakes I promise to help the thanks
June 8, 2010 at 12:44pm



Recep Erdoğan mrb benim hesabımı kapatmışsınız yanlış bişey yapmadım yaptım ise uyarı bile göndermeden hesabım kapatılmış sizden facebook sitemin açılmasını rica ediyorum.
tanju.akbaba@hotmail.com
June 11, 2010 at 3:37am



Woody Turner You people are MORONS...do you hear me? MORONS How do you run a website that connects people WHEN YOU CAN'T KEEP THE CONNECTION GOING ? 'Friends drop off for days and weeks at a time...do your programmers no nothing about 'refreshing'
And speakin... [See More](#)
June 11, 2010 at 9:24am · 1



Facefaceface Bookbookbook THANKS GOD
November 5, 2011 at 12:16am



John-Ruben Holtback Great share Akhil!
March 31, 2012 at 4:40am



Rick Thomas LOL You do know woody that Facebook lets you add another name to your acct so its unique like Woody1234 and no one else can have it but you and it will show up when you tell another friend to search that name
September 23, 2012 at 5:21am · 1



Ahmed Ibrahim people can't find my page after searching for it in Facebook.. it is published and still cannot see it in the results..
October 31, 2012 at 5:41am · 1



Linda Diane Hollosi I am having a problem with my facebook when i go on facebook i cannot scan down the page can you help me
November 8, 2012 at 4:39pm · 2



Angelo De Angelis Hi, I'd like to search, within a group, a person living in a certain region (km from a certain city) in a certain age rank (i.e. 26 to 30 years old). Is it possible?
Thanks.
January 6, 2013 at 2:20am · 2



مها يونس
[See Translation](#)
January 6, 2013 at 1:38pm

اعجبتني

**رفیق عزیز ارمانی** i like this book

January 6, 2013 at 11:16pm · 1

**Ashraful IslamDj** gr8

January 17, 2013 at 2:26am

**Val Hughes** I keep getting a group Ive not joined and is a closed group that keeps coming up on my search, and I get all my fiances ex gf coming up as people i may know, even tho the account he had them on has been disabled! It pissing me off!

January 24, 2013 at 5:37pm · 1

**GarynBarbara Witt** I want to stop getting a group Ive not joined and is a closed group that keeps coming up on my search. Help!

February 27, 2013 at 9:15pm

**Mark Shorrock** Hi Akhil, can you please tell me if having spaces in you name effects the search results? i.e. does it matter if we use LJ Hooker or L J Hooker? Will the other come up in search results if you search the other?

March 3, 2013 at 7:42pm

**Surendar Chand** shankar kumar

March 18, 2013 at 1:55am

**Jordan Cataldo** Facebook has the worst search available. I should be able to search a name and get every result with those characters. I should be able to use " " to only get those results. I should be able to search and not have to see only 5 or 6 results. This is one reason I may drop Facebook. It's just horrid.

April 19, 2013 at 8:36pm · 3

**Marwa Kamel** Is it by chance that some of the people who show up on the search list when i type a letter are there because they visit my profile page a lot ?because i get some weird suggestions sometimes like people who are not my friends and then contacts on fb

August 3, 2013 at 9:06pm · 2

**Jennifer Watson** All information regarding android ios windows and games and much much more pleas like my page<https://www.facebook.com/pages/Appshah/810790925613220>

May 7, 2014 at 4:52am

**Up In bang** intro tu apa[See Translation](#)

June 1, 2014 at 1:57am

**Rahui Tepapa David yy**

June 15, 2014 at 9:26am

**Rahui Tepapa David yyiu**

June 15, 2014 at 9:27am

**Rahui Tepapa David** your katsna search is stink why fo you maje excuses tbat your pafe just dtop for no reasons

June 15, 2014 at 9:28am

**Mohseen Saifi** 7417506510

June 27, 2014 at 2:16am

**Mohseen Saifi** samer rok

June 27, 2014 at 2:17am

**Akash Howlader b**

July 5, 2014 at 6:36am

**Hector Danilo Herdoiza Mancheno** Mmm[See Translation](#)

August 12, 2014 at 12:55pm

**NuPink JaiDee** How does Facebook guess results when you search for someone in Facebook's search bar ?

I need to know for search results between friend list vs someone.

August 13, 2014 at 1:58am

**Venkat Jum** hi friends looking for Digital Marketing Specialist contact me! am smart in all like PPC, FaceBook Ads, Bing/Yahoo Ads....etc

November 18, 2014 at 2:10am

**Kidota Hara** How to search any Note facebook?

January 9 at 1:15am