Separating Bots from Humans

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@kludgist

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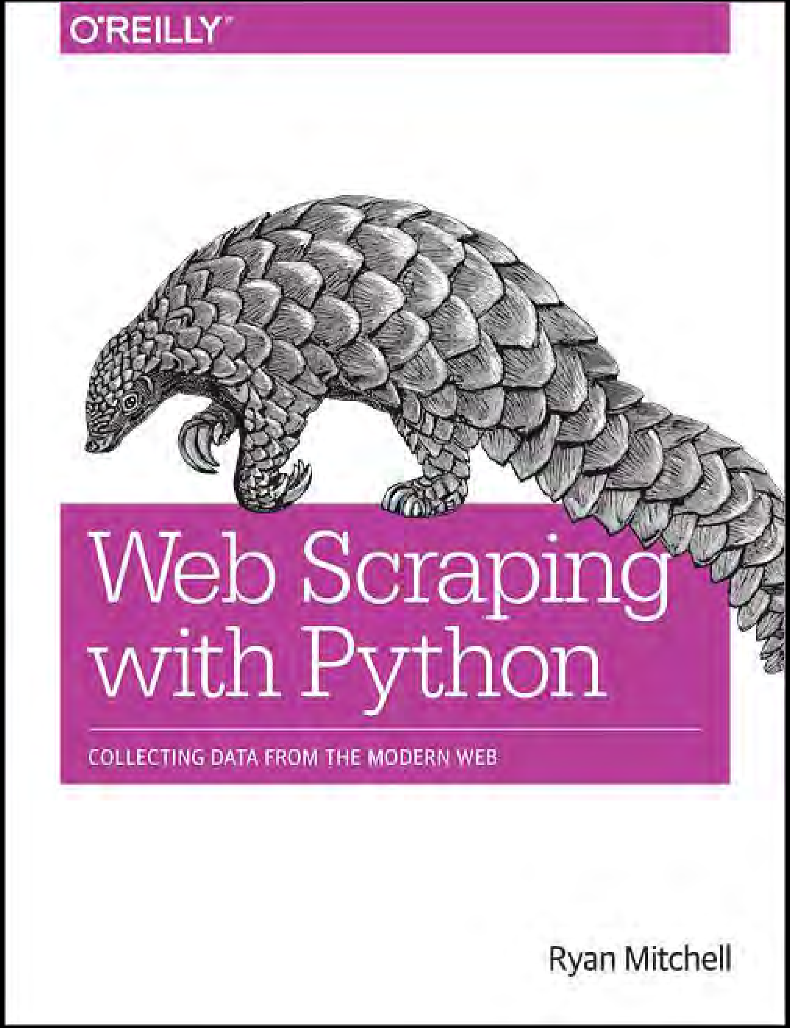
Who am I?

- Software Engineer
- Author of two books:
  - Web Scraping with Python (O’Reilly, 2015)
  - Instant Web Scraping with Java (Packt, 2013)
- Engineering grad from Olin College
- Masters student at Harvard University School of Extension Studies, 2016

A history of this talk

The O’Reilly Hacking Book:



O'REILLY

Web Scraping with Python

COLLECTING DATA FROM THE MODERN WEB

Ryan Mitchell

Separating Bots from Humans

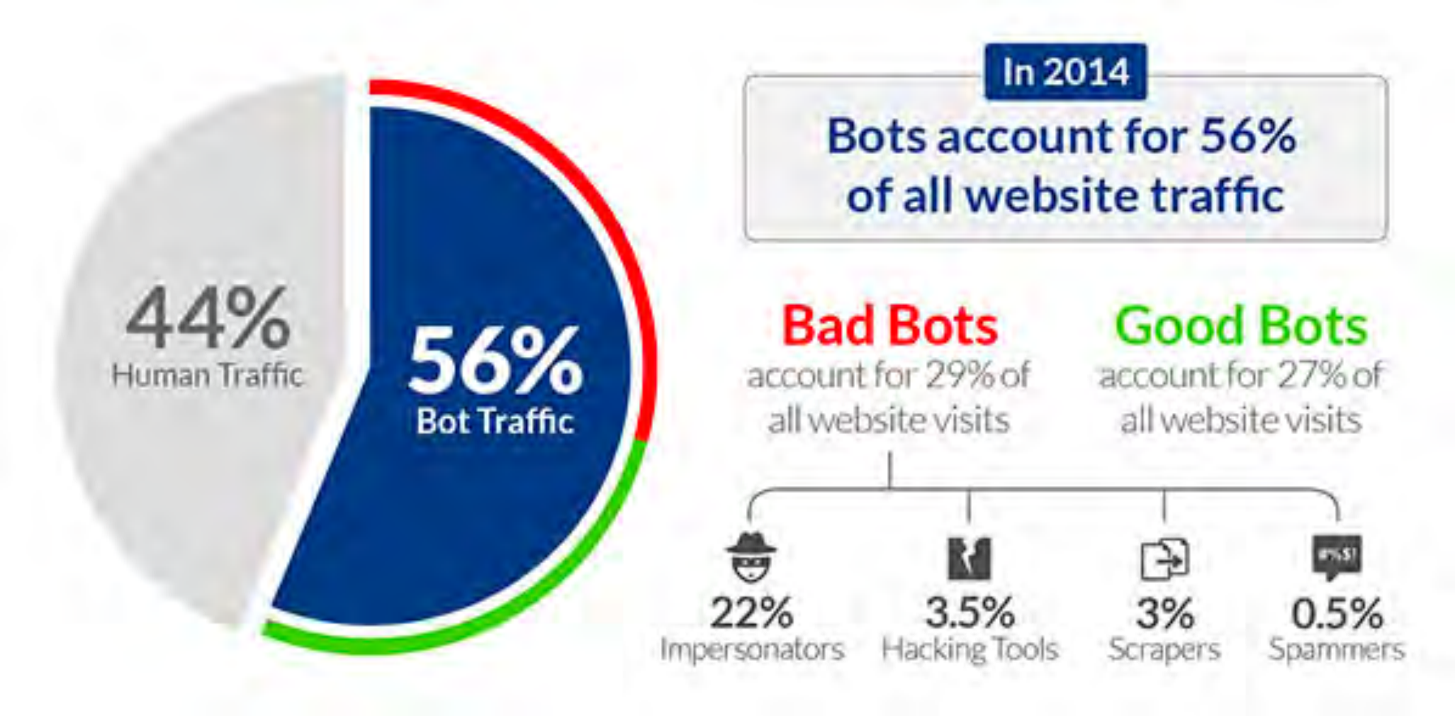
Pro-tips to get what you want:

- Include some market research
- Write it in Python, because it’s really popular

What are Web Scrapers, Bots, etc?

- They can use browsers
- They can take their sweet time
- They can be surprisingly smart
- They can be stunningly idiotic

Why They’re Important



In 2014

Bots account for 56% of all website traffic

Bad Bots account for 29% of all website visits

Good Bots account for 27% of all website visits

source: https://www.incapsula.com/blog/bot-traffic-report-2014.html

On the Defense Side of Things

(For better or worse)

robots.txt?

- “No Trespassing, please?”

Terms of Service

- “Hey! You said you wouldn’t trespass!”

Headers

- “I’m totally not a bot. Promise”

JavaScript

- Make your site un-indexable for anyone but the bad guys

Embedding Text in Images

- Oh come on.
- You’re the type of person who writes email addresses like “m e (at sign) domain . com”
    - And you have duct tape on your laptop’s web cam, mostly because you never use it.

CAPTCHAs

Annoying

Breakable

Honepots

- Can be effective, if implemented correctly
- Please don’t block the Google bots

Example time!

http://ryanemitchell.com/honeypots.html

Behavioral Patterns

- Now we’re getting somewhere!
- Again, please don’t block the Google bots

IP Address Blocking

- It’s sort of effective… If they didn’t really care in the first place
- Lists are a pain to maintain
- You can easily block the good guys

On the Attack Side of Things...

Targeted vs. Non-Targeted Attacks

- Non-targeted: Also known as, “look for /phpMyAdmin”
- Targeted, usually to get proprietary data

OCR

- Works best on relatively normal text
- Can be used to solve CAPTCHAs
  - Time consuming to create training data. Have a series or two of a TV show ready

OCR Training Tool

- Everything you need to solve a CAPTCHA!

https://github.com/REMitchell/tesseract-trainer

JavaScript Execution

- Selenium
- PhantomJS

Honeypot Avoidance

- Better than you might expect -- it’s biggest weakness is color

https://github.com/REMitchell/python-scraping/blob/master/chapter12/3-honeypotDetection.py

Stop Caring!

- Bot-proofing sites is way too much work, and often impedes accessibility
- Is your data really that valuable?
  - Consider API costs, ease of use -- make it more attractive to pay for data
- If your application is vulnerable to automated attacks, it’s vulnerable, period.

Question time!