NATIONAL CENTRE FOR
RESEARCH METHODS

The value, logic and practice of web scraping

Web Scraping for social scientists

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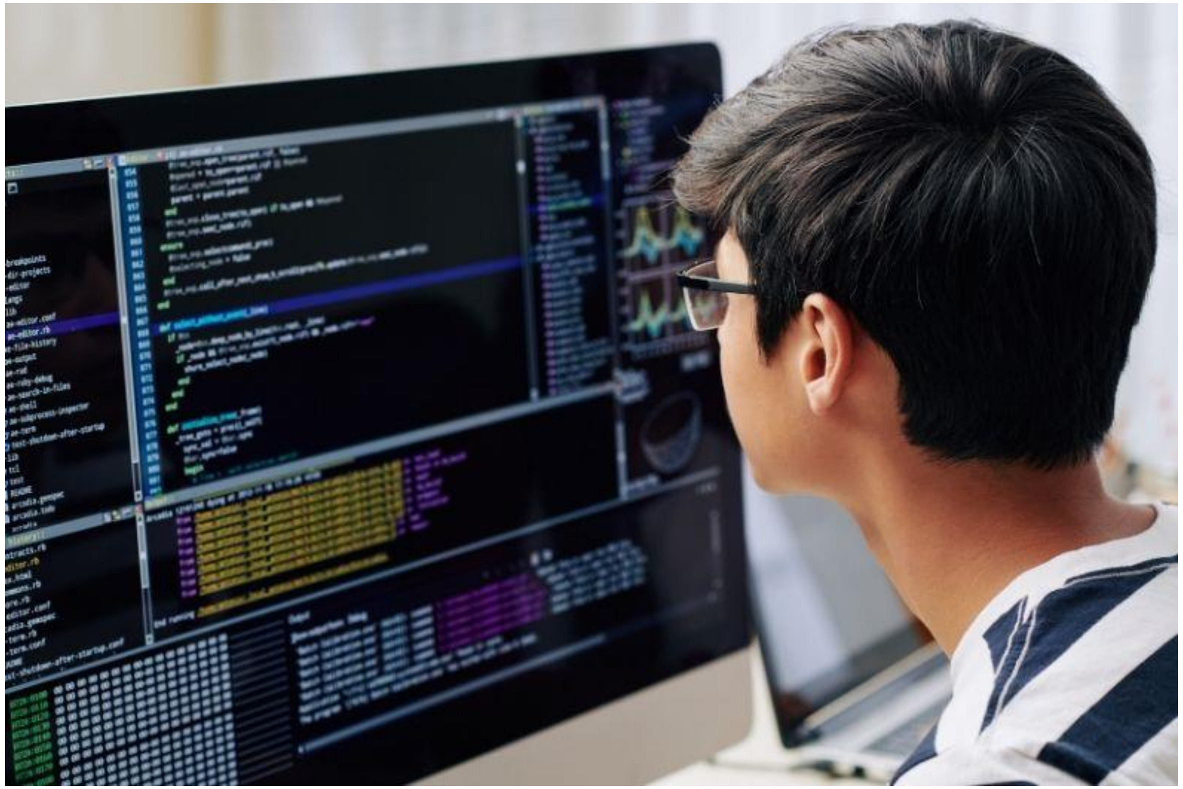

What is web scraping?

It is a computational technique for capturing information stored on a web page.

It is generally implemented using a programming script, although there are software applications that you can use.

It is relatively simple to implement using open-source programming languages e.g., Python, R.

Why collect data from the web?

Web pages can be an important source of publicly available information on social phenomena of interest.

Web pages can store a range of different data types including files, text, photos, videos, lists etc, all of which may be collected and marshalled for research purposes.

Once collected, data can be reshaped into a familiar structure (tabular) and linked to other sources of social science data.

What is the logic of web scraping?

We need to **know** the following:

1. The location (i.e., web address or URL) where the web page can be accessed. For example, the BBC homepage can be accessed via https://bbc.co.uk.
2. The location of the information we are interested in within the structure of the web page. This involves visually inspecting a web page's underlying code using a web browser.

Then we need to **do** the following:

3. Request the web page using its web address.

4. Parse the structure of the web page so your programming language can work with its contents.

5. Extract the information we are interested in.

6. Write this information to a file for future use.

What is the value of web-scraping for social science research?

Web scraping is a mature computational method, with lots of established packages (e.g., `requests` and `BeautifulSoup` in Python), examples and help available.

Using computational, rather than manual, methods provides the ability to schedule or automate your data collection activities.

The richness of some of the information and data stored on web pages is a point worth repeating.

Collect data at scale (more concerned with *coverage* than *sampling*).

Web scraping can be an accurate and reliable data collection method.

What are the limitations/challenges of web-scraping for social science research?

“Data on the web typically does not come in a format amenable to analysis.” (Hogan, 2022: 78)

Web pages are frequently updated, therefore changes to their structure can break your script. It can be a lot of work maintaining your code, especially if you make it available for use by others.

Some websites may be advanced enough that they throttle or block scraping of their contents.

Web scraping, and computational social science in general, is dependent on your computing setup.

Some ethical and legal complications that must be navigated/avoided.

Questions