A Comparative Analysis: DuckDuckGo Vs. Google Search Engine

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Abstract

Search engines are like power houses of the World Wide Web, returning number of responses to number of queries every day satisfying people. Search Engine has been the key utility of internet. There exists many search engines in the world like Google search engine, Bing, DuckDuckGo, Baidu, Soso, Naver, Yandex, Seznam etc. Number of search engines in the world kept on linearly increasing at one instant, but the only search engine that went through bricks and succeeded in being highly used today is - Google Search Engine. To get compete many search engine tried to incorporate flexibility and facilities along with security, but Google search engine turned to be at top in terms of all. DuckDuckGo's unique features like Zero-click information, category pages, ambiguous keyword detection, simpler links, less spam and many others have made it popular among users. Nowadays most of the Linux based system is using DuckDuckGo as default search Engine. It was also introduced in hardware such as ' Raspberry pi' as default. It work more efficiently on Raspbian(A raspberry pi Operating System). In this paper features of both search engines are analyzed. And based on that comparative analysis of both search engines is being done in this paper.
Keywords- Search Engine, Google, DuckDuckGo, Raspberry pi, Raspbian, Baidu, Soso, Naver, Yandex, Seznam

I. INTRODUCTION

A brief history of both the search engine and the quality services are included in the sub section below.

A. Google Search Engine

Google web search is widely used search in the world. According to the report of February 2015, it was the most used search engine in USA. Search Engine purely works on the concept of 'Page Rank' - a priority rank concept being developed by Google. It differentiates each website by rating from 10 showing the actual behavior of the website in search engine. Many Factors are taken into consideration during page rank. It keeps on changing during each page rank updating carried by Google after some phase of time. Google search provides many features which are extraordinary such as showing time of movies, quotes, earthquake data, numbers, dates, timing, weather etc. One of the main competitors of Google search engine was Yahoo! whose search engine graph went declining with ongoing years of time.

B. DuckDuckGo Search Engine

As the subtitle of the search engine defines 'The search engine that doesn't track you. A superior search experience with smarter answers, less clutter and real privacy.' Search engine which follows this slogan as changed the whole privacy concept determined in many other search engines. The main motto of the search engine is to allow user keep their privacy. DuckDuckGo has some of its software freeware, hosted at Github. The company and search engine name was decided from the game duck,duck, goose a children's game [1]. Some of the great achievements of the search engine belonged when Apple and Mozilla included DuckDuckGo as an optional search engine into their browsers.

II. FEATURES

Some of the most advantage features are mentioned in the sub section below, showing the enhanced facilities of the search engines. Those are the unique features of the search engines which are mainly differ from other search engines.

A. *Features of Google Search Engine*

One of the main benefits of using Google Search Engine is that it includes more customized options than any other browser on internet, from connecting all Google's product using a single Gmail Address to giving highest numbers of Extensions.

Specific type of search for images including special tool integrated to search GIF, different size of images, images with and without copyrights are being the key features of Google Search Engine [3].

Google search engine also allows you to check your bills that are left to be paid. If one has logged with Google mail than Google search engine tries to fetch the bills mails from it and shows in the search.

It also allows to check the time and schedule of your flight, it also shows status. For entertainment purpose it also allows to search local movies timings instantly. One of the main feature of Google is showing public data Analysis. One can check the employment and unemployment ratio of specific countries.

Package tracking is also performed, if one has package tracking number of UPS or FedEx than can simply plug into search engine and check the status.

B. *Features of DuckDuckGo Search Engine*

A search engine that don't track about your search, this means if one has visited any e-commerce website than he/she will not see adds relevant to his/her previous search [2].

It gives instant answer to any questions, example Music, Weather etc. One of the main feature is you can develop your own instant answer and integrate into your search by simply logging the link and start creating.

One can change look and feel of the search engine, adjust themes and including regional search. Most amazing feature of DuckDuckGo is the instant search for thousands of website. One can search the content of thousands of website simply using the keywords example: !a (here type the things that you want to search) ' will help to search content in Amazon website. Similarly different keywords are created and included in search engine to search different websites database. One can also create its own keyword for specific search.
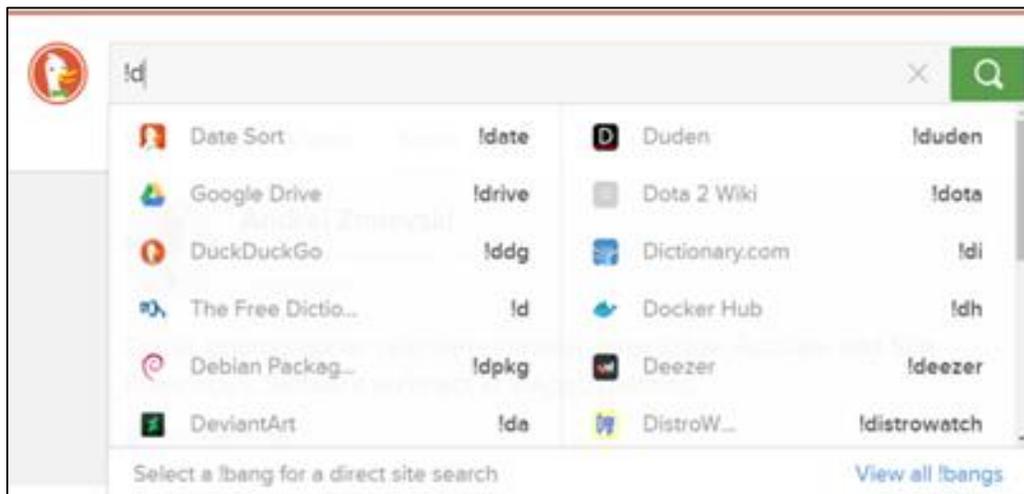

Fig. 1: Working of DuckDuckGo

It also includes Social Media Bio feature example type ' @NarendraModi' into search and it will shows you social media bio right over there.
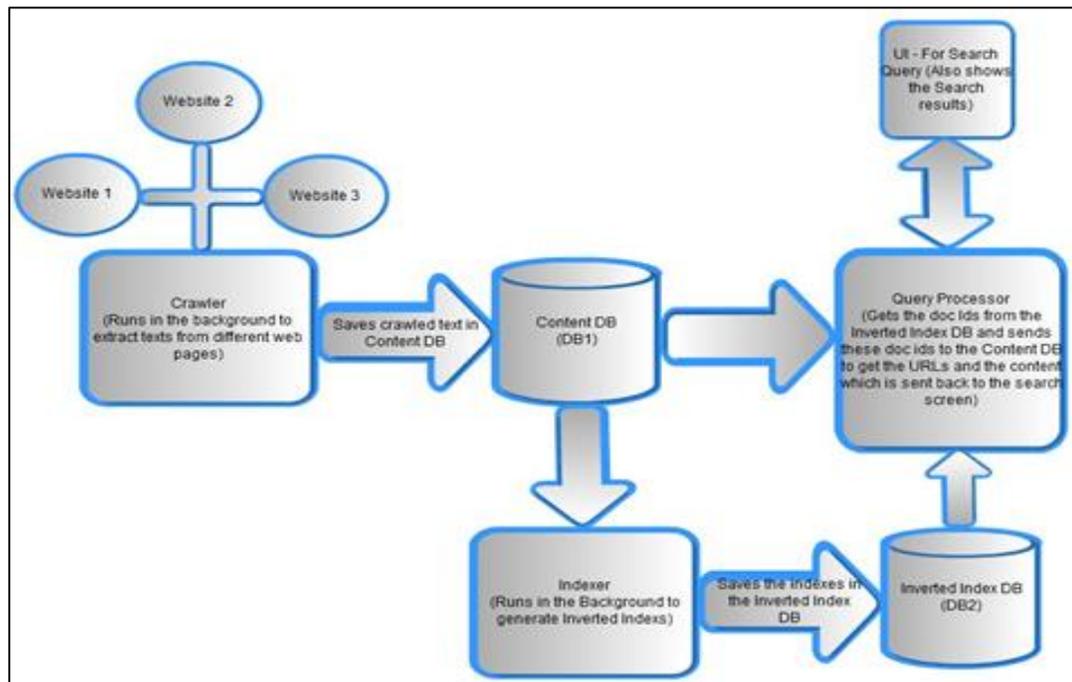

Fig. 2: Example of DuckDuckGo search

Fig. 3: Working of Search Engine [6]

III. ARCHITECTURE COMPARISON

Google runs on a distributed network of thousands of low-cost computers and can therefore carry out fast parallel processing. Parallel processing is a method of computation in which many calculations can be performed simultaneously, significantly speeding up data processing. Google has three distinct parts [5]:

− Googlebot, a web crawler that finds and fetches web pages [5].
− The indexer that sorts every word on every page and stores the resulting index of words in a huge database [5].
− The query processor, which compares your search query to the index and recommends the documents that it considers most relevant [5].

DuckDuckGo is coded in Perl and JavaScript with the help of the YUI Library, served via nginx, FastCGI and me cached, running on FreeBSD and Ubuntu via daemon tools. It use PostgreSQL+bucardo, CDB, Solr, Berkeley DB, Amazon S3 and flat files for data. It has some side components that use Prosody, Debian, ejabberd,jQuery, node.js, Python and even more Perl with lots of CPAN distributions [4].

IV. FEATURES COMPARISON

DuckDuckGo has many features which are unique as compare to Google. Below given are some of the features of DuckDuckGo not in Google. [7]

A. Social Media Bio

DuckDuckGo allows user to view the social media profiles of people without leaving the search engine. So, if you want to get full profile information about any person one can do with '@person_name'.You can also search for profiles on other social bios.In Google+ you can search like 'G+ ForamKalyani' and in Linkedin you can search like '!linkedin Dr. Vaishali Parsania'.
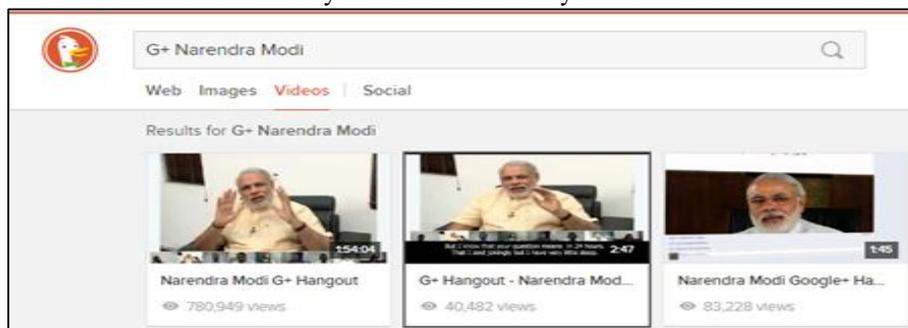

Fig. 4: Example of searching for user profile on G+

B. Searching for the Apps

DuckDuckGo provides a unique feature for searching the apps which will be displayed as a card. When you click on the card, it will provide you full description.
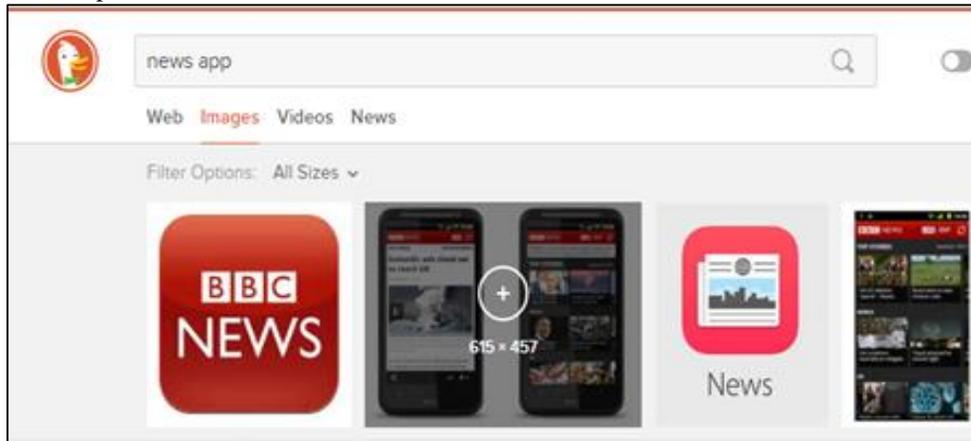

Fig. 5: Example of searching for the app

C. Shortening and Expanding the URLS

DuckDuckGo provides the feature of Expanding and Shortening of the URLs. For Example, you can expand the URL by typing 'expand   https://is.gd/cYdsWV'   and   similarly   for   shortening   you   can   write   'shorten http://ieeexplore.ieee.org/search/searchresult.jsp?newsearch=true&queryText=search%20engine'
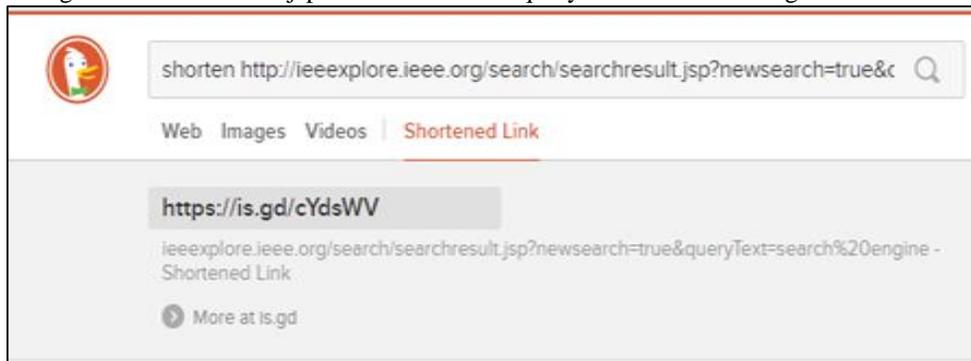

Fig. 6: Example of shortening the URL

D. Password Generation

The most important feature that DuckDuckGo provides is the password generation. For example, if you want to create a random password that is easy to remember and hard to crack, you can search 'password 15'. The number can be varied, depending on the user requirement.
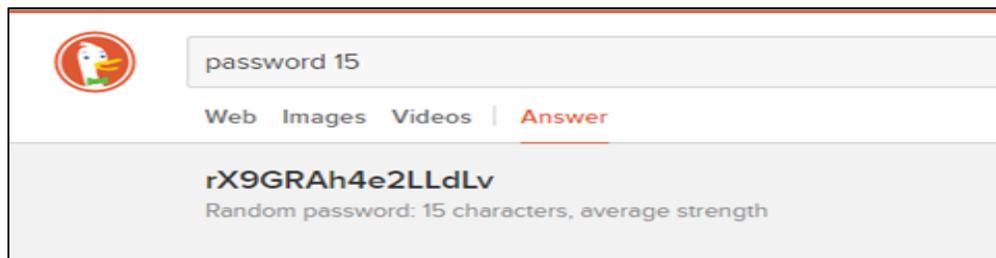

Fig. 7: Example of generating password

E. Changing of Character Case

You can change the case of the characters to UPPER CASE and lower case. For that, you need to write title case followed by the title for which you want to change the case.
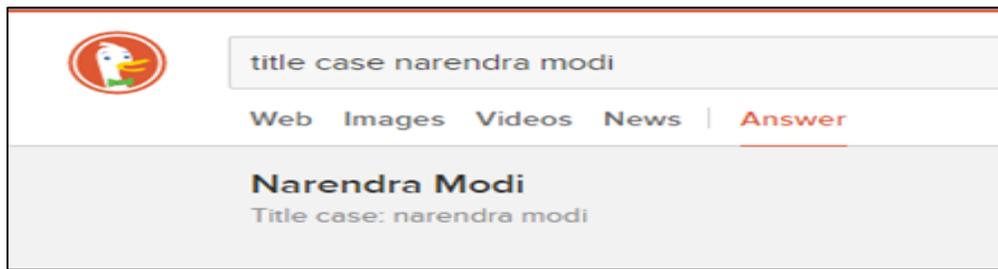
Fig. 8: Example of case conversion

F. Checking Website Status

DuckDuckGo provides the feature for checking the current status of the website like whether the website is working or it is down. For that, you simply need to write 'is website_name down'.
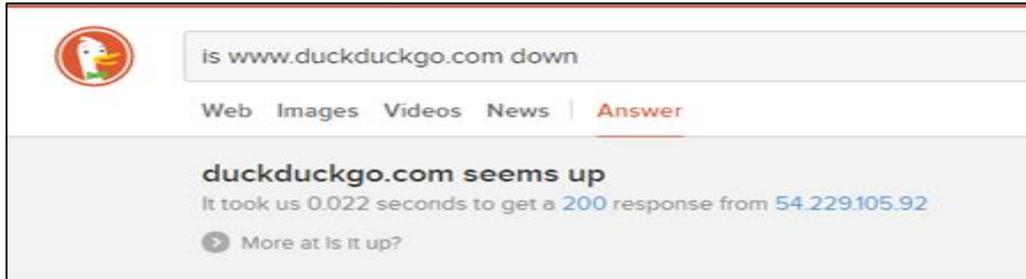

Fig. 9: Example of checking the website status

G. Rhyming Words

DuckDuckGo allows you to search for the rhyming words. For that, you need to write ' rhymes with name'. The name specifies the name you want to rhyme with.
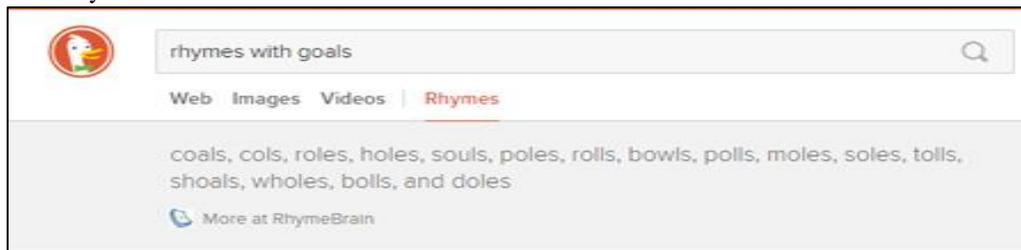

Fig. 10: Example of rhyming word.

H. Loan Calculator

Another important feature of the DuckDuckGo is the loan calculator. For calculating the loan you need to type 'loan amount at interest with percent down for duration'.

Fig. 11: Example of Loan calculator

I. Developing Features for Developers

DuckDuckGo provides advanced features that will be useful to the software developers. Various features include:
‒ Generating loremipsum text.
‒ Encoding the URLs to machine – readable text.
‒ Converting binary into decimal format.
‒ Displaying the list of HTML special characters along with their values.
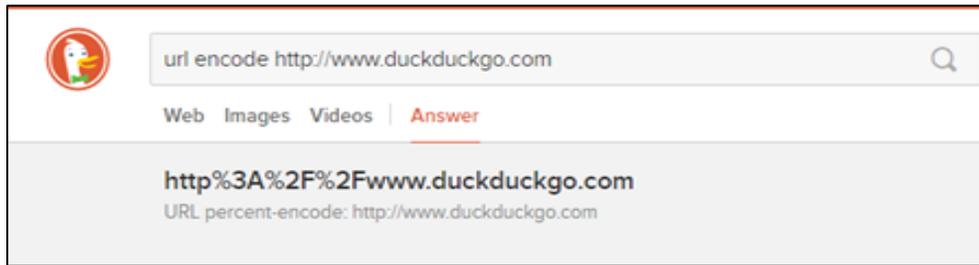‒ Displaying the colors along with their hexadecimal values.

Fig. 12: Example of URL encodings

V. CONCLUSION

Specific changes have been noticed between both the search engines. One of the main and most important advantage of DuckDuckGo over Google Search Engine is ' NO PAGING REQUIRED ' - that means DuckDuckGo don't have paging system like Google , user don't need to switch from page 1 to page 2 and so on for visiting search results (websites). The Infinite Scrolling of DuckDuckGo allows users to get all websites on scrolls.

     A scientific research has conveyed that only 5 % users in world try to search information visiting search engines pages after 4th page. According to this, DuckDuckGo has huge advantage from user perspective.

Used by most Linux based system and include as optional search engine in Apple's browser - Safari , Mozilla and Ad blocks shows the effective usage of the search engine.

     Another advantage of DuckDuckGo over Google search engine is its ' Open Source and Open to Customize ' facility. User can customize it according to its self-need. This makes user feel more comfortable and easy to use over Google Search Engine.

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