



**WORKSHOP MANUAL**

# Faster than the Algorithm

by Fanus Ghorjani and Naz Al-Windi

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## 1. Introduction

The workshop “Faster than the Algorithm” aims to provide a deeper understanding of how algorithms work in social media and their impact on decision-making in democratic settings. Our everyday experience of the internet is shaped by algorithms. This workshop will explore what algorithms are and how they influence our political positioning.

### Contents of the workshop

In order to convey this content in a target group-oriented and interactive way, the workshop will be divided into two modules:

#### Module 1: Democracy (duration: 50 minutes)

**GOAL** to develop a basic understanding of democracies, their characteristics and their limitations.

#### Modul 2: Algorithms (duration: 110 minutes)

**GOAL** to provide a substantial review of how algorithms work and the role they play.

### Appendix:

- Statement cards
- Illustrated data sets
- Information on how to use Instagram accounts
- Information on Mentimeter

### Preparation of the workshop<sup>1</sup>

We ask the peer trainers to pronounce the names mentioned in the workshop true to their origin. This is to ensure respectful and appreciative interaction. Audio recordings can be found in the materials folder to assist.



### DURATION

160 minutes



### TARGET GROUP

The target audience is young people in 9th grade and above at all types of schools



### FORMAT

The workshop can be conducted both digitally and in person.



### MATERIALS

#### DIGITAL WORKSHOP

For digital implementation, the following is required:

- Video conferencing software
- Internet-capable device and a stable internet connection for all participants and the workshop leader, and at least three smartphones with Instagram installed.

#### WORKSHOP ON SITE

For implementation on site, the following is required:

- One Laptop and beamer, or a smartboard
- Moderation cards and pens for the participants, and at least three smartphones with Instagram

→ All materials can be downloaded here

<sup>1</sup> It is highly recommended that trainers adapt the data and legal aspects that are referred to in this manual with respective data for the country/region where the workshop is taking place (e.g. how many people are ineligible to vote; what is the distribution of votes among different age groups; which data protection directives apply, besides the European one?).

## 2. Schedule

DURATION	MODULE	TOOL	DESCRIPTION
5 min	<b>Introduction</b>	Presentation/Zoom	Introduction of the workshop's objectives and trainers.
<b>MODULE 1: DEMOCRACY</b>			
15 min	<b>Positioning method</b>	Mentimeter/Zoom	Participants are introduced to the topic in a low-threshold manner by taking a position on various questions.
20 min	<b>Group work</b>	Statement cards	While using statement cards, the participants create a chronicle of democracy.
10 min	<b>Summary</b>	Presentation/Zoom	The findings of the groupwork are presented and summarized.
<b>MODULE 2: ALGORITHMS</b>			
15 min	<b>Positioning method</b>	Mentimeter/Zoom	Similar to Module 1, the participants are introduced to the topic through their own positioning.
40 min	<b>Content Creator task</b>	Instagram	The participants create an Instagram profile based on given data.
20 min	<b>Theory</b>	Presentation	The results of the Content Creator task are evaluated to subsequently demonstrate how algorithms work.
<b>MODULE 3: CONNECTION</b>			
20 min	<b>Connection</b>	Presentation	The findings of the two modules are brought together. It is discussed how democracy and algorithms are connected.
15 min	<b>Conclusion and feedback</b>	Mentimeter/Zoom	Participants have the opportunity to evaluate the workshop and provide feedback.

## 3. Implementation

### INTRODUCTION AND OBJECTIVES OF THE WORKSHOP — 5 MIN

At the beginning of the workshop, trainers introduce themselves and the goals of the workshop to give participants a realistic picture of what to expect over the next 160 minutes. This will be followed by presenting the workshop's schedule.

#### MODULE 1

### Democracy

The first module prepares the participants for the complexity of topics related to democracy. In order to introduce the elements of democratic systems, different methods are used.

### POSITIONING METHOD — 15 MIN

The trainers throw questions into the room one after the other and ask the participants to physically position themselves in the room in response to the individual questions (in a digital workshop, Mentimeter is used). When implementing this method, it is helpful to address the participants individually, especially if they are students. In general, the team members should observe the group dynamic attentively and sensitively in order to give quieter people room to communicate.

#### 1. What does democracy mean to you?

The participants sit down in a circle of chairs and the first question is asked.

#### 2. Which elections are most important for you?

For this question, there is a related picture in the presentation. The participants should position themselves in the respective four corners of the room (federal election, state election, etc.).

#### 3. Do you feel that you and your opinion are represented?

The trainers determine two prominent points in the room, one of which should mean "I feel very strongly represented" and the other "I don't feel represented at all". The participants are to then position themselves again.

During this time, there is the possibility to ask individuals why they have positioned themselves at a certain point.

## GROUP WORK — 20 MIN

The plenary is divided into two groups, which work more intensively on the history of democracies. For this purpose, the groups each receive eight statement cards that address different aspects of the discussion of democracies.

### The statement cards look as follows:

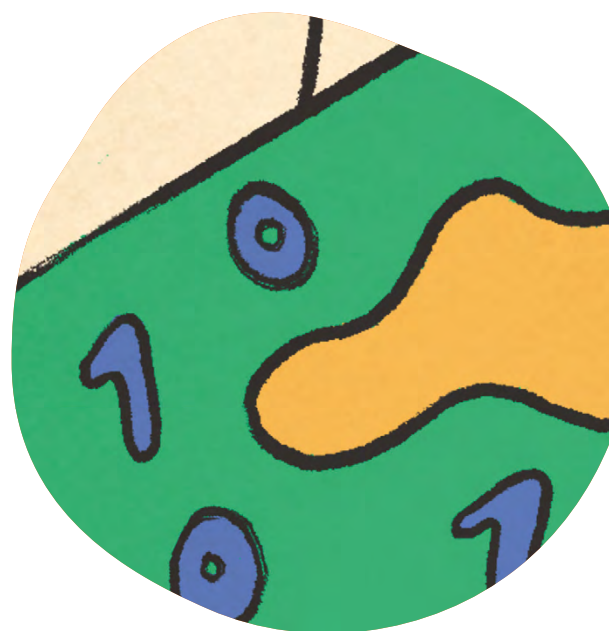
- dēmos and kratíe – the rule of the mob
- The Haitian Revolution
- Representation and parliaments
- Elections
- Rights and freedoms
- Control
- Democracies in danger
- Political communication

The aim is to understand democracies primarily as a political system, which organizes the coexistence of a particular population in a certain way. Democracies are multifaceted. Depending on the genesis of a state or region, their understanding of democracy also differs. The necessary characteristics that democracies should have are discussed using the statement cards.

The trainers take on a moderating role by adding information if needed or helping to explain terms. Referring to the previous positioning method, the statement cards on representation and elections, in particular, are critically discussed. It is important to focus on the historical relevance of political participation in democratic systems in this phase of the workshop and to discuss the mechanisms that impede political participation. The statement cards, including brief descriptions, can be found with the workshop materials.

## SUMMARY — 10 MIN

Back in plenary, the participants have the opportunity to present the statement cards that they find particularly relevant. Questions and ambiguities can also be clarified in the final round.



## MODULE 2

# Algorithmen

This module is designed to give participants an introduction into how algorithms work and what importance and impact they have. At the end, this module will be linked to the first one by discussing the influence of algorithms on democratic processes and democracies in general.

### POSITIONING METHOD — 15 MIN

The participants are again introduced to the topic by positioning themselves according to a related question. The positioning questions should be linked to the reality of their lives as strongly as possible.

#### 1. Have you ever had the feeling that your cell phone is “listening” to you?

The trainers define two prominent points in the room, one of which should mean “I agree” and the other, “I disagree”.

#### 2. How important is data protection to you?

#### 3. Who is allowed to have your data?

These two questions are again addressed by the group as a whole. They are a good starting point to learn more about attitudes and personal experiences with regard to data privacy, cookies, etc.

### CONTENT CREATOR — 40 MIN

The plenary is divided into three groups, each of which receives a data set.

The data sets refer to the persona\* of three fictional people. A persona is a fictional person who is supposed to represent a prototype for a group of users. This method is often used to analyse target groups in marketing or product development.

The provided data sets represent different attributes, such as education or age. Here, the data sets are almost identical and differ only in the name and the supposed gender. In addition, they contain different amounts of information. For example, the data set for group 1 contains less information, i.e. less data, than the one for group 3. The illustrated data sets can be found in the appendix.

Each group will be given access to an Understanding Europe → [Instagram account](#). There should be at least three devices available that allow the use of Instagram. However, participants are welcome to use more devices, as logging in with multiple devices on one account is possible. If the course does not take place within the Understanding Europe network, empty accounts should be created in advance.



The task of the participants is to fill the empty Instagram accounts with content. Together, they should start a thinking process in which they use provided data to create an Instagram account suitable (as they see it) to the fictional person. The groups must be physically separated to make sure that they do not know that they are dealing with quasi-identical data sets. The trainers will carefully observe the group activities and should always be available to answer questions and provide clarifications.

**Participants may create the following:**

- Instagram description/bio
- Posts
- Stories
- Story highlights
- Subscriptions
- Subscribers, if possible.

After 30 minutes, one person from each group should present the accounts(s) and share thoughts on the respective content. Specific questions can be used to transition to the next topic.

**For example, the trainers can ask:**

- “Why did you decide to publish these posts/add subscriptions?” Participants should explain what conclusions they drew from the data sets.
- “What are the similarities and differences between the accounts presented?”

Participants should reflect on the fact that the data is identical and only the quantity of data and the name differs. Here, for example, attention can be drawn to the fact that the supposed gender and origin leads to different outputs on the accounts.

**ADDITIONAL INFORMATION**

It is important to remind participants to be mindful and respectful of the data. The given categories are intended to create a simplified profile of a person without reproducing prejudices or stereotypes.

For representational purposes, names were chosen that are read as non-white by the majority of the German and other European societies. Since we cannot assume that German and European schools address racism-critical sensitization as a standard, it is important to be attentive and to address it to prevent potential problems. At the end, participants are asked to log out of the account on their own after completing the task.



**GOAL** The goal of the task is to provide participants with an awareness of how data is collected and analysed. They can use the data to get a fairly accurate picture of the fictional people and to create a suitable Instagram account. Thus, the goal is to create awareness of how accurately a persona can be created based on a data set with a few attributes of a real person. The more data there is, the more precisely users can be targeted on the Internet with a personalized approach. Algorithms can also calculate probabilities more accurately if sufficient data and a certain data quality are available.

In practice, data experts develop such personas from sociodemographic information in order to calculate the potential of markets, optimize online marketing with more specific targeting, or make better product recommendations. This exercise provides an important link to the everyday use of data by companies and organizations.

The “Content Creator” exercise provides creative insight into how algorithms work. While the participants have initially worked with data themselves, the following theory module explains how algorithms work with this data.

## **THEORY MODULE — 25 MIN**

This part of the module is an introduction to algorithms accompanied by the PowerPoint presentation. The following text can be used to guide the trainers:

**We encounter algorithms everywhere: at traffic lights, on dating apps, on the “For You” page on TikTok. But where do they come from and how do they work?**

The algorithm principle has been known for a long time; it has its origins in mathematics. The origin of the term is the Latin name of the Persian arithmetician and astronomer Abu Dscha'far Muhammad ibn Musa al-Charizmi, from Baghdad. In his work, he focused on following the rules of arithmetic using the Indo-Arabic numerals. The concept of algorithms is considered as an abstract view on task solution paths – not only in mathematics, but also in logic and philosophy.

After all, this is what algorithms are, task solution paths. Formulated in very general terms, an algorithm is a set of instructions that are executed step by step to solve a task or problem. Thus, an algorithm is a formally defined way of proceeding. The procedure of algorithms can be illustrated by a cooking recipe.

At this point, algorithms are explained using the illustration of a Bolani recipe (see Presentation/Illustration). The operation of the algorithm and the individual decision and action steps are explained there.





The “ingredients” or input are the data, while the “dish” or output are the calculations of probabilities – be it the correct classification of an object in a picture, the sales forecast of a company or the weather forecast.

It is important to convey what Artificial Intelligence (AI for short) and Machine Learning (ML) are and to explain the difference between classical programming and ML. These and other terms are briefly introduced in the glossary.

Both classical algorithms and special forms such as Machine Learning are subsumed under the term Artificial Intelligence (AI). Artificial intelligence is generally understood as technologies created by humans that are capable of analysing large amounts of data and making decisions based on this data.

The most common form of algorithms we encounter today no longer require traditional programming (instruction to act) because they are self-learning. One example of how this works is machine learning. If a historical data set is large enough, an algorithm can recognize patterns of information without an explicit instruction to act. The more data it has, the more accurate its output, or predictions, become. The self-learning algorithm therefore identifies structures in repetitions or other patterns and can deduce logical consequences by itself.

### MODULE 3

## Connection

### THEORY MODULE — 20 MIN

Democratic participation is directly linked to the provision of relevant information. The communication of those who are present (statement card 1) has become the communication of the anonymous, as social media increasingly takes on the role of media houses and informs users about current political, economic and social issues (statement card 8).

Algorithms thus play a key role in political communication, which in turn can influence political positioning and electoral decisions. In social media, information is not only ordered by algorithms, but also selected for. The criteria according to which algorithms display posts and news are not always transparent. However, it is assumed that algorithms in social media, similar to online shopping, try to achieve increased engagement and time spent on the app. This means that we are shown posts that not only interest us, but also reinforce our opinion or position: we are shown “directed” and “on-sided” or even “extreme” posts more often than neutral ones, and are rarely shown posts that contradict our stance.

In practice, this means that vegans who have often searched for inspiration for vegan dishes on social media are very unlikely to see posts about how to prepare a steak. This creates information dependencies that can lead to filter bubbles<sup>2</sup>.

Algorithms thus fundamentally change and restructure the democratic public sphere and can exert great influence on opinion-forming and decision-making processes.

<sup>2</sup> For an introduction to information dependencies and filter bubbles see [Melanie Magin und Pascal Jürgens, Are Algorithms a Threat to Democracy?](#)

## **FEEDBACK — 15 MIN**

In the last fifteen minutes, participants are given the opportunity to provide feedback using the Mentimeter tool. The answers should be discussed during the follow-up.

If the workshop is conducted on site, feedback sheets are distributed.

### **Follow-up**

Immediately after the end of the workshop, the registered devices must be removed from the Instagram accounts and the passwords changed. Also, all added content (posts, highlights, etc.) must be removed.

Feedback will be documented and may enable improvements for future workshops.

### **AUTHOR**

## **Fanus Ghorjani**

Fanus Ghorjani is a Bachelor student of Political Science at the University of Hamburg. Fanus was active for a long time at Jugendpresse Deutschland e.V., where she was, among other things, the communications officer for the Youth Media Days 2019. She is currently a Fellow of Understanding Europe.

### **AUTHOR**

## **Naz Al-Windi**

Naz Al-Windi is doing her master's degree in political science at the University of Hamburg. Previously, she supported the field of criminological social research there, focusing on decolonial, postcolonial and feminist theories. As a political educator, she worked for the Schwarzkopf Foundation in various contexts of in-school and out-of-school political education of young people.

## 4. Glossary

**ALGORITHMS** – To explain algorithms, the standard definition of Cormen et al. is used: “Informally, an algorithm is any well-defined computational procedure that takes some value, or set of values, as input and produces some value, or set of values, as output. An algorithm is thus a sequence of computational steps that transform the input into the output. We can also view an algorithm as a tool for solving a well-specified computational problem. The statement of the problem specifies in general terms the desired input/output relationship. The algorithm describes a specific computational procedure for achieving that input/output relationship.”

Cormen, Thomas H., et al. Introduction to algorithms. MIT press, 2009.  
→ <http://139.59.56.236/bitstream/123456789/106/1/Introduction%20to%20Algorithms%20by%20Thomas%20H%20Cormen.pdf>

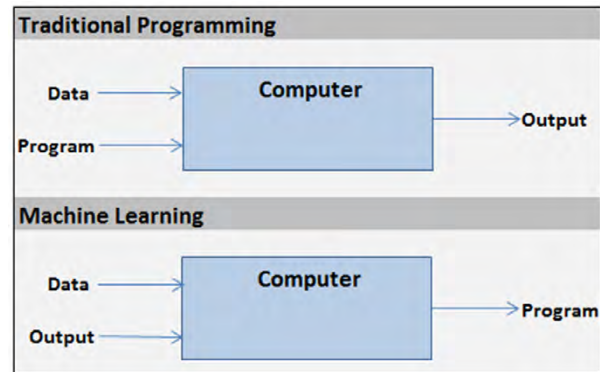
**ARTIFICIAL INTELLIGENCE** – There is no single definition of what Artificial Intelligent (AI) is. Artificial Intelligence can be understood as a program or a programming, which has the ability to navigate in an arbitrary world similar to humans. This means that under Artificial Intelligence systems (machines, softwares, robots etc.) are summarized, which are able to work on and solve abstract tasks and problems without further human support.

Dobrev, Dimiter. „A definition of artificial intelligence.“ arXiv preprint arXiv:1210.1568 (2012). → <https://arxiv.org/pdf/1210.1568.pdf>

**MACHINE LEARNING (CLASSIFICATION MODEL)** – In machine learning, algorithms can learn to make predictions by recognizing patterns in the data without being explicitly programmed. The machine learning thereby relies on different mathematical formulas and is thus considered to be self-learning.

„Paraphrasing Arthur Samuel (1959), the question is: How can computers learn to solve problems without being explicit programmed?“ in Koza, John R.; Bennett, Forrest H.; Andre, David; Keane, Martin A. (1996).  
→ [Link to source](#)

### DIFFERENTIATION BETWEEN TRADITIONAL PROGRAMMING VS. MACHINE LEARNING



→ <https://storage.ning.com/topology/rest/1.0/file/get/2808354979?profile=original>

In traditional programming, in addition to the required data, the system is also given an instruction as to which different possibilities or scenarios can result from the data set. In machine learning, on the other hand, this instruction is not needed, since the system is capable of filtering out patterns, possibilities and scenarios from the given data set itself and is thus also capable of creating its own programs on the basis of these insights and patterns.

Sharma, Avneesh: „How Different are Conventional Programming and Machine Learning.“, 2018.  
→ [Link zur Quelle](#)

**TARGETING** – In online marketing, targeting is the process of addressing specific customer groups.

→ <https://www.onlinemarketing-praxis.de/glossar/targeting>

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→ <https://www.bpb.de/apuz/263673/kuenstliche-intelligenz>

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→ <https://kompetenzzentrum-augsburg-digital.de/kuenstliche-intelligenz-einfach-erklart/>

Melanie Magin und Pascal Jürgens. Are Algorithms a Threat to Democracy?

→ <https://algorithmwatch.org/en/wp-content/uploads/2020/05/Governing-Platforms-communications-study-Stark-May-2020-AlgorithmWatch.pdf>

ESEPOP- Backen, Persisch Kochen, DIY (Blog). Afghanische Teigtaschen = Bolanis.

→ <https://www.esepop.com/bolani>

## 6. Imprint

### **Publisher**

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10178 Berlin

[www.schwarzkopf-stiftung.de](http://www.schwarzkopf-stiftung.de)

### **V. i. S. d. P.**

Mandy Buschina

### **Editors**

Evin Demir

Friedrich Landenberger

Mina Saidze

Sean Mackenney

### **Authors**

Fanus Ghorjani

Naz Al-Windi

### **Layout**

Friederike Schlenz

### **Illustration**

El Boum

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