

Introduction to digital trace data: Quality, ethics, and analysis

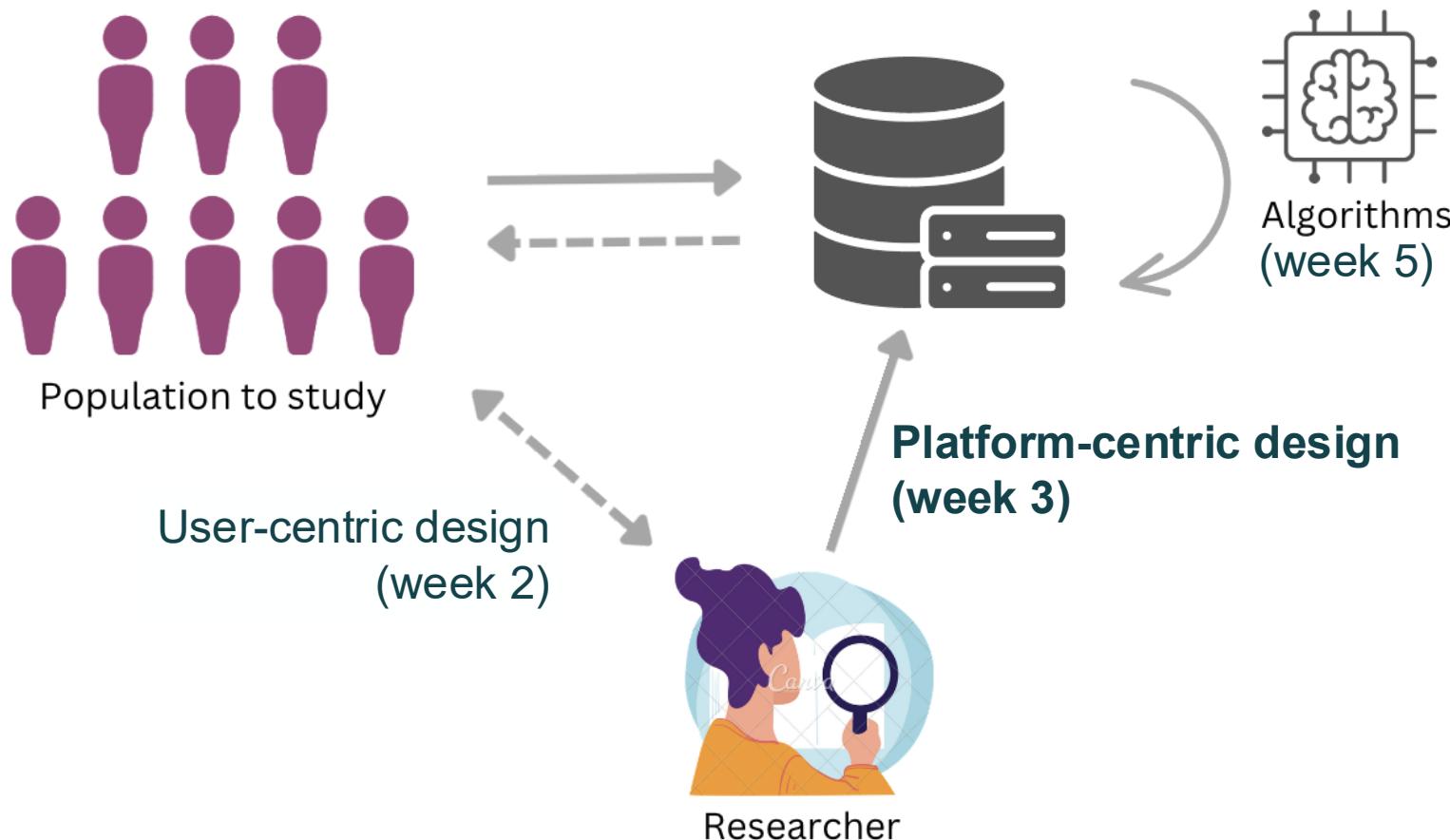
Lecture 3: Collecting platform-centric data

Javier Garcia-Bernardo

Assistant Professor

Department of Methodology and Statistics

Where are we?



Week 4: Errors in DTD
Week 6: Ethics and Legislation
Week 9: Recap and Q&A

Platform-centric design

Collaboration with the organization holding the data

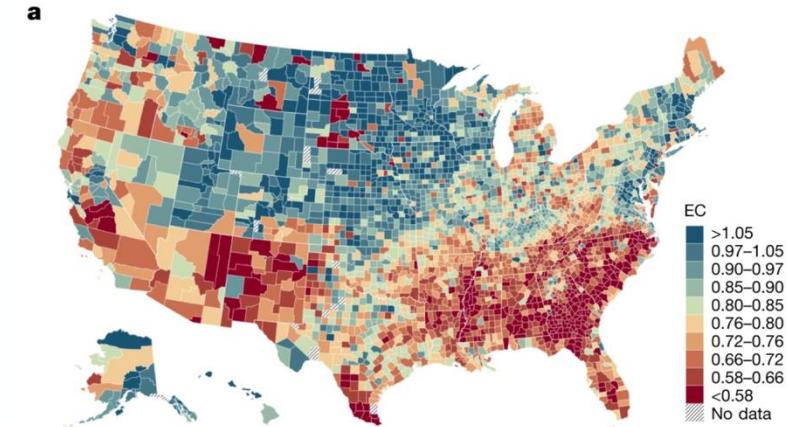
- The organization provides the data privately
- Public and private data

APIs (Application Programming Interfaces)

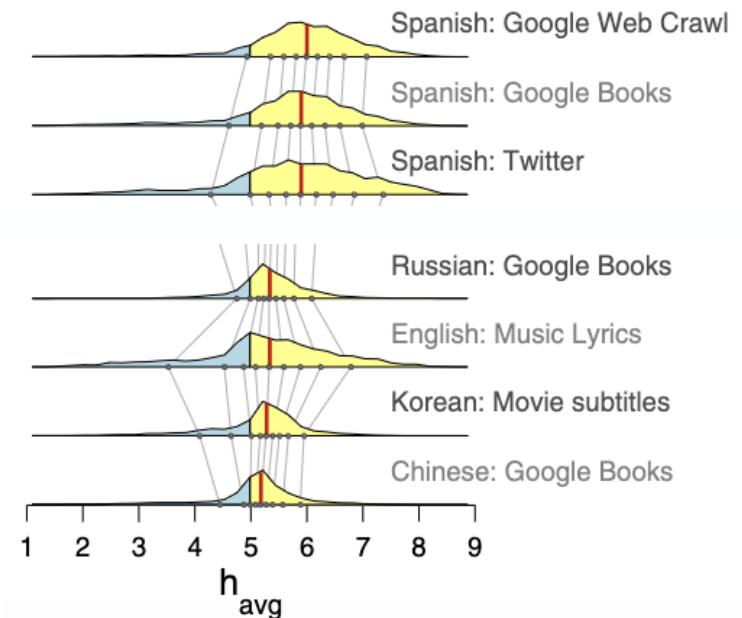
- The organization provide direct access to (parts) of the data.
- Public data only

Web-Scraping

- Download the information as shown in the website
- Public data only (at least legally)



Chetty et al., 2022, Nature



Dodds et al., 2015, PNAS

TODAY

Lecture

Explain what APIs and web scraping are
(in your own words).

Understand how HTML code is structured

Distinguish between the role of robots.txt,
Terms of Service and GDPR.

Understand the main advantages,
challenges and legal considerations of APIs
and Web Scraping.

Lab

Learn how to read robots.txt

Use APIs to extract data:

- Wikimedia
- TheGuardian

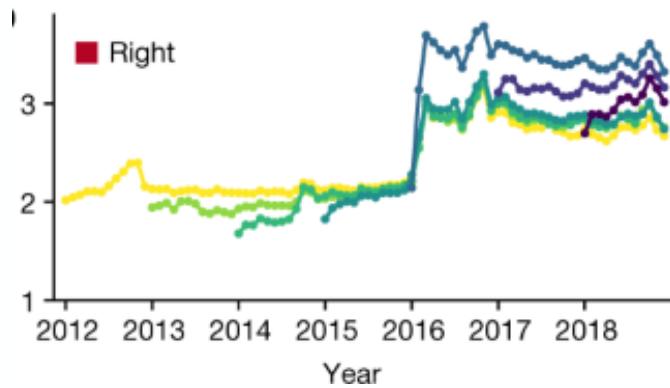
Web scraping data from NU.nl

Saving text data to your hard drive

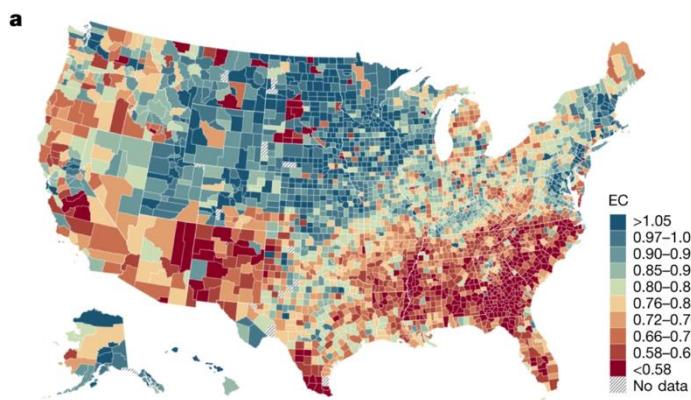
Why take a platform-centric approach?

Studying aggregated effects

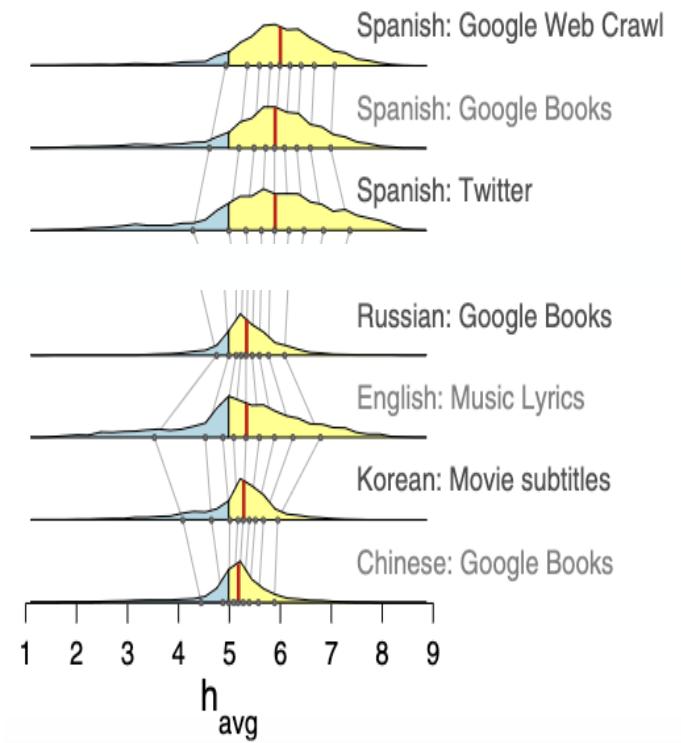
- Platform-specific effects
- How does X affects Y in general?
 - Big assumption here! Either that the data is representative of the target population or the studied phenomenon applies to the target population.



Waller and Anderson, 2021, Nature



Chetty et al., 2022, Nature



Dodds et al., 2015, PNAS

Application Programming Interfaces

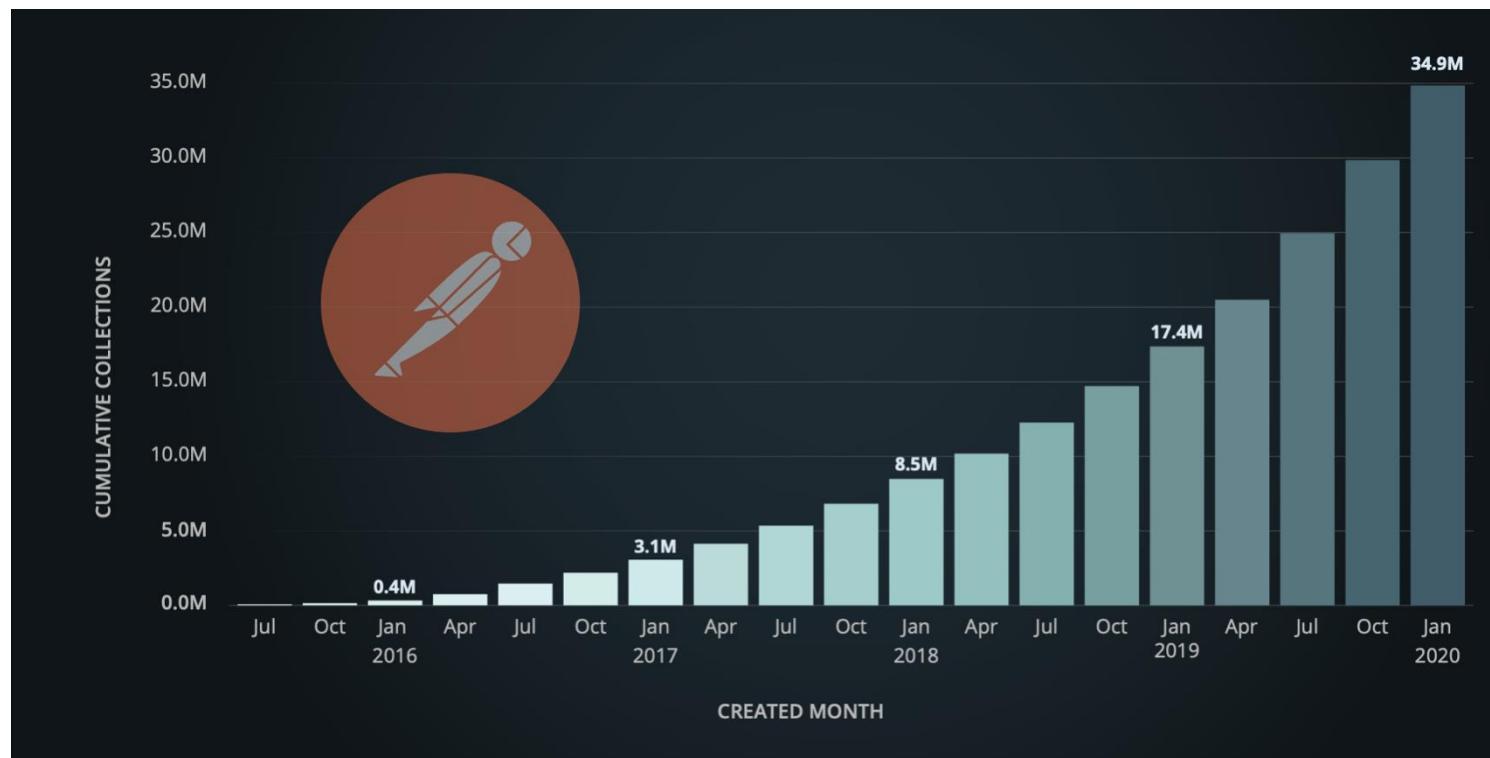
APIs

What are Application Programming Interfaces (APIs)?

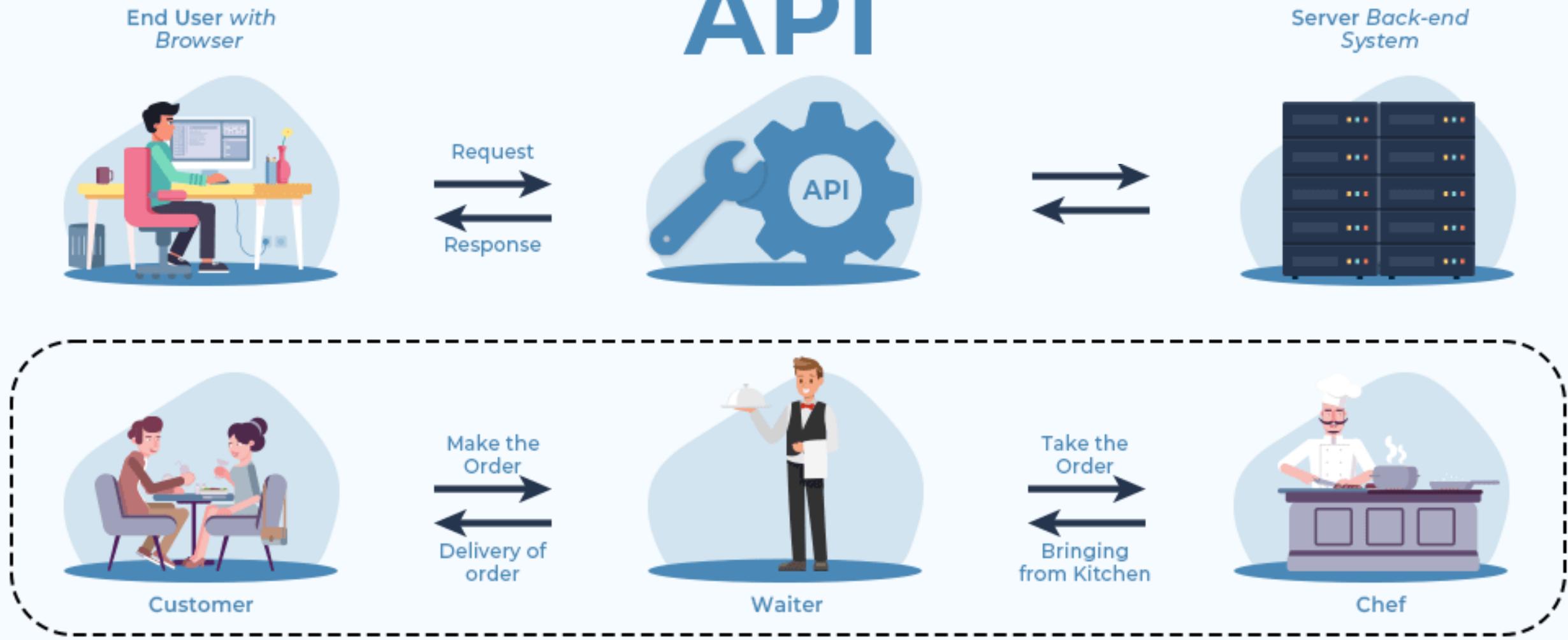
APIs allow one computer (the client) to request data or services from another computer (the server). They act as a bridge between different systems. APIs provide:

1. *Communication rules*: APIs set rules for how computers communicate.
2. *Security*: APIs control who can access what information, so different users might see different data.

APIs are mainly designed for *developers* to use, not for researchers.



API



You just need to know how to ask properly.

<https://www.geeksforgeeks.org/what-is-an-api/>

Example use case

Het Parool wants to encourage readers to become members. To do so, it shows a banner at the bottom. However:

- The membership price must be accurate and up-to-date
- An independent company should manage memberships and payments.

Solution: Use an online service that provides an API to handle membership and payment processing.



When you load the site, your browser calls the API:

<https://feeds.pexi.nl/api/feeds/bi6674262e89bda?brand=HP&articles=false&prices=false&pricetype=digitaal>

The API returns the data (JSON)

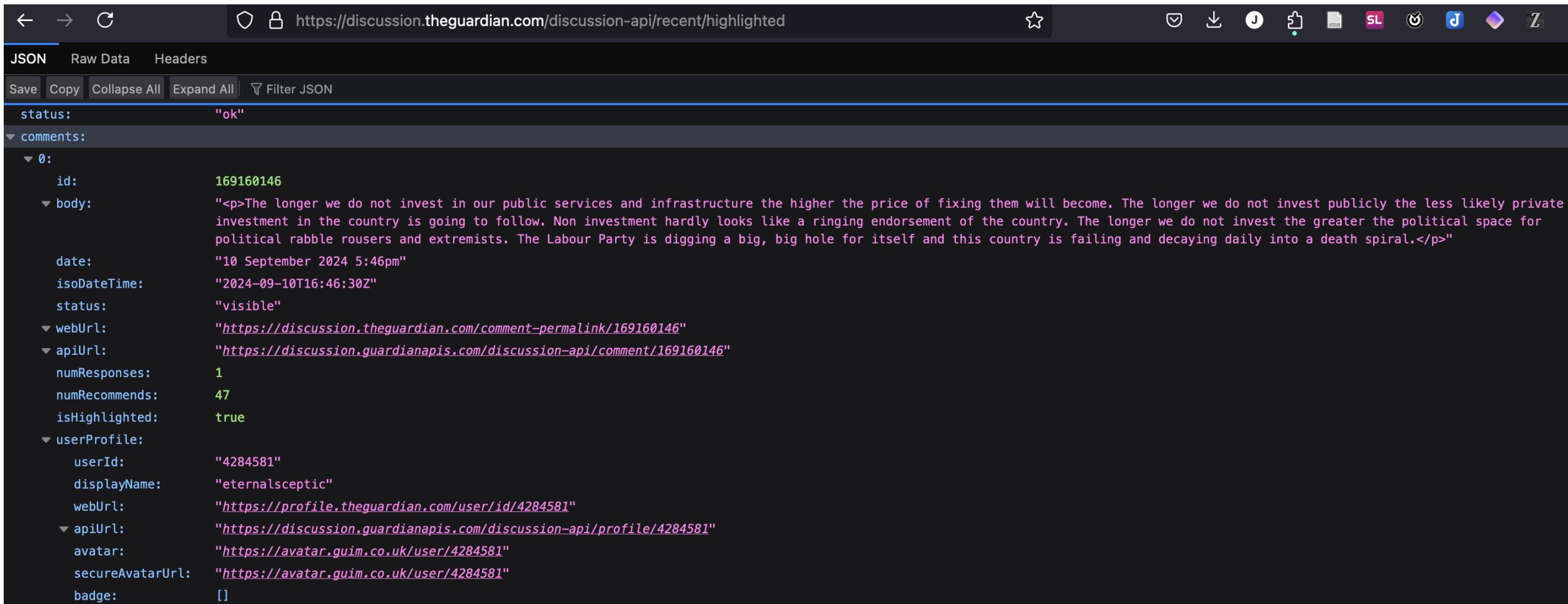
Your browser sets up the correct price

```
https://feeds.pexi.nl/api/feeds/bi6674262e89bda?brand=HP&articles=false&prices=true&pricetype=digitaal

0:
  brand: "hp"
  brand_title: "Parool"
  brand_lopende_zin: "Het Parool"
  brand_begin_zin: "Het Parool"
  brand_logo: "https://static.pexi.nl/dpg-mediamagazines/styles/parool/logos/logo-parool.svg"
  brand_packshot: "https://static.pexi.nl/dpg/packshots/Parool.png"
  brand_cover: "https://static.pexi.nl/dpg-mediamagazines/kiosk_krant_covers/krant-hp.jpeg"
  brand_url: "parool.nl"
  brand_kleur: "#D72236"
  brand_kleur2: "#00A95"
  brand_kleur3: "#FFB600"
  priceFrequency: "week"
  priceBeforeDiscount: "5,86"
  priceAfterDiscount: "3,75"
  priceEuroBeforeDiscount: 5
  priceCentBeforeDiscount: 86
  priceEuroAfterDiscount: 3
  priceCentAfterDiscount: 75
  priceDiscount: "36%"
  priceDuration: 36
  priceType: "digitaal"
  priceDurationUnit: "weken"
```

Example use case in social science

For example, to extract the comments from TheGuardian using their Discussion API

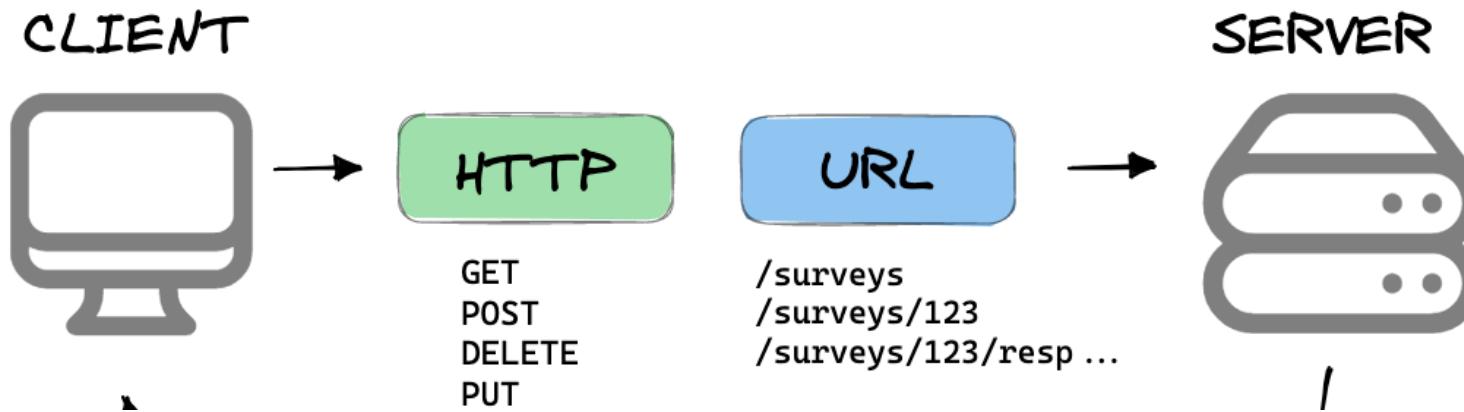


The screenshot shows a browser window with the URL <https://discussion.theguardian.com/discussion-api/recent/highlighted>. The page displays a JSON response from the API. The JSON structure includes a 'status' key with the value 'ok', a 'comments' array containing one element (index 0), and various nested properties for the comment itself.

```
status: "ok"
comments:
  0:
    id: 169160146
    body: "<p>The longer we do not invest in our public services and infrastructure the higher the price of fixing them will become. The longer we do not invest publicly the less likely private investment in the country is going to follow. Non investment hardly looks like a ringing endorsement of the country. The longer we do not invest the greater the political space for political rabble rousers and extremists. The Labour Party is digging a big, big hole for itself and this country is failing and decaying daily into a death spiral.</p>"
    date: "10 September 2024 5:46pm"
    isoDateTime: "2024-09-10T16:46:30Z"
    status: "visible"
    webUrl: "https://discussion.theguardian.com/comment-permalink/169160146"
    apiUrl: "https://discussion.guardianapis.com/discussion-api/comment/169160146"
    numResponses: 1
    numRecommends: 47
    isHighlighted: true
    userProfile:
      userId: "4284581"
      displayName: "eternalsceptic"
      webUrl: "https://profile.theguardian.com/user/id/4284581"
      apiUrl: "https://discussion.guardianapis.com/discussion-api/profile/4284581"
      avatar: "https://avatar.guim.co.uk/user/4284581"
      secureAvatarUrl: "https://avatar.guim.co.uk/user/4284581"
      badge: []
```

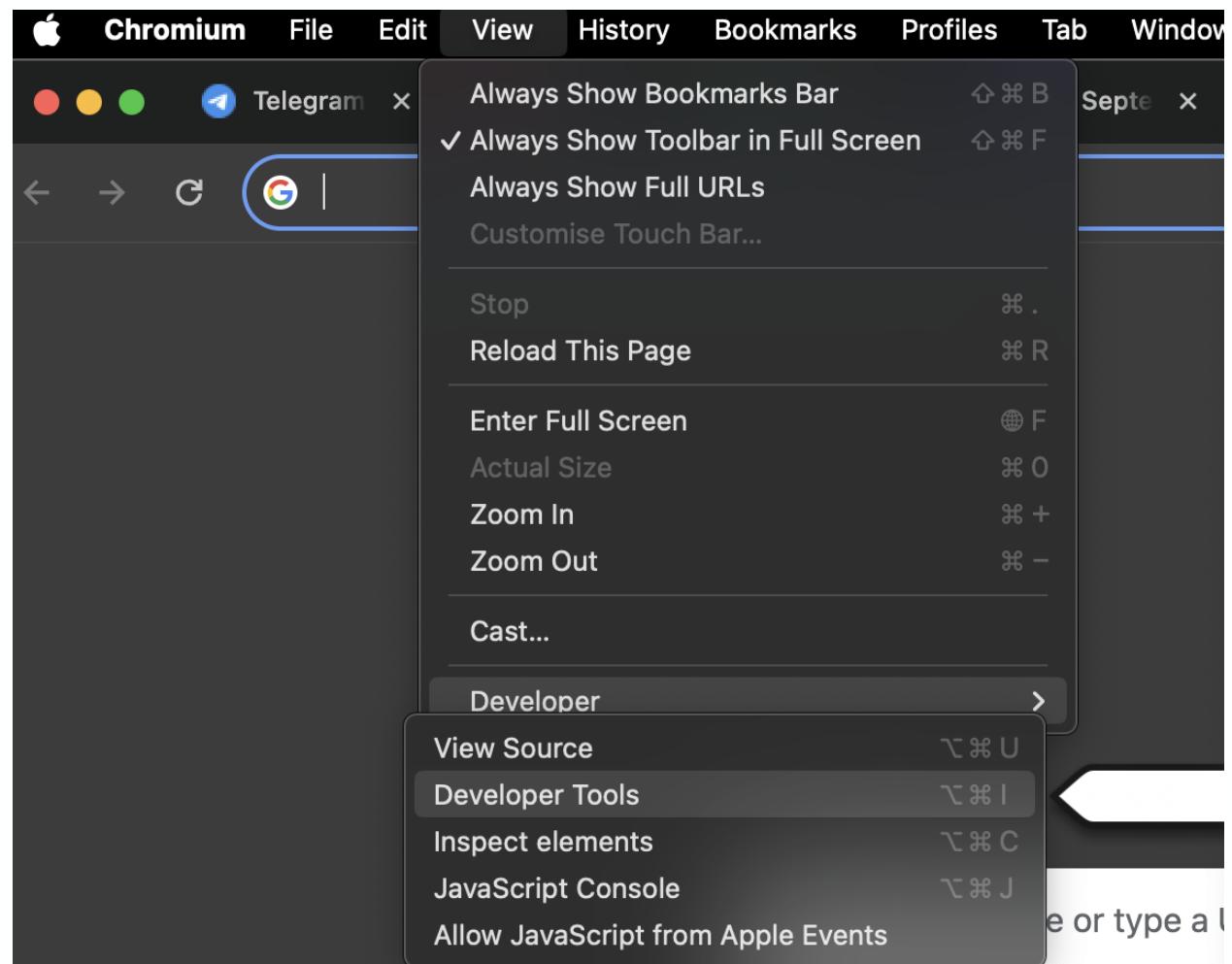
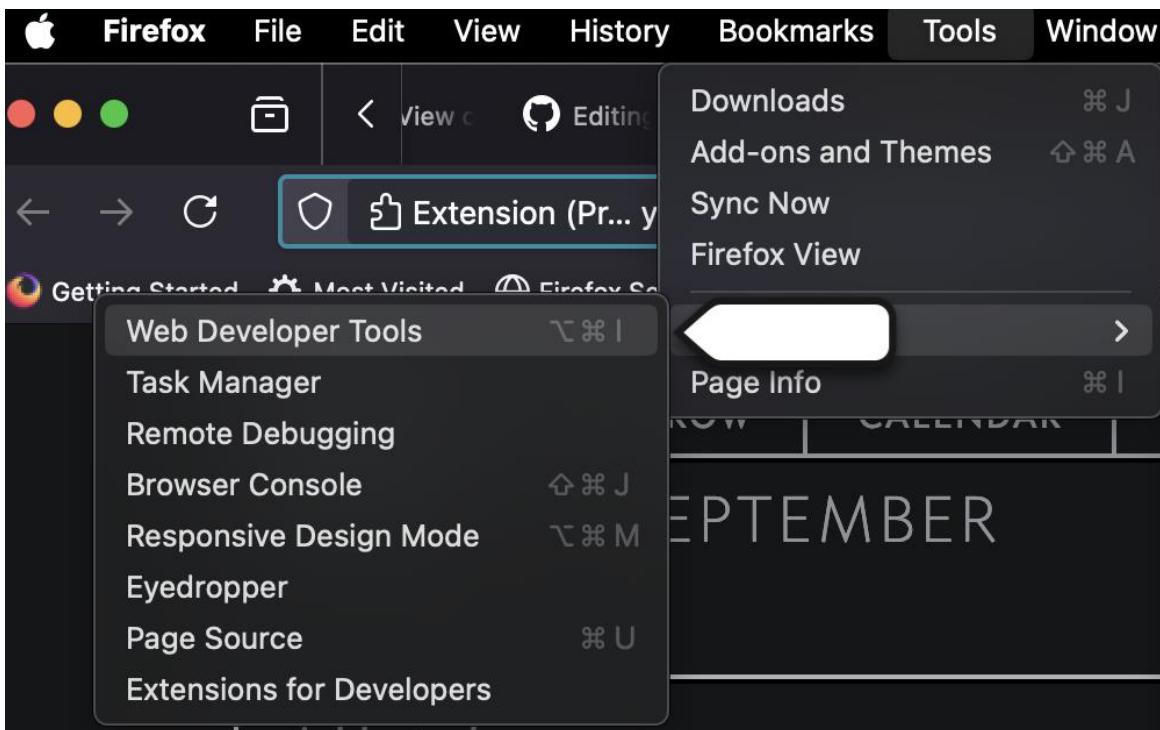
Web browsing works through HTTP(S) calls

- When you click a link, your computer (the client) sends a request to another computer (the server) asking for something resource (e.g. a website, an image)
- **HTTP(S)** (Hypertext Transfer Protocol) = the communication rules
 - HTTP(S) calls have *headers* and *body*, where extra information is sent to the server
- **URL** = location of the resource
- The server responds with an HTTP status code (and potentially a html website, a file, or data)



Developer Tools in the browser

Inspect and analyze the HTML, CSS, and JavaScript of a webpage to understand its structure.
Monitor network activity to see how data is requested and received.



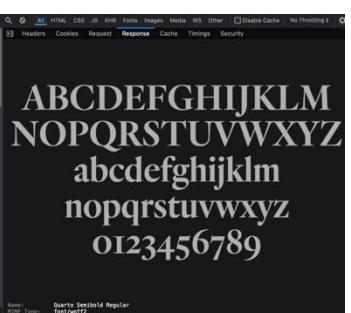
Nieuws

Ook Ajax-FC Utrecht zondag afgelast vanwege politiestaking: 'Hiermee ontneem je supporters de kans om te laten zien dat het kan'

De Eredivisiewedstrijd tussen Ajax en FC Utrecht, die aankomende zondag in de Johan Cruijff Arena zou plaatsvinden, gaat niet door. Het is de tweede keer dat een

Status	Method	Domain	File	Initiator	Type	Transferred	Size
200	GET	www.parool.nl	/nieuws/ook-ajax-fc-utrecht-zondag-afgelast-vanwege-politiestaking-hiermee-ontneem-je-supporters-de-kans-om-te-laten-zien-dat-het-kan~b849073c/	document	html	51,18 kB	22...
	POST	c.dpgmedia.net	b	68GC0udRiTWOX...			
0	GET	ingestion.smartoc...	r?p=0:m0w8d5zd:StNM679UFnv3c9bISQXgdu_X47ZI_kT~ ingestion.js:1 (xhr)	ingestion.js:1 (xhr)	NS_BINDING_AB...		
200	GET	www.parool.nl	Quarto-Semibold.woff2	font	woff2	cached	17...
200	GET	www.parool.nl	Balto-Bold.woff2	font	woff2	cached	28...
200	GET	www.parool.nl	webpack-d539726d8629d14b.js	script	js	cached	6...
200	GET	www.parool.nl	5a2308db-197d117c075e5ad8.js	script	js	cached	17...
200	GET	www.parool.nl	8618-4e04cde1fe5c88d5.js	script	js	cached	12...
200	GET	www.parool.nl	main-app-23c7a5add3b63efc.js	script	js	cached	47...
	GET	www.parool.nl	7667-ddadb07973a8e84e.js	script	js	3 kB (raced)	8...
	GET	www.parool.nl	7851-a4b1a1f04c86042a.js	script	js	7,19 kB (raced)	21...
200	GET	www.parool.nl	114-90f0e964beab2111.js	script	js	cached	8...
200	GET	www.parool.nl	6571-1bf5426353e6e2a3.js	script	js	cached	13...
200	GET	www.parool.nl	5603-5007b131325ab046.js	script	js	cached	9...
200	GET	www.parool.nl	6016-04f32c51dcde3ca3.js	script	js	cached	9...
200	GET	www.parool.nl	1024-23c4cc7f3910878b.js	script	js	cached	10...
200	GET	www.parool.nl	2375-332aeee94059a7f20.js	script	js	cached	19...
200	GET	www.parool.nl	layout-3c573fd2c9e00c23.js	script	js	cached	29...
200	GET	www.parool.nl	4009-95f4238b40416690.js	script	js	cached	7...
200	GET	temptation.par...	temptation.js	script	js	cached	9...
200	GET	www.parool.nl	not-found-c5d982ab719aa3df.js	script	js	cached	26...
200	GET	www.parool.nl	error-a32b242946972f21.js	script	js	cached	6...
200	GET	www.parool.nl	1707-18e9e1c8b1885802.js	script	js	cached	27...

71 requests | 3,69 MB / 116,62 kB transferred | Finish: 3,93 s | DOMContentLoaded: 1,05 s | load: 1,25 s



Ook Ajax-FC Utrecht zondag afgelast vanwege politiestaking: 'Hiermee ontneem je supporters de kans om te laten zien dat het kan'

Data from their servers

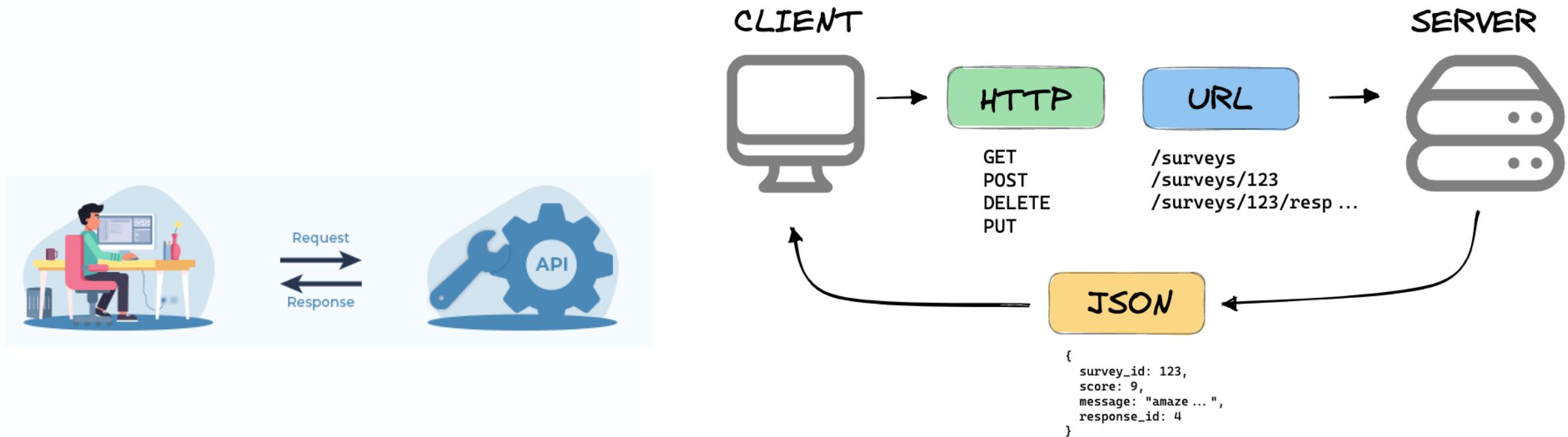
Status	Method	Domain	File	Initiator	Type	Transferred
	POST	c.dpgmedia.net	b	68GC0udRTWOX0eR3pkv_v3.9.js:80 (...)		
200	GET	www.parool.nl	/api/_next-api/v1/auth/session/	7425-d5a90897e58d6a3c.js:1 (fetch)	json	1,40 kB
200	POST	profile-public-api.data.dpgmedia.clo...	dmoi	advert-xandr.js:1 (fetch)	json	386 B
200	OPTIONS	temptation.parool.nl	_resolve_from_website?trackingIdCookieName=TID_ID&jwtTokenCookieName=het-parool-oidc-access-tok	fetch	json	1,34 kB
200	GET	temptation.parool.nl	_resolve_from_website?trackingIdCookieName=TID_ID&jwtTokenCookieName=het-parool-oidc-access-tok	temptation.js:1 (fetch)	json	23,25 kB
200	GET	login.parool.nl	ssosession	main.js:1 (fetch)	json	763 B
200	GET	feeds.pexi.nl	bi6674262e89bda?brand=HP&articles=false&prices=true&pricetype=digitaal	temptation.js line 1 > Function:49 (fetch)	json	1,08 kB
🚫	GET	ib.adnxs.com	getuidj	selfevokingxandr.js:2 (fetch)		Blocked By DuckDuckGo Privacy Essentials
200	GET	nmodpgendpoint.2cnt.net	?vendor=snowplow&cs_fpid=d241eb041f0c6b16fc4a92230608ddce0a463b77c6a181b1ab59d22ed2fb8c7	index.umd.min.js:7 (xhr)	plain	184 B
200	OPTIONS	c.dpgmedia.net	b	xhr	plain	349 B
200	GET	clientcdn.pushengage.com	3befc11084d1d0f40d7b419d4c128fa2?source=sdk&sdkv=3.0.44&swv=3.0.44	pushengage-subscription.js:2 (fetch)	json	cached
200	GET	web-sdk.pushengage.com	geo-details?sdkv=3.0.44&swv=3.0.44	pushengage-subscription.js:2 (fetch)	json	cached
200	GET	api.smartocto.com	tentacles?i=z7e3z8rzmqy2tcfecz7kp2n4dszsvqw8	tentacle.js:1 (xhr)	json	1,33 kB
204	GET	ingestion.smartocto.com	t?p=0:m0w8d5zd:StNM67 https://api.smartocto.com/api/brands/tentacles?	:1 (xhr)	xml	164 B

Ads, tracking, analytics, experiments (A/B testing), other services

API calls are usually shown as “xhr” or “fetch” (Initiator column)

Using RESTful APIs

- RESTful APIs work using **HTTP(s) calls** to **URLs**
 - **HTTP(s)** (Hypertext Transfer Protocol) calls
 - **URL** = location of the API resource
- Responds with a HTTP status code and data (typically **JSON**)



Examples of RESTful APIs



<https://api.wikimedia.org/feed/v1/wikipedia/en/featured/2024/09/20>

[https://api.crossref.org/works?query.author="Javier Garcia-Bernardo"&filter=from-pub-date:2024-01-01,until-pub-date:2021-01-01](https://api.crossref.org/works?query.author='Javier Garcia-Bernardo)

<https://discussion.theguardian.com/discussion-api/discussion/p/3htd7/topcomments?pageSize=50&page=1&orderBy=newest>

https://maps.googleapis.com/maps/api/geocode/json?address=Utrecht&key=YOUR_API_KEY

How to read the URL for the APIs:

- Base API URL: This is the main address where you access the API.
- Endpoints. These specify different data or services. Sometimes, they include required information, like IDs or paths.
- Query (starts with "?"): These are additional parameters, usually optional, that help filter or sort the data you're requesting.
 - When there are multiple parameters in a query, they are joined together with the symbol "&"

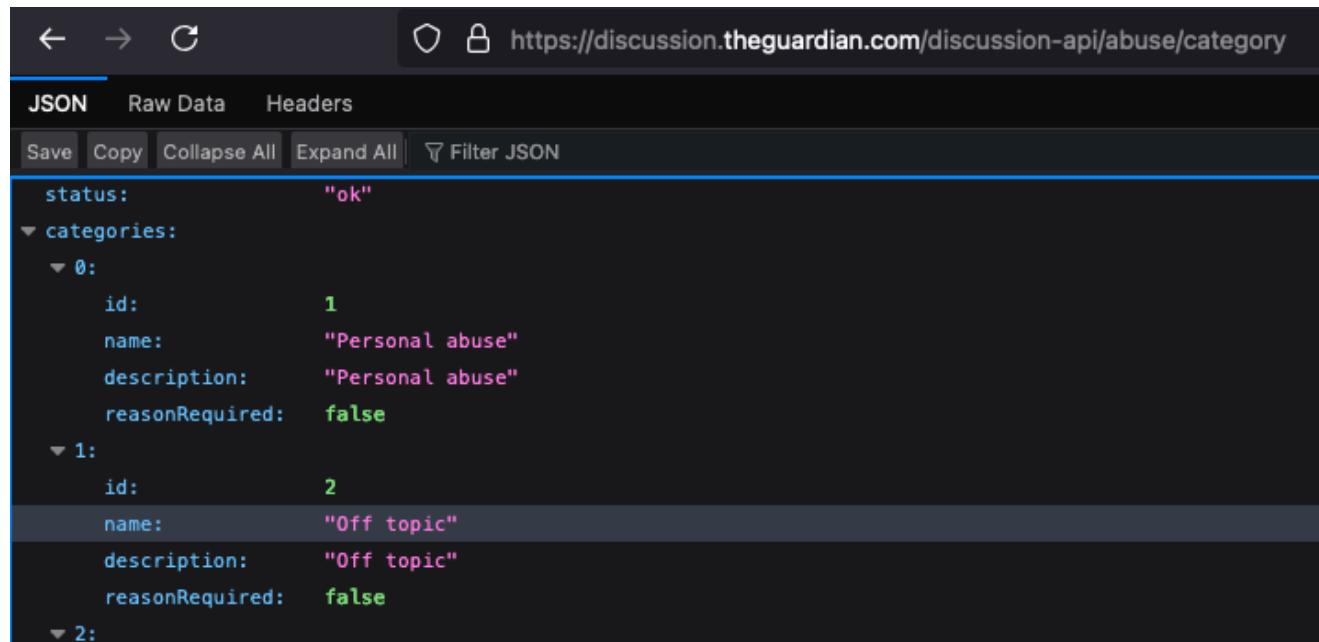
Status response of API

Status code	Meaning
200 OK	Request was successful.
301 Moved Permanently	For SEO purposes when a page has been moved.
401 Unauthorized	Server requires authentication.
403 Forbidden	Client authenticated but does not have permissions to view resource.
404 Not Found	Page not found because no search results or may be out of stock.
429 Too Many Requests	Client sent too many requests in a given time; server is rate limiting.
500 Internal Server Error	Server side error. Usually due to bugs and exceptions thrown on the server side code.
503 Server Unavailable	Server side error. Usually due to a platform hosting, overload and maintenance issue.

Example documentation

<https://discussion.theguardian.com/discussion-api#abuse/category>

Method	Path	Slug	Description	Examples
GET	/abuse/category	GetAllAbuseCategories	Return all abuse categories	/abuse/category
GET	/comment/:id	GetComment	Get a comment	/comment/12500137, /comment/12500137?displayResponses=true, /comment/12500137?displayResponses=true&displayThreaded=true
GET	/comment/:id/context	GetCommentContext	Returns the discussion url, key, and page number on which the comment appears in the discussion. Useful for permalinks.	/comment/12500137/context
POST	/comment/:id/highlight	PostHighlightToComment	Post a highlight to an existing unhighlighted comment	
GET	/comment/:id/permalink	GetCommentPermalink	Redirect to a comment permalink	/comment/1250013/permalink
POST	/comment/:id/reasonRequired	PutReasonRequired	Put a reason required annotation to an existing comment	



The screenshot shows a browser developer tools Network tab with the URL <https://discussion.theguardian.com/discussion-api#abuse/category>. The response is a JSON object with the following structure:

```
status: "ok"
categories:
  0:
    id: 1
    name: "Personal abuse"
    description: "Personal abuse"
    reasonRequired: false
  1:
    id: 2
    name: "Off topic"
    description: "Off topic"
    reasonRequired: false
  2:
```

Example documentation II

<https://api.wikimedia.org/feed/v1/wikipedia/en/featured/2024/09/20>

Featured content

[Discussion](#) [Updated 16 June 2023](#)

GET /feed/v1/wikipedia/{language}/featured/{YYYY}/{MM}/{DD}

Returns featured content from Wikipedia for a given date. Depending on [language availability](#), the response can include the daily featured article, featured image or media file, list of most read articles, latest news stories, and events from that day in history.

Examples

[curl](#) [Python](#) [PHP](#) [JavaScript](#)

```
# Get today's featured content from English Wikipedia
curl https://api.wikimedia.org/feed/v1/wikipedia/en/featured/2024/09/10
```

Parameters

language required path	Language code. For example: ar (Arabic), en (English), es (Spanish). List supported languages .
YYYY required path	Four-digit year
MM required path	Zero-padded month, 01 through 12
DD required path	Zero-padded day of the month, 01 through 31

Responses

200	Success Example	[Show]
400	Error: Invalid parameter Example	[Show]

Response schema

tfa object	Today's featured article (TFA) for the requested date. Available in 10+ languages . Properties	[Show]
mostread object	Previous day's most read articles. Available in 300+ languages . Properties	[Show]
image object	Daily featured image from Wikimedia Commons . Available in English. Properties	[Show]
news object	Stories from today's news. Available only for the current day in UTC . Available in 15+ languages . Properties	[Show]
onthisday object	Events that occurred on this day in history. Available in 5+ languages Properties	[Hide]
text string	Short summary of the event in plain text	
pages array	Articles related to the event Properties	[Hide]
type string	Type of article: <ul style="list-style-type: none">standard : Encyclopedia articledisambiguation : Page that links to articles covering topics with similar titlesno-extract : Article without an extractmainpage : A wiki's homepage	

Exercise (in pairs)

Create an API call for Reddit to retrieve 100 links containing the query “Utrecht”. Sort hot results first.

Base URL = <https://api.reddit.com>
Endpoint = /search

GET [/r subreddit]/search read rss support

Search links page.

This endpoint is a listing.

after	fullname of a thing
before	fullname of a thing
category	a string no longer than 5 characters
count	a positive integer (default: 0)
include_facets	boolean value
limit	the maximum number of items desired (default: 25, maximum: 100)
q	a string no longer than 512 characters
restrict_sr	boolean value
show	(optional) the string all
sort	one of (relevance, hot, top, new, comments)
sr_detail	(optional) expand subreddits
t	one of (hour, day, week, month, year, all)
type	(optional) comma-delimited list of result types (sr, link, user)

Authentication and rate limits

Authentication

[Page](#) [Discussion](#)

[Read](#) [View source](#) [View history](#) [☆](#)

Apps using the Wikimedia API should authenticate their requests using [OAuth 2.0](#). This provides a secure process for accessing Wikimedia resources and applies an app-specific rate limit. For a streamlined experience for evaluation and prototyping, you can authenticate using a personal [API token](#).

1. Create credentials

[Log in](#) with your Wikimedia account, and visit the [API keys dashboard](#). To create credentials, select **Create key**, and choose the **server-side app** option. After creating the key, you'll be shown a client ID and secret. Make sure to store these credentials securely before exiting the dialog.

Allow for different users to have access to different data/services

Rate limits

[Page](#) [Discussion](#)

[Read](#) [View source](#) [View history](#) [☆](#)

Rate limits restrict API calls to a set number of requests per hour based on the type of request. A 429 response code indicates that the applicable rate limit has been exceeded.

These limits only apply to APIs with `api.wikimedia.org` as the base URL. Rate limits may vary depending on the API; see the [API catalog](#) for the rate limits applicable to each API. For higher rate limits, check out [Wikimedia Enterprise](#).

Limit the number of requests per minute you can make

Anonymous requests

API requests without an access token are limited to 500 requests per hour per IP address.

Personal requests

API requests authenticated using a [personal API token](#) are limited to 5,000 requests per hour.



Usually wrappers exist

e.g. API for OpenAI

```
curl https://api.openai.com/v1/chat/completions \
-H "Authorization: Bearer $OPENAI_API_KEY" \
-H "Content-Type: application/json" \
-d '{ "model": "gpt-3.5-turbo", "messages": [{"role": "user", "content": "Say this is a test"}] }'
```

```
import os
from openai import OpenAI

client = OpenAI(
    # This is the default and can be omitted
    api_key=os.environ.get("OPENAI_API_KEY"),
)

chat_completion = client.chat.completions.create(
    messages=[
        {
            "role": "user",
            "content": "Say this is a test",
        }
    ],
    model="gpt-3.5-turbo",
)
```

Getting access to an API (e.g. Wikimedia)

1. Log in with your Wikimedia account

To log in to the API Portal, use the same account you use for Wikipedia and other Wikimedia projects. If you're new to Wikimedia (Welcome!), you can create a free account now.

[Log in](#) | [Create account](#)

 API key created

② Create a personal API token

Once you've logged in, visit [API keys](#) to create and manage your API credentials. Select **Create key**, and select the **Personal API token** option. This token is tied to your account. It should only be used by you and should not be published or shared. Remember to store your token in a secure place, like a password manager.

API keys

Client ID:
5be43a7d72ac8d8091c6eaecf

Client secret:
7cff841af8c82341d9b2df33fa6

Access token:
eyJ0eXAiOiJKV1QiLCJhbGciOiJIaWEI...
FjNmVhZWMyODViZmM1Zils
YTYxYjlwODY1ZDk4YzRhMz...
mE0liwiaWF0IjoxNzEzOTUyN...
XhwlijozMzl3MDg2MTI3OS4xI...
ldGEud2lraW1lZGlhLm9yZyls
MCwidW5pdCI6IkhpPVVlifSwic
RQUdnA-SIOQDMKmActEcns...
XgqNKPO_0H5Hala_50rbYY7
S-0-1-M1GDTBNU-6CAQ-7uA

3. Get today's featured article

For your first request, call the [featured content endpoint](#) to get today's featured article from English Wikipedia. Use your API token to authenticate the request.

curl Python PHP JavaScript

```
# Python 3
# Get today's featured article from English Wikipedia

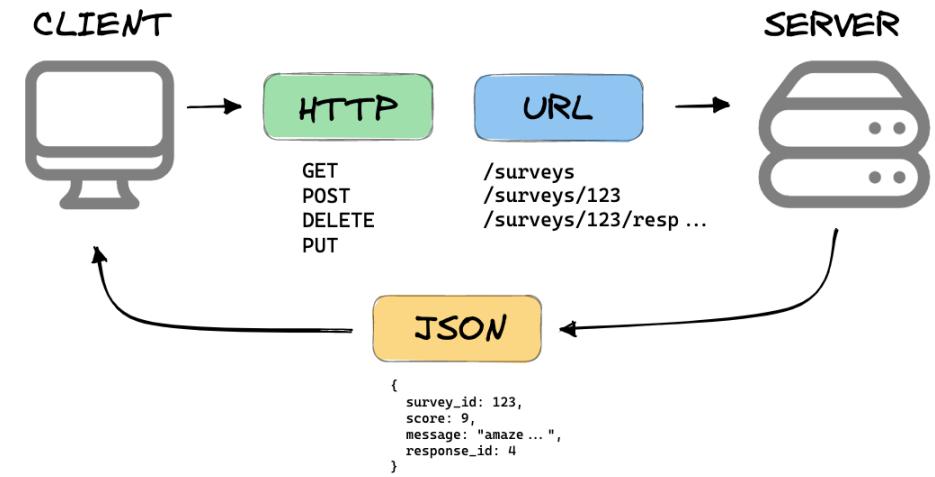
import datetime
import requests

today = datetime.datetime.now()
date = today.strftime('%Y/%m/%d')

url = 'https://api.wikimedia.org/feed/v1/wikipedia/en/featured/' + date

headers = {
    'Authorization': 'Bearer YOUR_ACCESS_TOKEN',
    'User-Agent': 'YOUR_APP_NAME (YOUR_EMAIL_OR_CONTACT_PAGE)'
}

response = requests.get(url, headers=headers)
data = response.json()
print(data)
```



Finding private APIs

(Don't hack. be nice and respect robots.txt/ToS/copyright)

The screenshot shows the official website of Universiteit Utrecht. At the top left is the university's logo and name. A navigation bar below it includes links for 'Medewerkers' and 'Organogram'. The main content area features a large photograph of a modern university interior with people walking and working. Overlaid on this is a yellow search bar containing the text 'Zoek een medewerker'. To the right of the search bar is a search results panel. The search term 'jav' has been entered into a search input field. Below the input field, a list of names is displayed, each preceded by a small profile picture. The names listed are: prof. dr. Javier Couso Salas, dr. Javanshir Fouladvand, dr. Javier Garcia Bernardo, Javier Iturrino Guerrero, Komar Javanmardi, A. (Ali) Javed, dr. ing. J. (Javier) Sastre Torano, and Javier Subils. On the far right of the search results panel, there is a link labeled 'Uitloggen' and a thumbnail image of a library shelf filled with books.

Universiteit
Utrecht

Medewerkers Organogram

Zoek een medewerker

jav

prof. dr. Javier Couso Salas

dr. Javanshir Fouladvand

dr. Javier Garcia Bernardo

Javier Iturrino Guerrero

Komar Javanmardi

A. (Ali) Javed

dr. ing. J. (Javier) Sastre Torano

Javier Subils

Uitloggen

English

Finding private APIs

(Don't hack. be nice and respect robots.txt/ToS/copyright)

The screenshot shows a web browser displaying a search results page for "medewerker:jav" on the website <https://www.uu.nl/medewerkers/Zoek?medewerker=jav>. The results list several employees, including their names, IDs, and contact information. The browser's developer tools Network tab is open, showing the JSON response for one of the search requests.

Network Tab:

Status	Method	Domain	File	Initiator	Type	Transferred	Size
200	GET	www.uu.nl	GetFooterLinks?l=NL	chunk-vendors.b0f3...	json	2,01 kB	1,7...
200	GET	www.uu.nl	search?expression=(%22medewerker%22%3A%22jav%22)%26t=7adc477ab8014ae5	chunk-vendors.b0f3...	json	6,65 kB	6,3...

Response Headers:

- cache-control: private
- content-length: 6358
- content-type: application/json; charset=utf-8
- date: Tue, 10 Sep 2024 13:44:50 GMT
- server: Microsoft-IIS/10.0
- strict-transport-security: max-age=31536000; includeSubDomains; preload
- X-Firefox-Spdy: h2
- x-frame-options: SAMEORIGIN

Response Body (Raw):

```
Count: 8
Departments: []
Employees: [
    {
        "Email": "j.a.cousosalas@uu.nl",
        "Id": 37734,
        "Name": "prof. dr. Javier Couso Salas",
        ...
    },
    {
        "Id": 62122,
        "Name": "dr. Javanshir Fouladvand",
        "Url": "JFouladvand",
        ...
    },
    {
        "Bio": "Assistant professor at Utrecht University in the Social Data Science (SoDa) team.",
        "Email": "j.garciabernardo@uu.nl",
        "Id": 62185,
        ...
    },
    {
        "Bio": "PhD Candidate. PhD Candidate Researching the metropolitan mobility system through active sustainable mobility by bicycle in Barcelona, Seville and Valencia.",
        "Id": 80174,
        "Name": "Javier Iturriño Guerrero",
        ...
    },
    {
        "Bio": "PhD candidate",
        "Id": 71088,
        "Name": "Komar Javanmardi",
        ...
    },
    {
        "Id": 80449,
        "Name": "A. (Ali) Javed",
        "Url": "AJaved",
        ...
    },
    {
        "Bio": "Analytical chemist at the Chemical Biology and Drug Discovery group, Utrecht University",
        "Email": "j.sastretorano@uu.nl",
        "Id": 9430,
        ...
    },
    {
        "Email": "j.gomezsubils@uu.nl",
        "Id": 73591,
        "Name": "Javier Subils",
        ...
    }
]
Expertises: []
FocusAreas: []
Groups: []
Positions: []
Sections: []
Skills: []
```

API world (before ~2020)



Offering to Bacchus, 1720 (Michel-Ange Houasse)

APIcalypse

(Bruns, 2021)

2015: LinkedIn

Reason: Privacy/competition

2015/8: Facebook/Instagram

Reason: Improve privacy

2023: Twitter

Reason: Monetize data access (Musk)

2023: Reddit

Reason: Monetize data access

2024: CrowdTangle (Meta)

Reason: Control over data



The Raft of the Medusa, 1818–19 (Théodore Géricault)

Is it all lost? Digital Services Act (DSA)

19 October 2022

Who needs to provide data: Very large online platforms and very large online search engines

In which cases: Detection, identification and understanding of systemic risk (e.g., disinformation, harms).

Track 1: Public Data (Art. 40.12)

Platforms must give access to **publicly accessible data**

Track 2: Non-Public Data (Art. 40.4 & 40.8)

Access only for "**vetted researchers**."

Platforms must provide requested **non-public data** within a reasonable period.



Researcher access

Last updated: 1 year ago

As of August 2023, we offer a [Beta] Researcher Access Program in order to meet our legal requirements under the European Union's Digital Services Act (DSA). Specifically, Article 40(12) of the DSA requires that we make available to qualified researchers, upon application, data that is publicly accessible on LinkedIn, so long as the following conditions are satisfied:

- Researchers must be independent from commercial interests.
- The researcher's application must disclose the funding of the research

Digital Services Act (DSA)

19 October 2022



EN English

Search

Search

[Home](#) > [Press corner](#) > [Commission opens formal proceedings under DSA](#)

Available languages: English ▾

PRESS RELEASE | 30 April 2024 | Brussels | 6 min read

Commission opens formal proceedings against Facebook and Instagram under the Digital Services Act

PRESS RELEASE | 19 February 2024 | Brussels | 3 min read

Commission opens formal proceedings against TikTok under the Digital Services Act

PRESS RELEASE | 18 December 2023 | Brussels | 4 min read

Commission opens formal proceedings against X under the Digital Services Act

PRESS RELEASE | 14 March 2024 | Brussels | 3 min read

Commission opens formal proceedings against AliExpress under the Digital Services Act

Mechanism Description	Interface	Who has access?	Application required	Data Dictionary /Docu...
AliExpress Open Research & Transparency	The mechanism description URL suggest...	Academic and civil society researchers as describ...	Yes	No
Booking.com Scraping Provision1	API "as applicable" (suggesting other met...	Anyone scraping for non-commercial purposes	No	No
Bing Qualified Researcher Program	API "as applicable" (suggesting other met...	Academic and civil society researchers as describ...	Yes	No
Google Request Records	Varies, see below:	Researchers affiliated with EU-based organizations	Yes	No
LinkedIn Researcher Access	API "as applicable" (suggesting other met...	Academic and civil society researchers as describ...	Yes	No
Meta Content Library and API	Searchable user interface and API provid...	To be eligible for product access, researchers mu...	Yes	Yes
Pinterest Researchers Intake		"If you're a researcher"	Yes	No
Reddit Researcher Access Request	Commercial API	Researchers accessing data for non- commercial ...	Yes	Yes
Snap Researcher Data Access		Requests are "in accordance with the Digital Servi...	Yes	No
TikTok Research API	API	Researchers from US and Europe	Yes	Yes
Wikipedia Tools	Scraping and a set of APIs	Public	No	Yes
X (formerly Twitter) API	Commercial API	Different levels of access on the basis of fees and...	Yes	Yes
YouTube Researcher Program	Commercial API	Must be affiliated with an "eligible academic instit...	Yes	Yes

Advantages and Disadvantages of APIs

Advantages for the company (providing the API):

- Track data usage
- Security and authentication: The company can control who gets access to their data by requiring API keys and user authentication.
- Rate limits: The company can limit how many requests are made to the API (e.g., a maximum number of requests per minute) to prevent abuse and ensure their servers aren't overwhelmed.

Advantages for you (the user of the API):

- Ease of use: they are documented and often have Python/R packages
- No legal concerns (as long as you don't bypass the API's technical restrictions)

Disadvantages for you:

- Limited data access: Only public data, or data where individuals cannot be identified
- Data availability: The data you want may not be available (e.g. Facebook) or be very expensive (e.g. Twitter)

Collaboration with companies

Meta/Facebook case

SOCIAL SCIENCE ONE

Hosted by Harvard's Institute for Quantitative Social Science

BLOG CONTACT US

Building Industry-Academic Partnerships



Projects must be focused on the effects of social media on democracy and elections.

RFP for URL Shares

This is a codebook for data on the demographics of people who viewed, shared, and otherwise interacted with web pages (URLs) shared on Facebook. The data has about 68 million URLs, over 3.1 trillion rows, and over 71 trillion cell values. It results from a collaboration between Facebook and Social Science One (at IQSS at Harvard), originally prepared for Social Science One grantees and describes the "full" URLs dataset, including its scope, structure, and fields. This is version 10 of the codebook and data (released 4/13/2023), first described by Gary King and Nathaniel Persily at <https://socialscience.one/blog/update-social-science-one> (2023).

Aggregated data available directly

FACEBOOK

Accessible data includes posts shared to and information about Pages, groups and events, as well as a subset of public profiles that have a [verified badge](#) or 25,000 or more followers.

GEOGRAPHICAL DATA

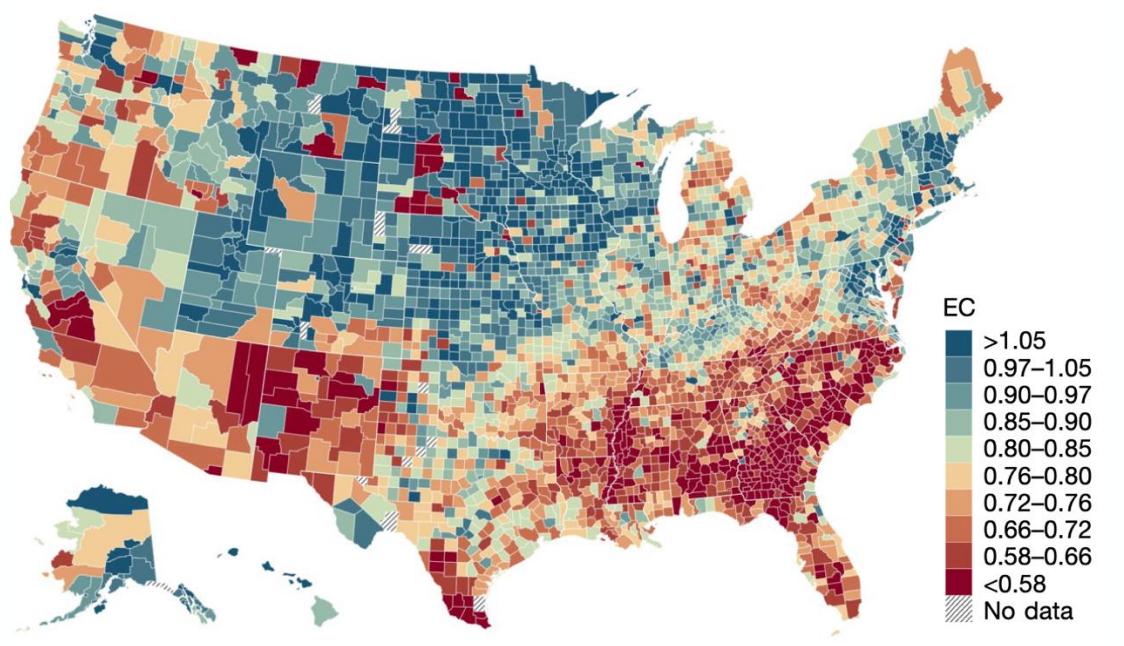
Data is available for most countries and territories but excluded from countries where Meta is still evaluating legal and compliance requirements.

INSTAGRAM

Accessible data includes posts shared by and information about business and creator accounts, as well as a subset of personal accounts that have been [set to public](#) and have a [verified badge](#) or 25,000 or more followers.

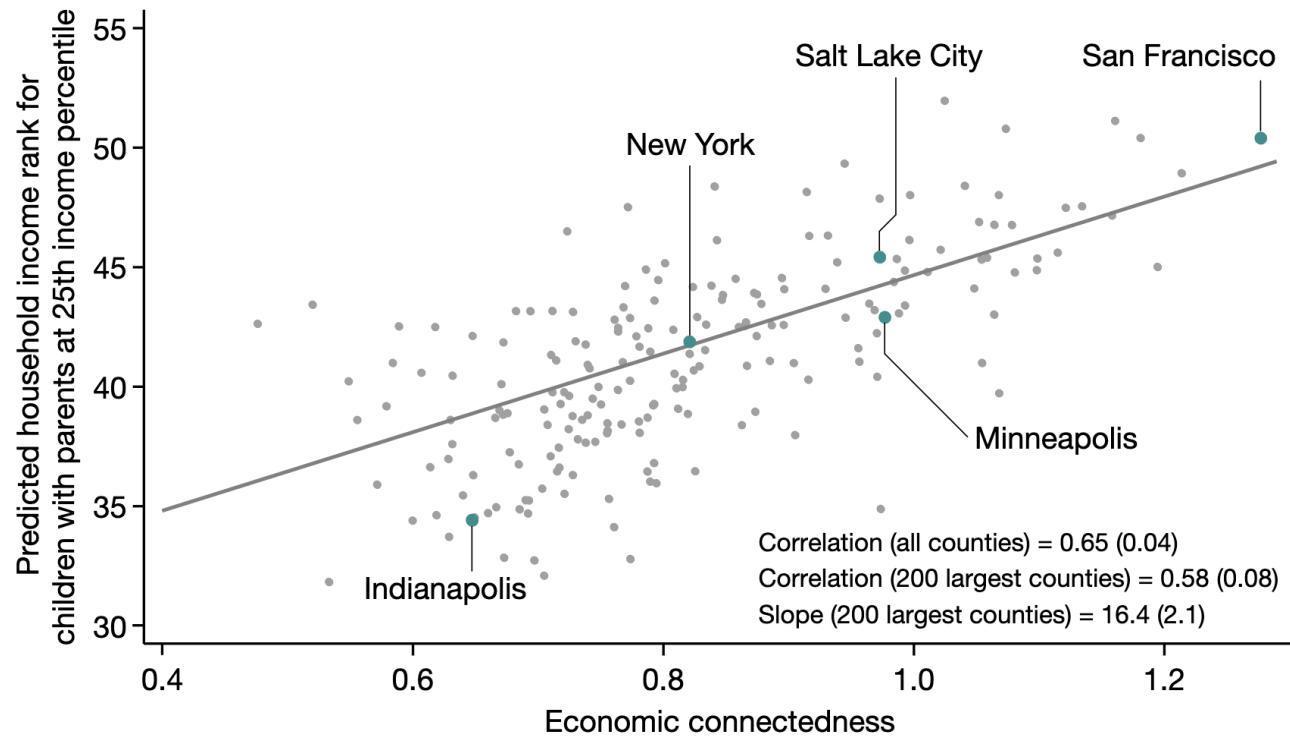
POST VIEW DATA

The post views metric indicates the number of times a post or reel was displayed on screen.



EC

- >1.05
- 0.97–1.05
- 0.90–0.97
- 0.85–0.90
- 0.80–0.85
- 0.76–0.80
- 0.72–0.76
- 0.66–0.72
- 0.58–0.66
- <0.58
- No data





15 min break

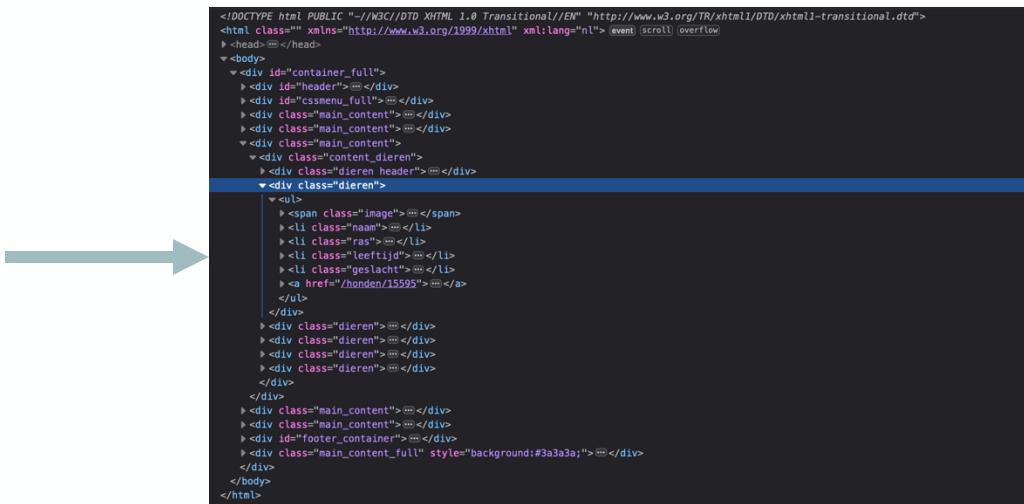
Web Scraping

What is web scraping?

Extracting data from the web in an automatic manner

Naam	Ras	Leeftijd	Geslacht	
	Tibbe	Kruising doodle	Volwassen	Reu
				<button>Beschikbaar</button>
	Pepper	Boerboel	Volwassen	Reu
				<button>Beschikbaar</button>
	Pepper	Amerikaanse Bulldog	Volwassen	Teef
				<button>Beschikbaar</button>
	Rocky	jack russel terriër	Volwassen	Reu
				<button>Geplaatst</button>
	Dexx	Kruising	Volwassen	Reu
				<button>Beschikbaar</button>
	Poppy	Kruising	Volwassen	Teef
				<button>Beschikbaar</button>

Start with a website you can legally scrape



The diagram illustrates the process of web scraping. It starts with a screenshot of a website displaying a list of dogs with their names, breeds, ages, genders, and availability status ('Beschikbaar' or 'Geplaatst'). An arrow points from this table to a block of raw HTML code representing the website's structure. Another arrow points from the HTML code to a large blue icon of a house with the word 'CSV' at its base, representing the final output format.

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="nl"> event scroll overflow
<head> ... </head>
<body>
  <div id="container_full">
    <div id="header"> ... </div>
    <div id="cssmenu_full"> ... </div>
    <div class="main_content"> ... </div>
    <div class="main_content"> ... </div>
    <div class="main_content">
      <div class="content_dieren">
        <div class="dieren_header"> ... </div>
        <div class="dieren">
          <ul>
            <li><span class="image"> ... </span>
            <li class="naam"> ... </li>
            <li class="ras"> ... </li>
            <li class="leeftijd"> ... </li>
            <li class="geslacht"> ... </li>
            <a href="/honden/15595"> ... </a>
          </ul>
        </div>
        <div class="dieren"> ... </div>
        <div class="dieren"> ... </div>
        <div class="dieren"> ... </div>
      </div>
    </div>
    <div class="main_content"> ... </div>
    <div class="main_content"> ... </div>
    <div id="footer_container"> ... </div>
    <div class="main_content_full" style="background:#3a3a3a;"> ... </div>
  </div>
</body>
</html>
```

1. Download the HTML code of the website

2. Parse the HTML

How Censorship in China Allows Government Criticism but Silences Collective Expression

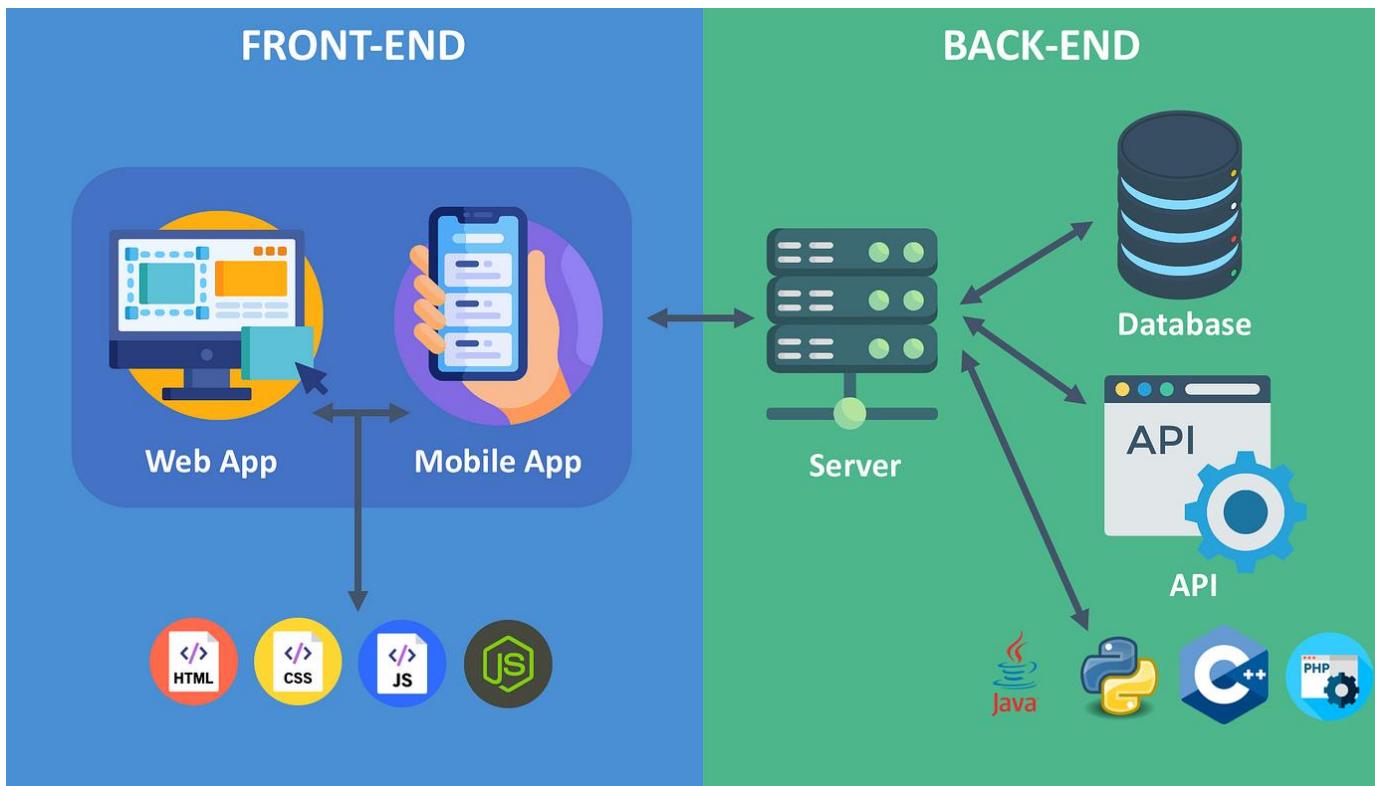
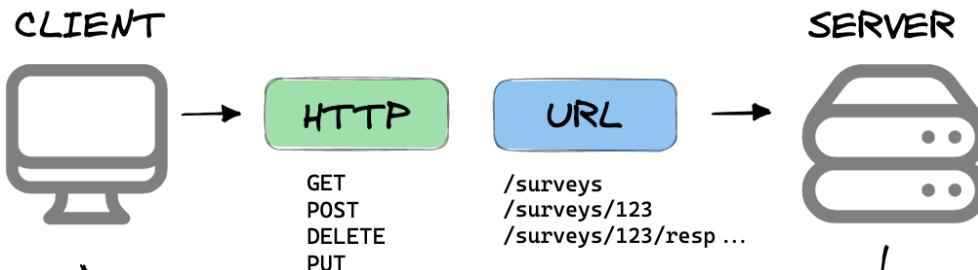
GARY KING *Harvard University*

JENNIFER PAN *Harvard University*

MARGARET E. ROBERTS *Harvard University*

We offer the first large scale, multiple source analysis of the outcome of what may be the most extensive effort to selectively censor human expression ever implemented. To do this, we have devised a system to locate, download, and analyze the content of millions of social media posts originating from nearly 1,400 different social media services all over China before the Chinese government is able to find, evaluate, and censor (i.e., remove from the Internet) the subset they deem objectionable. Using modern computer-assisted text analytic methods that we adapt to and validate in the Chinese language, we compare the substantive content of posts censored to those not censored over time in each of 85 topic areas. Contrary to previous understandings, posts with negative, even vitriolic, criticism of the state, its leaders, and its policies are not more likely to be censored. Instead, we show that the censorship program is aimed at curtailing collective action by silencing comments that represent, reinforce, or spur social mobilization, regardless of content. Censorship is oriented toward attempting to forestall collective activities that are occurring now or may occur in the future—and, as such, seem to clearly expose government intent.

Web pages

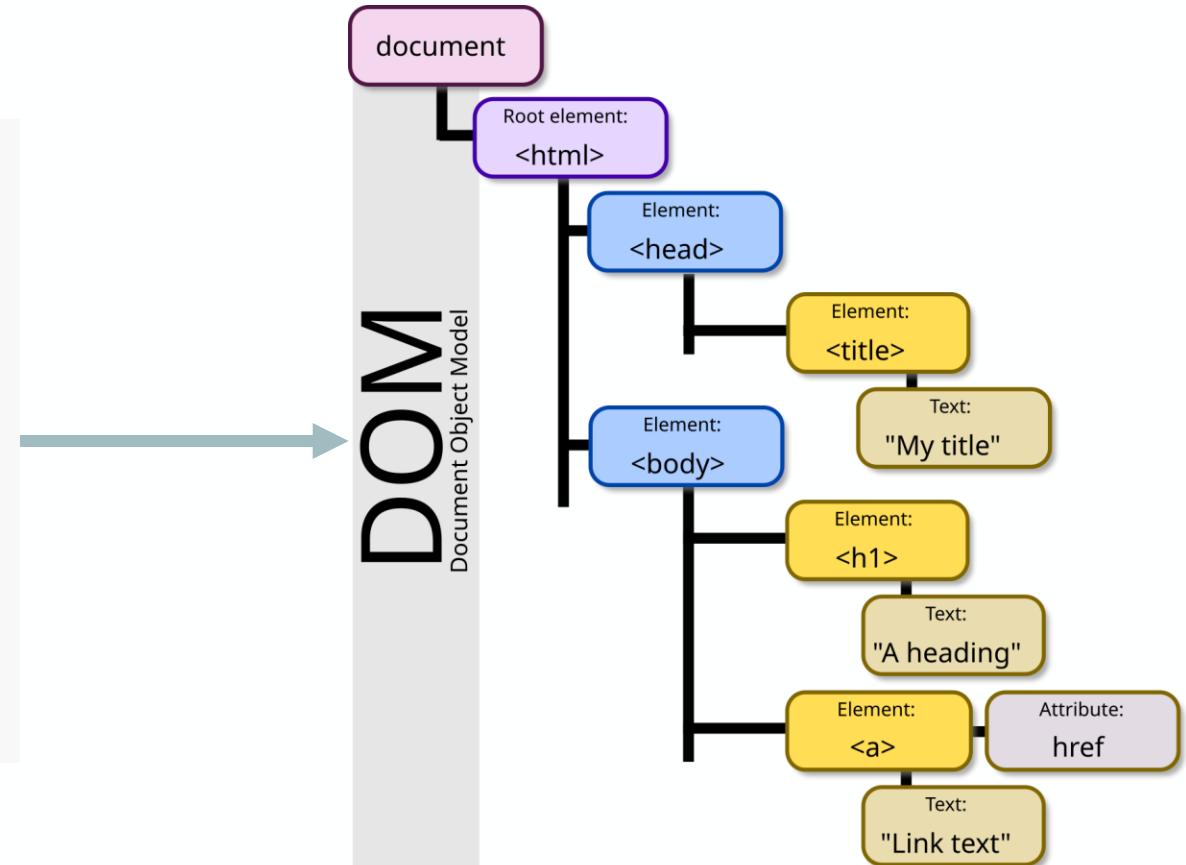


- **HTML** (HyperText Markup Language): The skeleton of a website, containing the sections and text.
- **CSS** (Cascading Style Sheets): Makes it pretty by adding styles and colors.
- **JS** (JavaScript): Brings complex interactivity and logic to the website

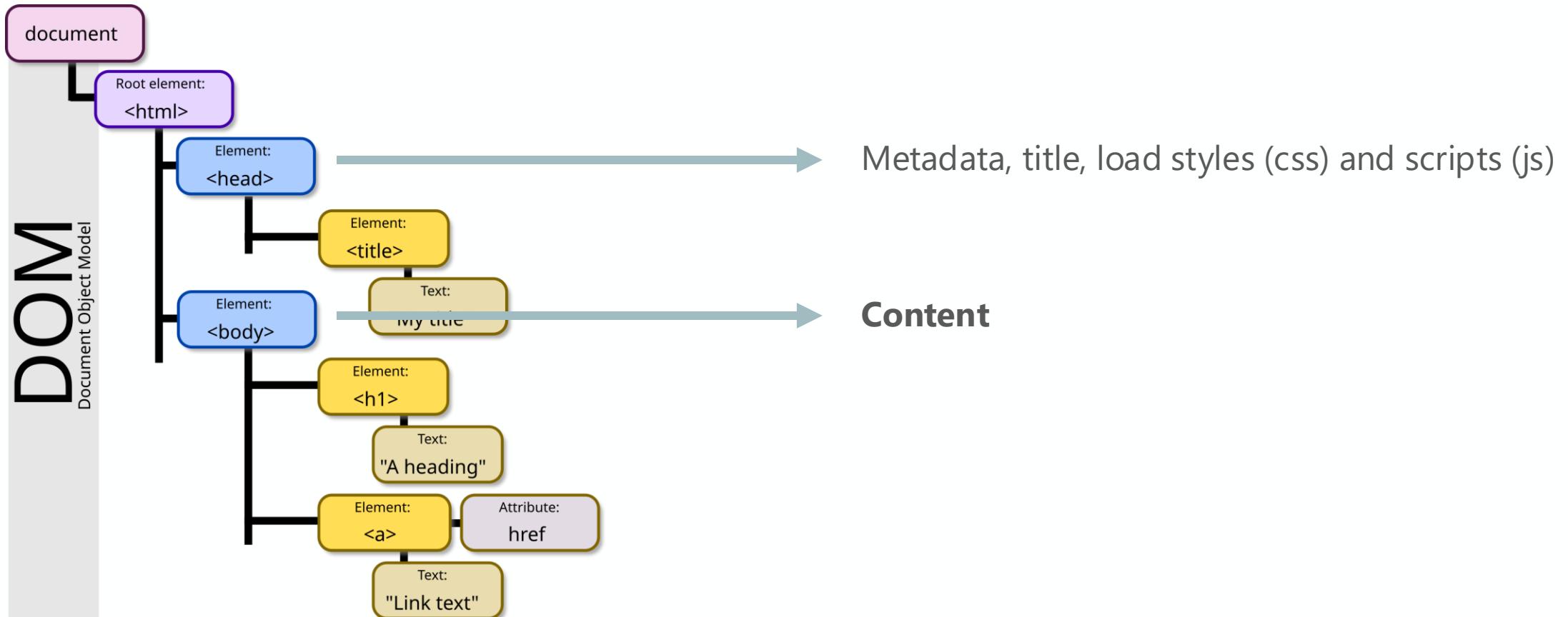
Document Object Model (DOM)

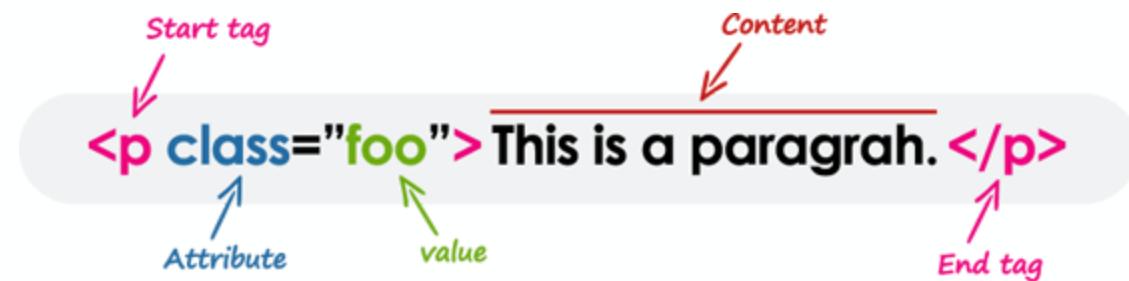
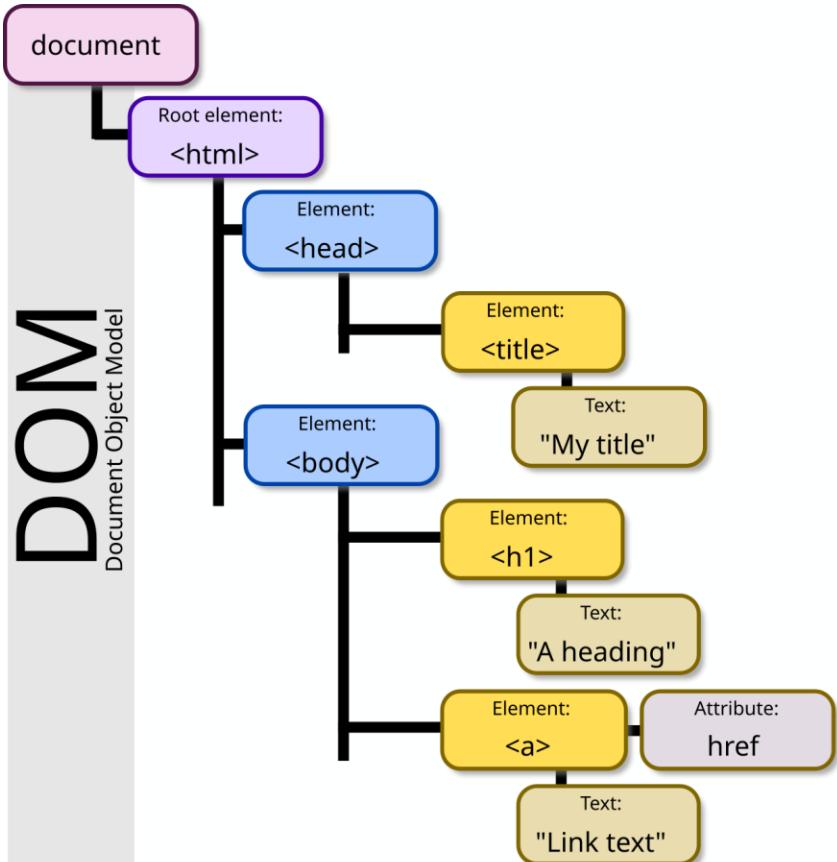
Represents the HTML code as a tree so that code (JavaScript, or other tools) can interact with it.

```
<html>
  <head>
    <title>My Website</title>
  </head>
  <body>
    <h1>Welcome</h1>
    <p>This is my website.</p>
  </body>
</html>
```



Document Object Model (DOM)





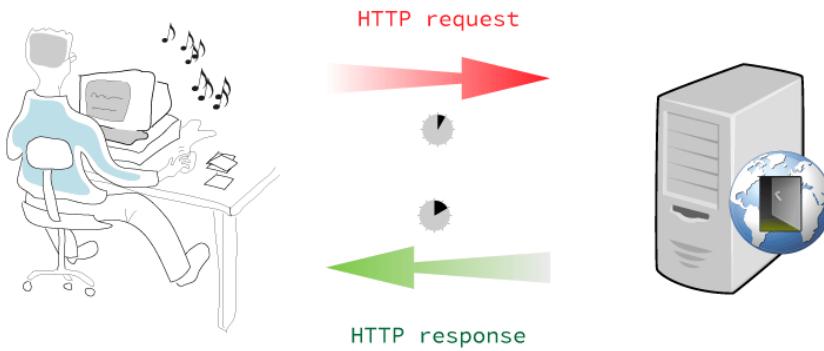
Elements (tags):

- div: basic container (a section)
- a: link to a url
- p: paragraph
- h1-h6: titles
- img: image
- table: table

Attributes:

- id: unique of the element
- class: set the style/interactivity for multiple elements
- href: url
- ...

Scraping static websites



<https://about.gitlab.com/blog/2016/06/03/ssg-overview-gitlab-pages-part-1-dynamic-x-static/>

Naam	Ras	Leeftijd	Geslacht	
	Tibbe Kruising doodle	Volwassen	Reu	<button>Beschikbaar</button>
	Pepper Boerboel	Volwassen	Reu	<button>Beschikbaar</button>
	Pepper Amerikaanse Bulldog	Volwassen	Teef	<button>Beschikbaar</button>
	Rocky jack russel terrier	Volwassen	Reu	<button>Geplaatst</button>
	Dexx Kruising	Volwassen	Reu	<button>Beschikbaar</button>
	Poppy Kruising	Volwassen	Teef	<button>Beschikbaar</button>

<https://www.dierenasielutrecht.nl/honden/>

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0
<html class="" xmlns="http://www.w3.org/1999/
  > <head> ...
  > </head>
  > <body>
    >   <div id="container_full">
      >     <div id="header"> ...
      >     <div id="cssmenu_full"> ...
      >     <div class="main_content"> ...
      >     <div class="main_content"> ...
      >   <div class="main_content">
        >     <div class="content_dieren">
          >       <div class="dieren_header"> ...
          >       <div class="dieren">
            >         <ul>
              >           <span class="image"> ...
              >           <li class="naam"> ...
              >           <li class="ras"> ...
              >           <li class="leeftijd"> ...
              >           <li class="geslacht"> ...
              >           <a href="/honden/15595"> ...
              >         </ul>
            >       </div>
          >     <div class="dieren"> ...
          >     <div class="dieren"> ...
          >     <div class="dieren"> ...
          >     <div class="dieren"> ...
            >   </div>
          > </div>
        >   <div class="main_content"> ...
        >   <div class="main_content"> ...
        >   <div id="footer_container"> ...
        >   <div class="main_content_full" style="background:#3a3a3a;">
        >     </div>
      >   </body>
    > </html>
```

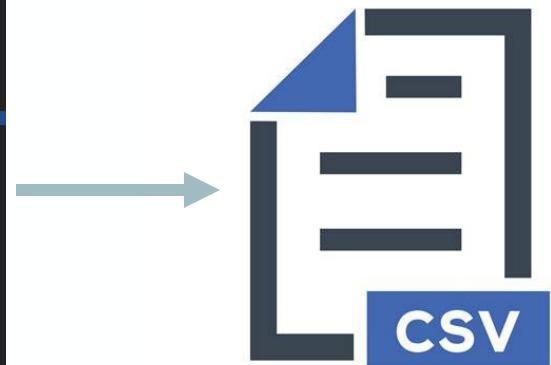
Naam	Ras	Leeftijd	Geslacht
 Tibbe	Kruising doodle	Volwassen	Reu
 Pepper	Boerboel	Volwassen	Reu

```
▼<div class="dieren">
  ▼<ul>
    ►<span class="image">□</span>
    ▼<li class="naam">
      <span>Naam:</span>
      Tibbe
    </li>
    ▼<li class="ras">
      <span>Ras:</span>
      Kruising doodle
    </li>
    ▼<li class="leeftijd">
      <span>Leeftijd:</span>
      Volwassen
    </li>
    ▼<li class="geslacht">
      <span>Geslacht:</span>
      Reu
    </li>
    ▼<a href="/honden/15680">
      ►<li class="status beschikbaar">□</li>
    </a>
  </ul>
</div>
```

Naam	Ras	Leeftijd	Geslacht	
Tibbe	Kruising doodle	Volwassen	Reu	Beschikbaar
Pepper	Boerboel	Volwassen	Reu	Beschikbaar
Pepper	Amerikaanse Bulldog	Volwassen	Teef	Beschikbaar
Rocky	jack russel terriér	Volwassen	Reu	Geplaatst
Dexx	Kruising	Volwassen	Reu	Beschikbaar
Poppy	Kruising	Volwassen	Teef	Beschikbaar



```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html class="" xmlns="http://www.w3.org/1999/xhtml" xml:lang="nl"> event scroll() overflow
  <head></head>
  <body>
    <div id="container_full">
      <div id="header"></div>
      <div id="cssmenu_full"></div>
      <div class="main_content"></div>
      <div class="main_content"></div>
      <div class="content_dieren">
        <div class="dieren_header"></div>
      </div>
      <div class="dieren">
        <span class="image"></span>
        <ul class="naam">
          <li class="naam"></li>
          <li class="ras"></li>
          <li class="leeftijd"></li>
          <li class="geslacht"></li>
          <a href="#">honden/15595</a>
        </ul>
      </div>
      <div class="dieren"></div>
      <div class="dieren"></div>
      <div class="dieren"></div>
      <div class="dieren"></div>
    </div>
    <div class="main_content"></div>
    <div class="main_content"></div>
    <div id="footer_container"></div>
    <div class="main_content_full" style="background:#3a3a3a;"></div>
  </body>
</html>
```



Start with a website you can legally scrape

1. Download the HTML code of the website

2. Parse the HTML

1. Download the HTML code of the website (usually easy)

```
import requests
r = requests.get("https://www.dierenasielutrecht.nl/honden/")
print(r.status_code)
print(r.text)

200
<!DOCTYPE HTML PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="nl">
<head>
  <title>Honden - Dierenasiel Utrecht</title>
  <meta name="author" content="Dierenasiel, Utrecht" />
  <meta http-equiv="content-type" content="text/html; charset=utf-8" />
  <meta http-equiv="content-script-type" content="text/javascript" />
  <meta http-equiv="content-style-type" content="text/css" />
  <meta name="viewport" content="width=device-width, initial-scale=1.0" />
```

2. Parse the HTML (prone to errors)

```
import bs4
html = bs4.BeautifulSoup(r.text)
html.find_all("li", attrs={"class": "naam"})

[<li class="naam">Naam</li>,
 <li class="naam"><span>Naam:</span>Tibbe</li>,
 <li class="naam"><span>Naam:</span>Pepper </li>,
 <li class="naam"><span>Naam:</span>Pepper</li>,
 <li class="naam"><span>Naam:</span>Dexx</li>,
 <li class="naam"><span>Naam:</span>Poppy</li>]
```

Exercise (in pairs)

What HTML element contains the date when the dog was added?

What element/attribute would you need to select to extract the image?



Milo

IJMUIDEN 18-09-2024

```
▼ <a class="animal-card-grid" target="_blank" href="/plaatsprofiel/189022-adoptiehond-zoekt-baasje-griekse-berghondbeagle-ijmuiden/"> event grid
  ▼ <div class="card-image">
    
      event
    </div>
  ▼ <div>
    ▼ <div class="card-header">
      ▼ <div class="align-items-center">
        <h3 class="font-size-subtitle text-dark">Milo</h3>
      </div>
    </div>
    ▼ <div class="card-body">
      ▼ <div class="d-flex justify-content-between align-items-center"> flex
        ▼ <div>
          <label class="font-family-system">IJmuiden</label>
          <span class="text-truncate text-gray-light">18-09-2024</span>
        </div>
        <div class="text-gray-light small"></div>
```

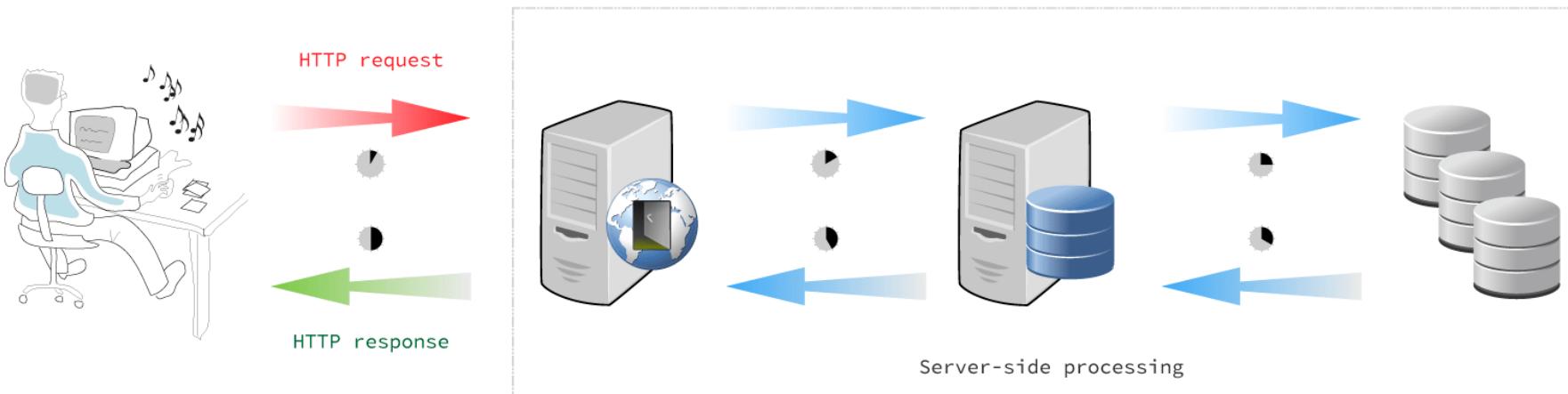
<https://verhuisdieren.nl/honden/adoptiehonden/>

Scraping dynamic Websites

Content is fetched with API requests instead of coming all at once in the initial HTML.
You interact with the HTML, not with the APIs directly! (unless you reverse engineer them)

Examples:

- **Infinite scroll**: new content loads automatically as you scroll (e.g., Twitter, Instagram).
- **Partial updates**: parts of the page change without a full reload (e.g., clicking “like” updates the counter instantly).



<https://about.gitlab.com/blog/2016/06/03/ssg-overview-gitlab-pages-part-1-dynamic-x-static/>

A photograph of a man with dark hair and a beard, wearing a light blue button-down shirt and dark trousers, standing outdoors against a large, textured rock wall. He has his hands clasped in front of him. To his right, an orangutan sits on a large, light-colored rock, facing towards the left. The orangutan's fur is a vibrant reddish-orange color. The background shows more of the rocky terrain.

Your scraper

How to scrape websites practically?

Programming:

- Static websites: *requests* + *beautifulsoup (bs4)*
- Dynamic websites: *selenium*

Web browser extensions (this afternoon):

- Click on elements
- The software figures it out by itself
- Not as flexible or fast

Advantages and Disadvantages of Scraping

Advantages for the company (the website being scraped):

- No need to provide an API

Disadvantage for the company:

- Loss of control over data, potential legal problems

Advantages for you (the person scraping the data):

- Access to public data: You can collect and analyze any data that is publicly available on the website, even if the site doesn't offer an API for it.

Disadvantages for you:

- Limited to public data: You can only scrape data that is publicly visible--not behind logins/paywalls
- It is usually hard!
 - Technical challenges: Especially if the website actively tries to prevent scraping (e.g. captchas) or if the website's structure changes.
 - Inconsistent data: Scrapped data is often messy/inconsistent.
- Legal challenges: Many websites explicitly forbid web scraping. It is legally complex.

Legality of APIs/web scraping

Different levels (specific for web scraping/APIs)

robots.txt

- Used to communicate what parts of a website should or should not be accessed
- Not legally binding, but please respect them unless you have a good reason not to!

Terms of Service

- Legal agreements that define how a user or a scraper are allowed to interact with a website
- Only enforceable if the user clicks "I agree" (e.g. by creating an account, or through a pop-up)
- Can have serious legal consequences, especially if the user bypasses authentication to download data (e.g. creates fake account to access data, rotates IPs, scrapes data in bulk from an institutional account, etc).
- Some companies (LinkedIn, Meta) have already won legal battles against scraping for commercial purposes.



Aaron Swartz



Robots.txt

← → ⌂



https://nos.nl/robots.txt

```
# www.robotstxt.org/
# www.google.com/support/webmasters/bin/answer.py?hl=en&answer=156449
```

```
User-agent: GPTBot
Disallow: /
```

```
User-agent: *
Disallow: /hybrid/
Disallow: /humans.txt
Disallow: /api
Disallow: /zoeken
```

```
Sitemap: https://nos.nl/sitemap/index.xml
```

Terms of Service

App/Service	Word Count	How many minutes to read? (240 wpm)
Microsoft	15,260	63.5
Spotify	8,600	35.8
Niantic (Pokemon Go)	8,466	35.2
TikTok	7,459	31.4
Apple (Media Services)	7,314	30.5
Zoom	6,891	28.7
Tinder	6,215	25.9
Slack	5,782	24.1
Uber	5,658	23.6
Twitter	5,633	23.5

<https://www.visualcapitalist.com/terms-of-service-visualizing-the-length-of-internet-agreements/>

More regulations (EU)

Database Directive (Directive 96/9/EC)

- Databases are protected products
- Non-commercial scientific research is exempted (with caveats)

Copyright law

- The copyright of created materials can lie with the user (e.g. Reddit) or the platform (e.g TikTok)
- Personal data cannot be protected by copyright

DSM Directive (Digital Copyright Directive, directive 2019/790)

- Exemptions for text and data mining: Researchers are allowed to mine data (like Reddit posts) for non-commercial research purposes, even without permission from the rightsholder, but only if the data is *lawfully accessed* (e.g. not hacking)
- Any contractual provision (e.g. ToS) contrary to the directive is unenforceable

Privacy regulations: GDPR

Last week:

- GDPR enables data donation (rights of access and data portability)
- *Personal data*: Information relating to an identified or identifiable natural person.
- *Data controller*: The person or organization responsible for processing personal data.

If you collect personal data, you become a data controller!

GDPR Principles in Data Collection for Research

Lawfulness, Fairness, and Transparency

- This is key! Collect data only with a **legal basis** (explicit *informed consent* OR *legitimate interest* that outweighs privacy risk to individuals)

Purpose limitation, data minimization and storage limitation

- Data must be collected for specific, explicit and legitimate purposes
- Collect only the data that is strictly necessary
- Retain personal data only for as long as needed.

Accuracy, security and accountability

- Ensure data is accurate and kept up to date.
- Provide individuals the right to access, correct, and delete their data.
- Safeguard personal data with appropriate security measures.

Sensitive personal data (extra protected): Genetic, biometric, health, racial or ethnic origin, political opinions, religious or ideological convictions, trade union memberships.

Anonymization and Pseudonymization

GDPR only applies to personal data.

Anonymization means data is processed so individuals cannot be identified, even with additional information.

- *Example:* Removing names, birthdates, and any other identifiable information from a dataset, leaving only aggregated statistics.
- Anonymized data is not personal data and GDPR does not apply

Pseudonymization involves replacing identifying information (e.g., names) with fake identifiers, but the data can still be linked back to individuals with additional information.

- Pseudoanonymized data is personal data.
- You should still do it when full anonymization is not possible (it still reduces risks)

It is your responsibility as data collector to handle the data appropriately

Personal data

Person	Country of Origin	Grade
Emma Kelwick	Netherlands	92
Jonah Merrick	Netherlands	88
Lila Ravenswood	Netherlands	95
Ethan Broderick	Netherlands	89
Ava Thornhill	Netherlands	94
Lucas Fairmont	Germany	87
Nora Windrow	South Africa	90
Caleb Durnford	Netherlands	85
Isla Hargrave	Netherlands	91
Mason Larkspur	Netherlands	93

Pseudoanonymization. Is this personal data?

Person	Country of Origin	Grade
Person 1	Netherlands	92
Person 2	Netherlands	88
Person 3	Netherlands	95
Person 4	Netherlands	89
Person 5	Netherlands	94
Person 6	Germany	87
Person 7	South Africa	90
Person 8	Netherlands	85
Person 9	Netherlands	91
Person 10	Netherlands	93

Is this personal data?

Country of Origin	Grade
Netherlands	92
Netherlands	88
Netherlands	95
Netherlands	89
Netherlands	94
Germany	87
South Africa	90
Netherlands	85
Netherlands	91
Netherlands	93

Clearview AI gets another EU fine

↗ Share

By Pieter Cranenbroek, Editor at LinkedIn News

Updated 6 days ago 

The Dutch Data Protection Authority has fined Clearview AI €30.5m for violating European privacy law. According to the Dutch authority, the facial recognition company **illegally maintains a database** of billions of photos, which were taken from the internet without the knowledge or consent of the people in question. If the US company does not change the way it operates, a penalty of up to €5m could be added on top of the fine. Clearview AI said the decision was "**unlawful**" as it does not have a place of business or customers in the EU. The data watchdog is also investigating whether the company's directors can be held **personally liable** for failing to take action despite previous fines from other authorities.

- Clearview AI has now been **fined a total of €90.5m in the EU** as authorities in France, Italy and Greece previously found the company in breach of data protection regulations.

Ethics?



Let's talk about it in 3 weeks!

Different definition of what is important (morality? consequences?)

Four guiding principles:

- **Respect for Persons:** Respect autonomy: receive informed consent if possible.
- **Beneficence:** Do no harm and maximize the benefit/risk ratio
- **Justice:** Ensure the risks and benefits of research are distributed fairly
- **Respect for law and public interest:** Include all relevant stakeholders

Experimental evidence of massive-scale emotional contagion through social networks

Adam D. I. Kramer , Jamie E. Guillory, and Jeffrey T. Hancock [Authors Info & Affiliations](#)

Edited by Susan T. Fiske, Princeton University, Princeton, NJ, and approved March 25, 2014 (received for review October 23, 2013)

June 2, 2014 | 111 (24) 8788-8790 | <https://doi.org/10.1073/pnas.1320040111>

When positive expressions were reduced, people produced fewer positive posts and more negative posts

The authors noted in their paper, “[The work] was consistent with Facebook’s Data Use Policy, to which all users agree prior to creating an account on Facebook, constituting informed consent for this research.”

Exercise (in pairs)

We are interested in detecting how implicit racism/sexism/classism on LinkedIn leads to inequalities in job acquisition.

Below is an excerpt from the ToS of LinkedIn.

- Could we log-in in our account and scrape photos and interactions between people?
- Could we create fake accounts to scrape photos and interactions between people?
- Could we scrape the information publicly available on Google?
- Could we use a plugin that downloads the data that we see in our personal account?

What would we need to do to be compliant with GDPR?

Customer agrees that it will not:

- Except as expressly authorized by LinkedIn in writing, use any automated means or form of scraping or data extraction to access, modify, download, query or otherwise collect information from LinkedIn's websites; or

	API Data	Web Scraping	Data Donations	Tracking (plugins)
User- vs. platform centrality				
Definition				
Time frame of collected data				
Types of data				
Robots.txt applies				
Terms of Service apply				
GDPR applies				
Consent of participants				
Potential for reactivity/ social desirability biases				
Level of gathered content				
Privacy risks in the collection of personally identifiable information				
Main advantages				
Main challenges				

	API Data	Web Scraping	Data Donations	Tracking (plugins)
User- vs. platform centrality	Platform	Platform	User	User
Definition	Official data pipelines that offer different data types depending on the platform	Gathering data from websites using crawlers/spiders/scrapers.	Donation of existing digital traces with informed consent	Client-side tracking software that is installed with informed consent
Time frame of collected data	Retrospective	Retrospective/Perspective	Retrospective (collects existing digital trace data)	Prospective (tracks digital traces as they are produced)
Types of data	Includes published and public data from digital platforms	Data available on the websites	Includes non- or semi-public user data and data not visible to user (e.g., profiling, etc.)	Includes (mostly nonpublic) behavioral sequence data (e.g., click streams, screenshots, etc.)
Robots.txt	Yes (for private APIs)	Yes	n/a	n/a
Terms of Service	Yes	Sometimes (accounts/popups)	No	No
GDPR	When personal data is involved	When personal data is involved	When personal data is involved	When personal data is involved
Consent of participants	No	No	Yes	Yes
Potential for reactivity/ social desirability biases	Low	Low	Low	Medium to high
Level of gathered content	(Mostly) Aggregate-level data	Individual-level data	Individual-level data	Individual-level data
Privacy risks in the collection of personally identifiable information	Medium	High	High	Very high
Main advantages	Easy and legal	Flexible	Private data; informed consent	Private data and algorithmic data; informed consent
Main challenges	Public data only; few social media APIs left or expensive	Public data only; legally complex	Expensive	Expensive and reactive

TODAY

Lecture

Explain what APIs and web scraping are
(in your own words).

Understand how HTML code is structured

Distinguish between the role of robots.txt,
Terms of Service and GDPR.

Understand the main advantages,
challenges and legal considerations of
APIs and Web Scraping.

Lab

Learn how to read robots.txt

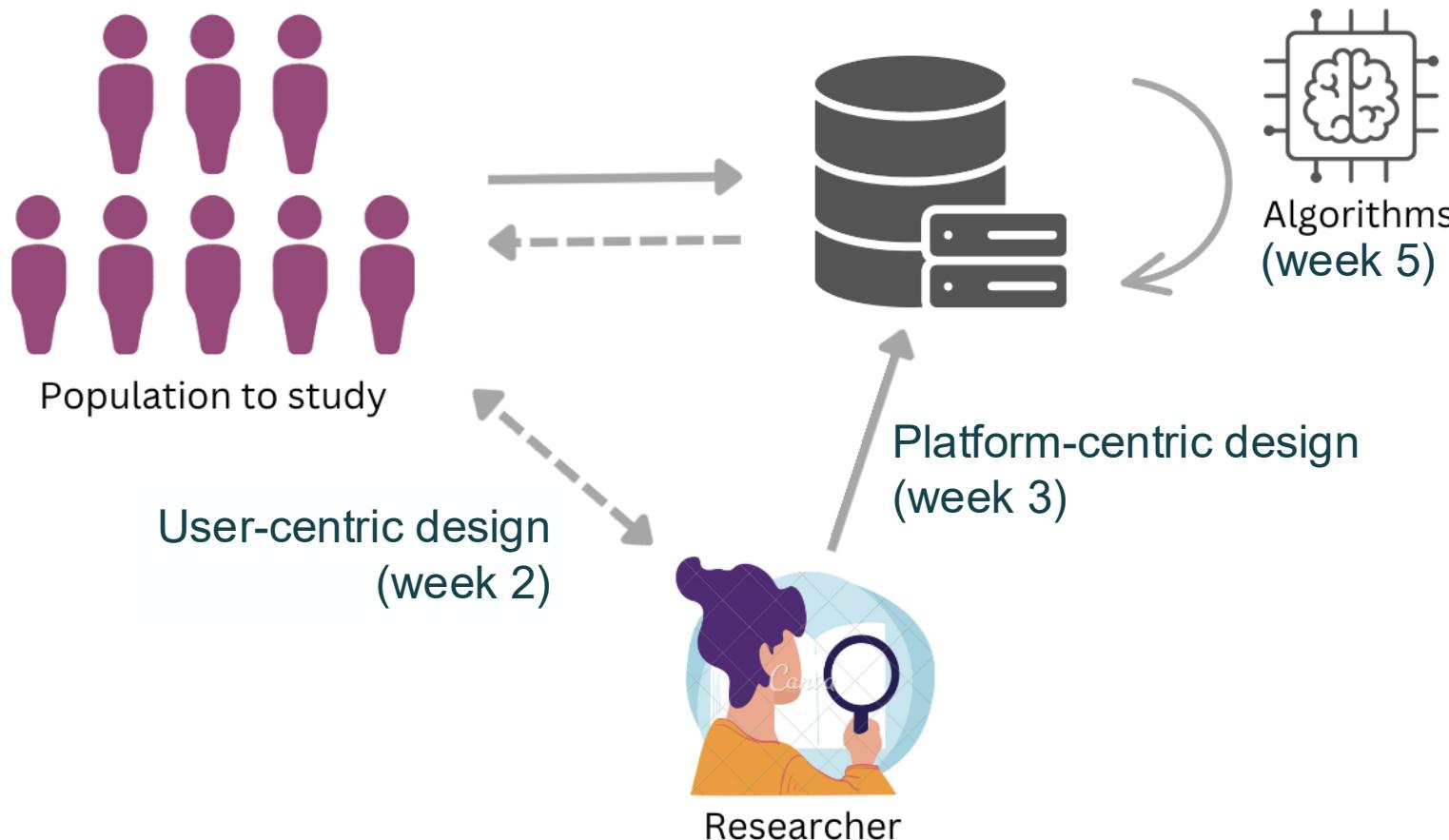
Use APIs to extract data:

- Wikimedia
- TheGuardian

Web scraping data from NU.nl

Saving text data to your hard drive

Summary of the course



Week 4: Errors in DTD
Week 6: Ethics and Legislation
Week 7: Beyond DTD and Q&A

Remember: This Friday → first feedback moment

- Prepare a few (<5) slides with your progress (RQ, dataset, proposed next steps) which indicates on what topics each group member worked (each slide should contain the contributors).
- Send your prepared slides to your project supervisor (either Thijs or Laura) **before the meeting**.
- Be on time!

	19-Sep		26-Sep		10-Oct		17-Oct	
	Present progress	Attend	Present progress	Attend	Present progress	Attend	Present progress	Attend
Laura	11:00-11:15	Cheetah	Pardus	Tigris	Pardus	Cheetah	Tigris	Pardus
	11:20-11:35	Pardus	Cheetah	Pardus	Tigris	Tigris	Cheetah	Cheetah
	11:40-11:55	Lynx	Tigris	Lynx	Cheetah	Pardus	Lynx	Tigris
	12:00-12:15	Tigris	Lynx	Cheetah	Lynx	Lynx	Pardus	Lynx
Thijs	13:00-13:15	Puma	./	Leo	./	Uncia	./	Onca
	13:20-13:35	Caracal	Puma	Puma	Leo	Leo	Uncia	Uncia
	13:40-13:55	Onca	Caracal	Caracal	Puma	Puma	Leo	Uncia
	14:00-14:15	Uncia	Onca	Onca	Caracal	Caracal	Puma	Leo
	14:20-14:35	Leo	Uncia	Uncia	Onca	Onca	Caracal	Puma