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Editorial

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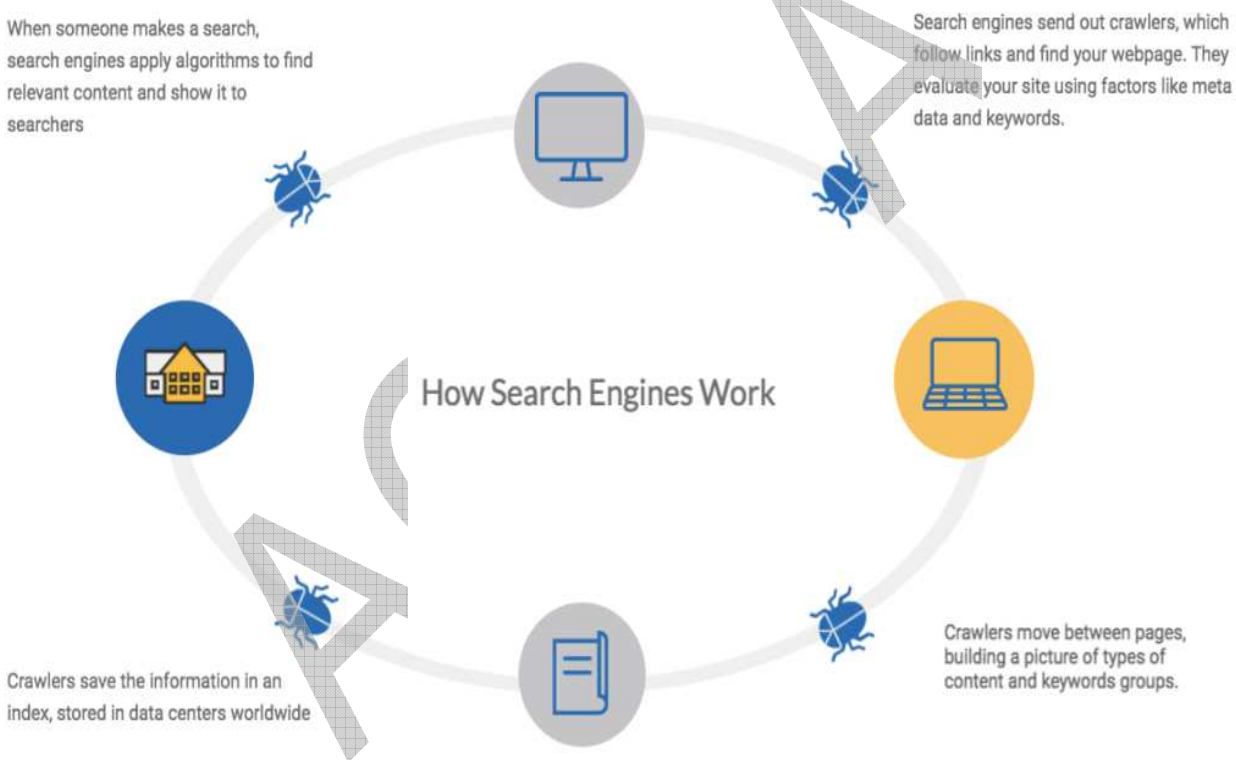
The search algorithm in action



Introduction:

Algorithms play a crucial role for search engines as they process millions of web searches every day.

With the quantity of information available on the internet growing steadily, search algorithms are becoming **increasingly complex, raising privacy** and other concerns and drawing the attention of regulators.

Context:

Recently, U.K.'s digital watchdog said they will take a closer look at algorithms, seeking views on the benefits and risks of how sites and apps use algorithms, as well as inputs on auditing algorithms, the current landscape and the role of regulators.

How do search algorithms work?

1. An algorithm, essentially, is a **series of instructions.** It can be used to perform a calculation, find answers to a question or solve a problem.
2. Search engines use a number of algorithms **to perform different functions** prior to displaying relevant results to an individual's search request.
3. Tech giant Alphabet Inc's Google, whose flagship product is the Google search engine, is the dominant player in the search market.
4. Its search engine provides results to consumers with the help of its ranking systems, which are composed of a broad set of algorithms, that sort through web pages in its search index to find the most appropriate results in quick time.
5. Its search algorithms consider several factors, including the words and expressions of a user's query, relevance and usability of pages, expertise of sources, and the user's location and settings, according to the firm.
6. While Google **captures a significant chunk of the general search market**, there are alternative search engines such as Microsoft's Bing and DuckDuckGo available for users to explore.
7. The latter, a **privacy-focused search engine**, claims it does **not collect or share users' personal information.**
8. In January, market leader Google generated 61.4% of all core search queries in the U.S., according to database company Statista.
9. During the same period of time, Microsoft sites handled a quarter of all search queries in the U.S.

How are they developed?

Algorithms are often **built using historical data and for specific functions**.

1. Once developed, they go through frequent updates from the companies to **enhance the quality of search engine results** presented to users.
2. Most large search engine providers also bank on machine learning to automatically improve their users' search experience, essentially by identifying patterns in previous decisions to make future ones.

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3. Over the years, Google has developed search algorithms and updated them constantly, with some major updates like Panda, Penguin, Hummingbird, RankBrain, Medic, Pigeon, and Payday, meant to enhance some function or address some issue.
4. In March, it introduced another update **to improve the search engine's ability to identify high-quality product reviews.**
5. **Search engines exert huge control over which sites consumers can find**. Any changes or updates in their algorithms could also mean that traffic is steered away from certain sites and businesses, which could **have a negative effect on their revenue.**

Negative side: What's the current state of these algorithms?

1. **Manipulate and Change Consumer Perceptions:**
    1. These search algorithms can be **used to personalize services** in ways that are difficult to detect, leading to search results that can be **manipulated to reduce choice or artificially change consumers' perceptions**.
2. Additionally, firms can also use these algorithms to change the way they rank products on websites, prioritizing their own products and excluding competitors.
3. Some of these concerns have caught the eye of regulators and as a result these search algorithms have come under their scrutiny.
4. The **European Commission has fined Google €2.42 billion** for abusing its market dominance as a search engine by giving an **illegal advantage** to another Google product, its comparison-shopping service.
5. Moreover, under the **Commission's proposal on the Digital Services Act, transparency measures for online platforms on a variety of issues**, including the algorithms used for recommending content or products to users are expected to come into force.
6. "Majority of algorithms used by private firms online are currently subject to little or no regulatory oversight," U.K.'s Competition and Markets Authority has said earlier in a statement, adding that "**more monitoring and action is required by regulators."**

What are the concerns?

1. The search giant's trackers have allegedly been found on majority of the top million websites, as per a DuckDuckGo blog post.

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2. This means they are not only tracking what you search for, [but] they're also **tracking which websites you visit,** and **using all your data for ads that follow you around the internet.**
3. According to a **Council of Europe study,** the use of data from profiles, including those established based on data collected by search algorithms and search engines, directly affects the right to a person's informational self-determination.
4. Most of Google's revenues stem from advertisements, such as those it shows consumers in response to a search query.
5. DuckDuckGo, in addition to providing an alternative to Google's search engine, offers mobile apps and desktop browser extensions to protect users' privacy while browsing the web.
6. The privacy-focused firm, in a blog post, said that editorialized results, informed by the personal information Google has on people (like their search, browsing, and purchase history), puts them in a "Filter Bubble" based on what Google's algorithms think they are most likely to click on.

Conclusion:

As the algorithms used to deliver results would vary from one search engine to another, when a user inputs a query, the results would also differ.

Moreover, **results from different users would be rarely similar**, even when searching for the same things, since the algorithms take into account multiple factors, like their location.

Therefore, Algorithms play a crucial role for search engines as they process millions of web searches every day.

With the quantity of information available on the **internet growing steadily,** search algorithms are becoming increasingly complex, raising privacy and other concerns and drawing the attention of regulators.

Containing Rising Inflation

The recent action of the **Reserve Bank of India (RBI)** to raise the **repo rate** by 40 basis points and **cash reserve ratio (CRR)** by 50 basis points is a recognition of the serious situation with respect to inflation in our country and the resolve to tackle inflation.

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Inflation has assumed a menacing proportion in almost all countries. The situation is the worst in the United States where the consumer price inflation stood at 8.56%, a level not reached for several decades. **Consumer price index (CPI)** inflation in India stood (in March 2022) at 6.95%. It is expected to rise further in the coming months.

On the other hand, the **Wholesale Price Index (WPI)** inflation had remained in double digits since April 2021. The GDP implicit price deflator-based inflation rate for 2021-22 is 9.6%.

In this context, it is imperative to understand the issue of inflation and measures that need to be taken in order to contain inflation.

What are the Reasons for Increasing Inflation in India Lately?

- **Inflation** in India cannot be described just as **'cost-push'**. Abundance of liquidity has been an important factor.
    - The April **Monetary Policy** statement talked of a liquidity overhang of the order of ₹ 8.5 lakh crore.
    - Beyond a point, inflation itself can hinder growth. Negative real rates of interest on savings are not conducive to growth. If we want to control inflation, action on liquidity is very much needed with a concomitant rise in the interest rate on deposits and loans.
- The **high rate of inflation** in March 2022 is primarily due to rise in prices of crude petroleum and natural gas, mineral oils, basic metals, etc. owing to disruption in the global supply chain caused by the Russia-Ukraine conflict.
- On the other hand, the retail inflation rose mainly on account of rising prices of essential food items like **'oils and fats', vegetables and protein-rich items such as 'meat and fish'**.
    - As per the CPI data, inflation in 'oils and fats' in March soared to 18.79% as the geopolitical crisis due to the Russia-Ukraine war pushed edible oil prices higher.
    - Ukraine is a major exporter of sunflower oil. In vegetables, inflation quickened to 11.64% in March, while in 'meat and fish' the rate of price rise stood at 9.63 compared to February 2022.

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- The sharp rise in commodity prices across the world is a major reason behind the inflation spike in India. This is increasing the import cost for some of the crucial consumables, pushing inflation higher.

What is Repo rate & CRR?

Repo rate is the interest charged by the RBI when commercial banks borrow from them by selling their securities to the central bank. Essentially it is the interest charged by the RBI when banks borrow from them - much like commercial banks charge you interest for a car loan or home loan.

Under **Cash Reserve Ratio (CRR)**, the commercial banks have to hold a certain minimum amount of deposit as reserves with the central bank. The percentage of cash required to be kept in reserves as against the bank's total deposits is called the Cash Reserve Ratio.

What is the Impact of Higher Inflation in India?

- **Repo Rate:**
  - It is expected to push up interest rates in the banking system. Equated Monthly Installments (EMIs) on home, vehicle and other personal and corporate loans are likely to go up.
  - Deposit rates, mainly fixed term rates, are also set to rise.
  - Consumption and demand can be impacted by the Repo rate hike.
- **CRR:**
  - The hike in CRR will suck out Rs 87,000 crore from the banking system. The lendable resources of banks will come down accordingly.
  - It also means the cost of funds will go up and banks' net interest margins could get adversely impacted.
  - Net interest margin (NIM) is a measure of the difference between the interest income earned by a bank or other financial institution and the interest it pays out to its lenders (for example, depositors), relative to the amount of their assets that earn interest.

What are the Challenges in Tackling Increasing Inflation?

- In the current situation, it is argued that inflation will come down, if some part of the increase in crude prices is absorbed by the government. There may be a

case for reducing the duties on petroleum products for the simple reason that one segment of the population should not bear excessive burden. The same consideration applies to food prices.

- But to think that it is a magic wand through which inflation can be avoided is wrong. If the additional burden borne by the government (through loss of revenue) is not offset by expenditures, the overall deficit will widen.
- The borrowing programme will increase, and additional liquidity support may be required.

- Central banks cannot order interest rates. For a rise in the interest rate to stick, appropriate actions must be taken to contract liquidity. That is what the rise in CRR will do. In the absence of a rise in CRR, liquidity will have to be sucked by open market operations.
  - As the RBI Governor put it in his statement, "Liquidity conditions need to be modulated in line with the policy action and stance to ensure their full and efficient transmission to the rest of the economy."

What can be done to contain inflation?

- **Fuel duty cut:**
  - Further duty cuts by some amount at least Rs 5 per litre according to expers.
  - It can likely lower the inflation by 15-20 bps.
  - It Has immediate and secondary impact on electricity, transport cost
  - 1% rise in oil (Indian basket) could raise WPI by 8 bps.
- **Food Prices:**
  - Crackdown on supply side if hoarding happens
  - Ease import limits on pulses, oil seed
- **More duty cuts:**
  - More duty cuts for edible oil imports is required. However, it was reduced from 19 .25%to 13.75%.
- **Buffer stock:**
  - Prepare to use buffer stock if inflation spills over to cereals

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- 1% rise in WPI primary food prices can go up CPI by 48 bps

- **Other measures:**
  - Press for faster growth: 10% higher industrial output can ease retail inflation by 40 bps
  - Address supply bottlenecks
  - Boost income generating capacity to reduce burden on low income households

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