

Analysis of Effective Implicit Feedback Methods

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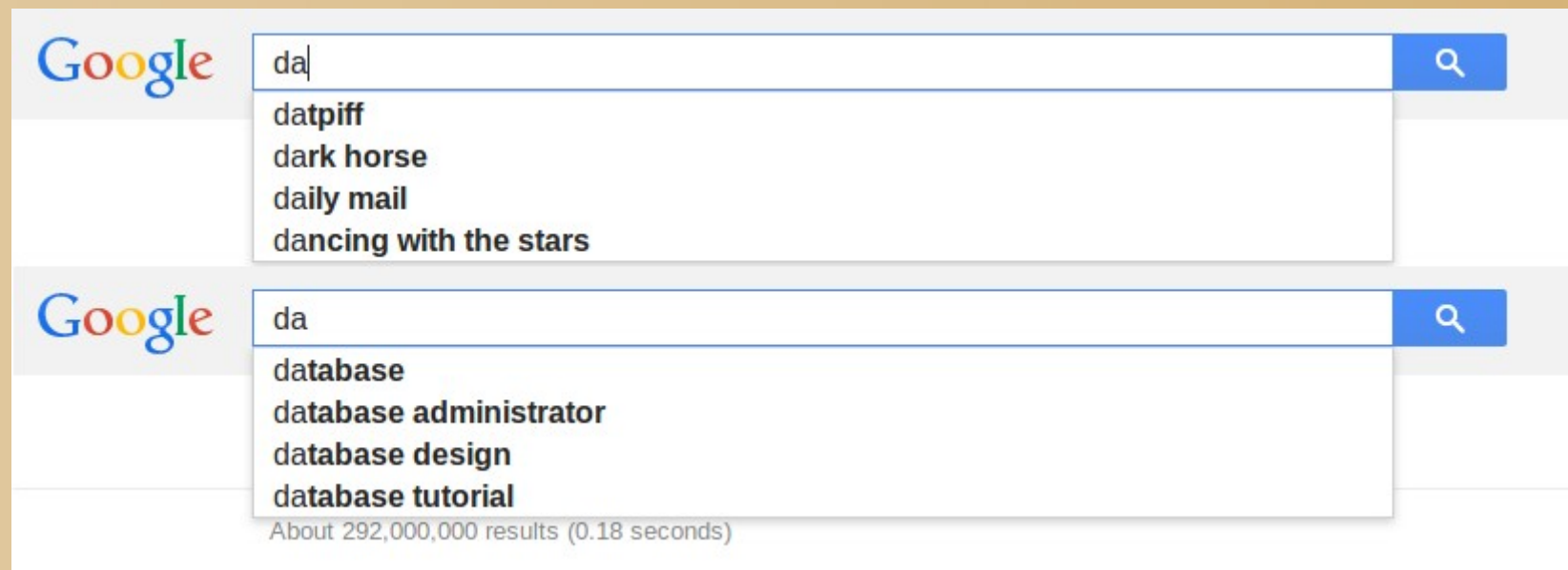


Introduction

- A one size fit's all information retrieval system is good for when you have a multitude of different user's
- However it is not as good as a system that is specifically made to fit one user's purpose
- What are the techniques involved in adjusting an information retrieval system to better serve the user

How I Became Interested

- I noticed that Google was slowly changing my search results to match my interests



The image shows two screenshots of a Google search interface. The top screenshot shows the search bar with the text 'da|' and a search button. Below the search bar, a dropdown menu displays four suggestions: 'datpiff', 'dark horse', 'daily mail', and 'dancing with the stars'. The bottom screenshot shows the same search bar with the text 'da' and a search button. Below the search bar, a dropdown menu displays four suggestions: 'database', 'database administrator', 'database design', and 'database tutorial'. At the bottom of the second screenshot, it says 'About 292,000,000 results (0.18 seconds)'.

Location

- Googling Oriolos in the Baltimore area gives the expected results.

The screenshot shows a Google search for "orioles". The search bar contains "orioles" and the search button is visible. Below the search bar, there are suggestions: "orioles", "orioles schedule", "orioles tickets", and "orioles opening day 2014". The search results show "Orioles™ Baseball Tickets - Official Site - mlb.com" as the top result, with a link to "orioles.mlb.com/Tickets". Below this, there is a section for "Baltimore Orioles" with details about the team, including their league, division, and stadium. A scoreboard is displayed for a game between the Baltimore Orioles and the Tampa Bay Rays, showing the Orioles leading 4-3. To the right of the search results, there is a gallery of Orioles logos and branding, including the team's mascot, the Oriole Bird, and various logos used in different contexts.

Google orioles

orioles
orioles schedule
orioles tickets
orioles opening day 2014
About 6,870,000 results (0.30 seconds)

Orioles™ Baseball Tickets - Official Site - mlb.com
Ad orioles.mlb.com/Tickets
2014 Single Game Tickets starting at \$8. Buy Now!
2014 Schedule Seating & Pricing Map
Orioles™ Ticket Info Promotions & Giveaways

Baltimore Orioles
17-14, 1st in AL Eastern Division
American League
Wednesday, May 7, 7:10 PM
Tropicana Field, St. Petersburg, Florida

Baltimore Orioles (17-14) **4 - 3** Final **Tampa Bay Rays** (15-19)

	1	2	3	4	5	6	7	8	9	R	H	E
Orioles	0	1	0	1	0	0	2	0	0	4	7	1
Rays	0	0	0	0	1	1	0	0	1	3	7	1

Recap - Box Score

Orioles.com
Baltimore Orioles
Baseball Team
The Baltimore Orioles are an American professional baseball team based in Baltimore, Maryland, that competes in Major League Baseball. They are a member of the East Division of the American League. [Wikipedia](#)
Arena/Stadium: Oriole Park at Camden Yards
Location: Baltimore
Manager: Buck Showalter
Division: American League East
Mascot: The Oriole Bird

Relevance Feedback

- Take the results that are initially returned from a given query
- Use that information about whether or not those results are relevant to perform a new query.
- Return those new results to the user and iterate the process

Background

- The SMART (System for the Mechanical Analysis and Retrieval of Text) Information Retrieval System is an information retrieval system developed at Cornell University in the 1960s.
- Many important concepts in information retrieval were developed as part of research on the SMART system, including the vector space model and relevance feedback

3 Types of Feedback

- Blind Feedback
- Explicit Feedback
- Implicit Feedback

Explicit Feedback

- The user directly judges whether the results retrieved by the system are relevant or irrelevant
- Many different judging methods
 - Yes / no
 - 1-10 relevance ratings
- The user must be aware that they are judging the results

Implicit Feedback

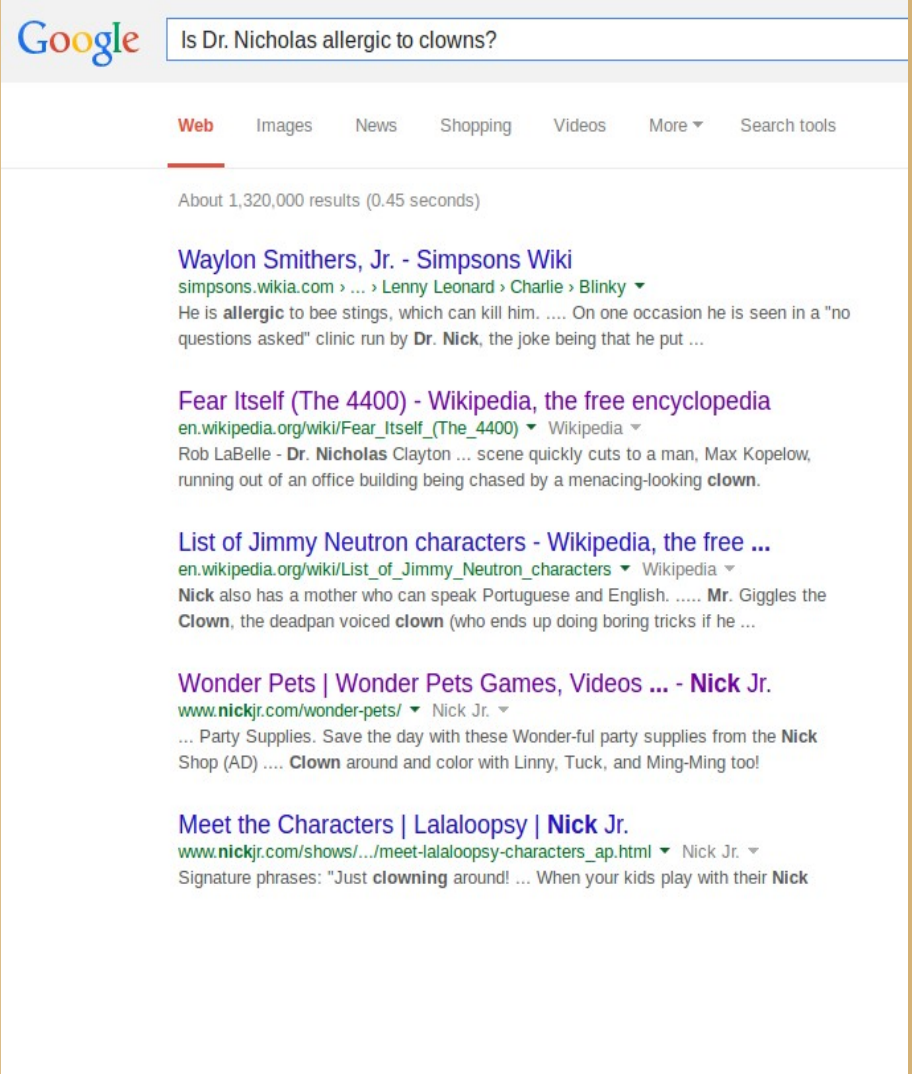
- Implicit feedback is inferred from user behavior as they navigate the results of the query
- The retrieval system gathers data on how the user looks at the results
- The system makes a decision on what results are relevant or irrelevant

Advantages and Disadvantages

- Advantages
 - Less Burden on the User
 - Easier for the system to gather large amounts of observations
- Disadvantages
 - Prone to noise
 - Difficult to interpret

Implicit Feedback Sources

- Clickthrough Information
- Document viewing time
- Scroll and Navigation patterns



The screenshot shows a Google search interface with the query "Is Dr. Nicholas allergic to clowns?". The search results are displayed under the "Web" tab. The first result is from Simpsons Wiki, mentioning that Dr. Nicholas is allergic to bee stings. The second result is from Wikipedia, discussing the character Dr. Nicholas Clayton from the movie "Fear Itself (The 4400)". The third result is from Wikipedia, listing Jimmy Neutron characters, including Dr. Nicholas. The fourth result is from Nick Jr., advertising Wonder Pets. The fifth result is also from Nick Jr., featuring the characters from the show Lalaloopsy.

Google Is Dr. Nicholas allergic to clowns?

Web Images News Shopping Videos More Search tools

About 1,320,000 results (0.45 seconds)

Waylon Smithers, Jr. - Simpsons Wiki
simpsons.wikia.com › ... › Lenny Leonard › Charlie › Blinky ▼
He is **allergic** to bee stings, which can kill him. On one occasion he is seen in a "no questions asked" clinic run by **Dr. Nick**, the joke being that he put ...

Fear Itself (The 4400) - Wikipedia, the free encyclopedia
en.wikipedia.org/wiki/Fear_Itself_(The_4400) ▼ Wikipedia ▼
Rob LaBelle - **Dr. Nicholas** Clayton ... scene quickly cuts to a man, Max Kopelow, running out of an office building being chased by a menacing-looking **clown**.

List of Jimmy Neutron characters - Wikipedia, the free ...
en.wikipedia.org/wiki/List_of_Jimmy_Neutron_characters ▼ Wikipedia ▼
Nick also has a mother who can speak Portuguese and English. **Mr.** Giggles the **Clown**, the deadpan voiced **clown** (who ends up doing boring tricks if he ...

Wonder Pets | Wonder Pets Games, Videos ... - Nick Jr.
www.nickjr.com/wonder-pets/ ▼ Nick Jr. ▼
... Party Supplies. Save the day with these Wonder-ful party supplies from the **Nick Shop** (AD) **Clown** around and color with Linny, Tuck, and Ming-Ming too!

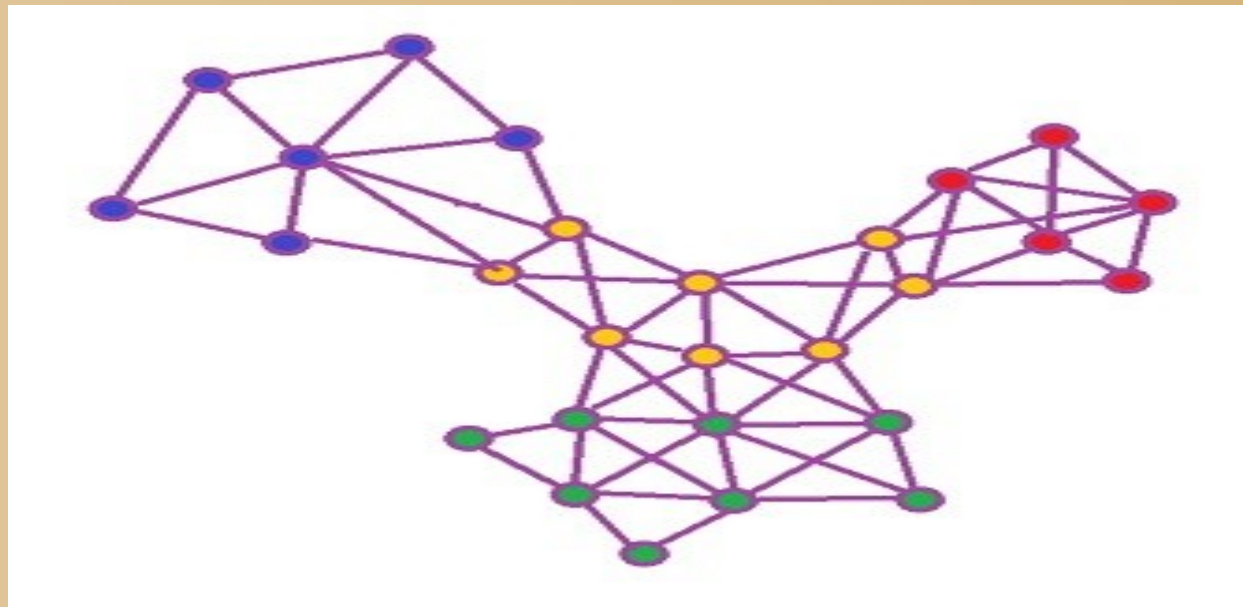
Meet the Characters | Lalaloopsy | Nick Jr.
www.nickjr.com/shows/.../meet-lalaloopsy-characters_ap.html ▼ Nick Jr. ▼
Signature phrases: "Just **clowning** around! ... When your kids play with their **Nick**

Possible Responses

- Modifying search queries
- Make new search decisions and then researching the document collection
- Restructuring or reordering already retrieved information.

Interpreting Implicit Feedback

- Machine Learning algorithms based on user actions and patterns
- Probabilistic models based on query information gleaned from feedback



Validating Implicit Feedback Systems

- Comparing results gained through implicit feedback to results gained through explicit feedback
- Having user's take surveys on whether the results obtained were adequate for the query given
- Measuring the time it takes for user's to satisfy their queries using an implicit system.

Future Developments

- Implementing new methods of gathering implicit feedback such as eye tracking
- Developing more advanced algorithms to parse through information gained through implicit feedback in order to better serve the user's interests

Conclusion

- Clickthrough data is still the most effective means of implicit feedback
- Advanced learning systems for studying users behavior could be the next step of implicit feedback
- Implicit feedback systems are going to continue steadily to increase in effectiveness

Citations

- Query expansion using local and global document analysis
<http://dl.acm.org/citation.cfm?id=243202>
- Evaluating the Accuracy of Implicit Feedback from Clicks and Query Reformulations in Web Search
http://sing.stanford.edu/cs303-sp11/papers/joachims_etal_07a.pdf
- Context-sensitive information retrieval using implicit feedback
<http://dl.acm.org/citation.cfm?id=1076045>
- Accurately interpreting clickthrough data as implicit feedback
<http://dl.acm.org/citation.cfm?id=1076063>

Questions ?

