

## WORKSHOP SUMMARY

- An algorithm is a sequence of tasks to be performed.
- Algorithms are fundamental to a social network's digital architecture.
- In the context of a social network, algorithms serve to create a custom online experience, based on personal and behavioural data.
- The personalized experience made possible by algorithms increases a user's level of comfort and provides certain advantages. They make it possible to display content that most likely aligns with your interests. However, the experience can also limit your horizons by constantly serving up similar content in your news feed.

## What is an algorithm?

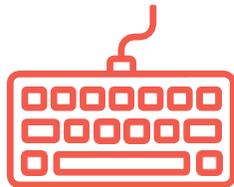
An algorithm consists of a predetermined series of specific commands for arriving at a given result. Here are a few examples: Following instructions to assemble a piece of furniture, multiplying two numbers, making a recipe...



## Why are algorithms used?

Algorithms are used to ensure that a series of sub-tasks are always performed in the same way.

Algorithms are part of our daily lives and play a key role in the fields of computer science and digital technology. They lay out the series of tasks to be performed by an electronic or computerized device. Displaying images on a screen, playing a video game, typing on an electronic keyboard, using social networks... algorithms make all these things possible!



Computers are useful for completing repetitive and complex tasks. They are fast and efficient. They don't make mistakes and they don't get bored.

## What is the purpose of algorithms in social networks? The Example of Facebook.

Facebook is an online social network that allows users to post images, photos, videos, files and documents. Users can also send each other messages, create and join groups, and use a variety of applications.

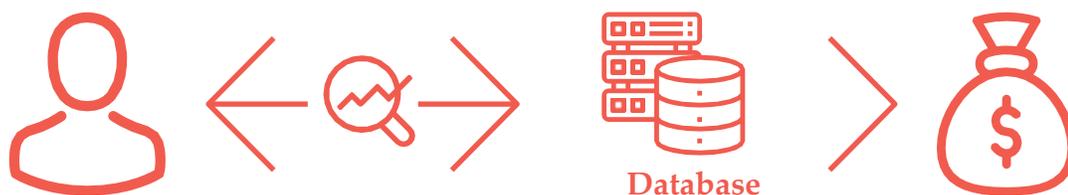
The inner workings of Facebook rely on a number of algorithms. These can be split into two main categories:

- Algorithms used to analyze user activity on Facebook.
- Algorithms used to generate/display each user's personalized Facebook page.

### HOW FACEBOOK WORKS

Algorithms are used to...

- Analyze user activity.
- Determine what content should be displayed for each user.



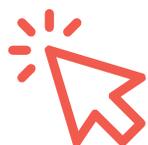
#### 1. DATA ANALYSIS ALGORITHMS

These algorithms analyze user activity. This makes it possible for Facebook to build a database of user behaviours, preferences and habits. The information in the database largely relates to users' collective habits, rather than their individual behaviours. Keep in mind that Facebook sells this information to other companies for advertising purposes.

Algorithms analyze two categories of activity on the platform:



- **Active use** includes things like writing a post, updating your Facebook status, posting content, adding a comment, reacting to a post, etc. This type of activity can be seen by other users.



- **Passive use** includes clicking on links or viewing information posted on the platform. This type of activity is not visible to other users.

 Social networks also collect residual data from user activity on other sites. For instance, Facebook can monitor your activity on other websites when you use your Facebook account to access those sites.

## 2. DISPLAY ALGORITHMS

In the early days of Facebook, back in 2004, the platform had no algorithms to determine what would be displayed on each user's screen. It simply displayed everything that had been posted.

Today, algorithms decide what posts are displayed in to each user. Facebook determines the posts with the highest scores based on its own criteria, then prominently displays them in your news feed.

Here are some of the criteria used by this social network to assess the relevance of a particular piece of content to a specific person. The criteria are applied based on an analysis of both passive and active use by all the platform's users.



**Who?**



**Where?**



**What?**



**When?**

- Who posted this new content? Was it someone close to the user?
- When and where was this content posted?
- How is this user's content normally perceived by other users?
- Have any of the user's Facebook friends commented on this content?
- How many people have already interacted with the content (reactions, comments, etc.)?
- Is this content likely to be violent in nature or contain nudity?



An illustration: By analyzing your past activity, Facebook may have determined that, every two days or so, you comment on photos of your cousin. Other users view these same photos more than 1,000 times a day. The photos have been analyzed and none of the scenes depicted appear to be violent or obscene. The display algorithm can make use of all this information.

The next time your cousin posts something, the display algorithm will assess when the post is relevant to you. Let's say that, based on the data described above, it determines that the content will interest you. As a result, your cousin's new post will be prominently displayed on your Facebook page.

On the other hand, you might decide to stop commenting on your cousin's posts. The analysis algorithm will interpret this behaviour as a lack of interest on your part. This will lower the likelihood that your cousin's next post will appear in your news feed.

## How do algorithms affect users?

It's important to distinguish between...



- **Desired effects** on users: Programmers design algorithms to impact users in certain ways, based on specifications developed by designers.



- **Side effects** on users: Algorithms can also impact users in ways that programmers did not expect. Such side effects can be either positive or negative.

### 1. DESIRED EFFECTS OF ALGORITHMS ON SOCIAL NETWORK USERS

Desired effects can include the following:



- **Maximizing the time users spend on the platform.** Facebook makes money by either delivering ads or selling reports on user habits. In either case, the company maximizes its revenues when users spend more time on the platform.
- **Providing a comfortable and efficient user experience.** Users will only spend more time on the platform if they find the experience enjoyable.

### 2. SIDE EFFECTS OF ALGORITHMS ON SOCIAL NETWORK USERS

As we review some of the so-called side effects of algorithms on social network users, please keep in mind that these are only examples. This is not an exhaustive list. Because of the speed at which online activity is increasing and the number of users is growing, it can be very hard to identify all possible side effects, be they positive or negative.

A lot of research is being carried out in the fields of health, law, economics and political science to better understand the role played by algorithms and the internet in today's world.

Side effects can include:



- Causing screen addiction.



- Catalyzing social change (e.g., the Maple Spring, the #MeToo Movement).



- Encouraging new patterns of friendship, as well as new types of personal and professional relationships (e.g., on Facebook, you can have 1,200 friends all at once). Do you consider this effect positive or negative?

## “Infinite Scrolling” as a Concrete Example of a Display Algorithm

“Infinite scrolling” refers to the ability of a web page to go on forever. The page simply keeps adding new content. It’s as if you keep reading a book but you never reach the final page. This feature was developed by entrepreneur Asa Raskin in 2006.

In fact, it relies on a very simple algorithm that can be summed up as follows: *As the user approaches the bottom of the page, search for content relevant to them and add it to the end of the page.*

The use of algorithm-based technology stops there. However, its consequences can be much more extensive. Here are a few points to consider in light of the distinction between desired effects and side effects.

### 1. DESIRED EFFECTS OF INFINITE SCROLLING ON USERS



- By helping to maximize the time a user spends on the platform, the results of Asa Raskin’s work are perfectly aligned with design specifications. It ensures that highly relevant new content constantly gets added to the page. As a result, the user will want to remain on the page to look at the added content.
- In terms of comfort and efficiency, providing direct access to relevant content makes the user experience extremely pleasant. No need to go searching on the web for something interesting. The algorithm brings the information straight to the user.

### 2. SIDE EFFECTS OF INFINITE SCROLLING ON USERS



- This algorithm actually makes the platform highly addictive. You could almost say that the algorithm is stealing the user’s time and attention. Could these repercussions have been predicted at the design stage?
- This algorithm assesses the relevance of content based on its similarity to other content previously viewed by the user. But the feeling of comfort provided by this process can be dangerous in cases involving political or scientific information. In these contexts, it is essential for all citizens to be exposed to opposing viewpoints, so they can develop personal opinions based on a full knowledge of the facts. A constant and never-ending flow of information from a single scientific or political viewpoint is potentially detrimental to a user’s ability to think critically. It can also contribute to the “news bubble” phenomenon. This occurs when you consistently surround yourself with news that you find comforting because it confirms your opinions, without ever exposing you to other perspectives.

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