

Week 8: Data Science Part-Time Course

Working with Data: APIs

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What is an API?

- ▶ **Application Programming Interface**
- ▶ Set of routines, protocols and tool used for building software applications
- ▶ **Web APIs:** List of function calls that are made to remote servers

Examples of where APIs can be of use

- ▶ Connecting to databases
- ▶ Connecting to python modules that can turn LED lights on and off
- ▶ Web services for accessing currency of stock prices
- ▶ Extending python with C code
- ▶ Adding your own functions to the numpy module

Why did APIs become popular?

- ▶ Prevents webscrapping
- ▶ Allows a website's brand to be incorporated into other webpages
- ▶ Easy to use for JavaScript programmers

Famous APIs

- ▶ **Facebook Graph API:** posts + activities
- ▶ **Yelp API:** reviews + business data
- ▶ **Echonest API:** recommendations + info on tracks and artists
 - Spotify
 - Pandora
 - Shazam
 - SoundHound

Making API Calls

- ▶ Making HTTP requests to a server and sending/receiving structured data from that endpoint
- ▶ API tokens:
 - Given when you register to obtain an authorization key
 - Usually needs to be renewed
 - A way to prevent abuse on the server's resources

HTTP

- ▶ **HyperText Transfer Protocol**
- ▶ **Protocol that determines how web pages get sent from one place to another**
- ▶ **Defines the format of messages passed between HTTP clients and HTTP servers**
- ▶ **HTTP clients:** make or generate HTTP requests
 - **Browsers:** Chrome, Firefox, Safari
 - **Command line programs:** `curl`, `wget`
 - **Application code:** `python requests`, `scrapy`, `mechanize`
- ▶ **HTTP and web servers:** receive HTTP requests and generates HTTP responses

JSON

- ▶ **JavaScript Object Notation**
- ▶ **A way to store info in an organized manner**
- ▶ **Built on two structures:**
 - **Collection of name/value pairs**
 - **Unordered list of values**