

# Analysis of unstructured data

## Lecture 5 - Data collection

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Overview:

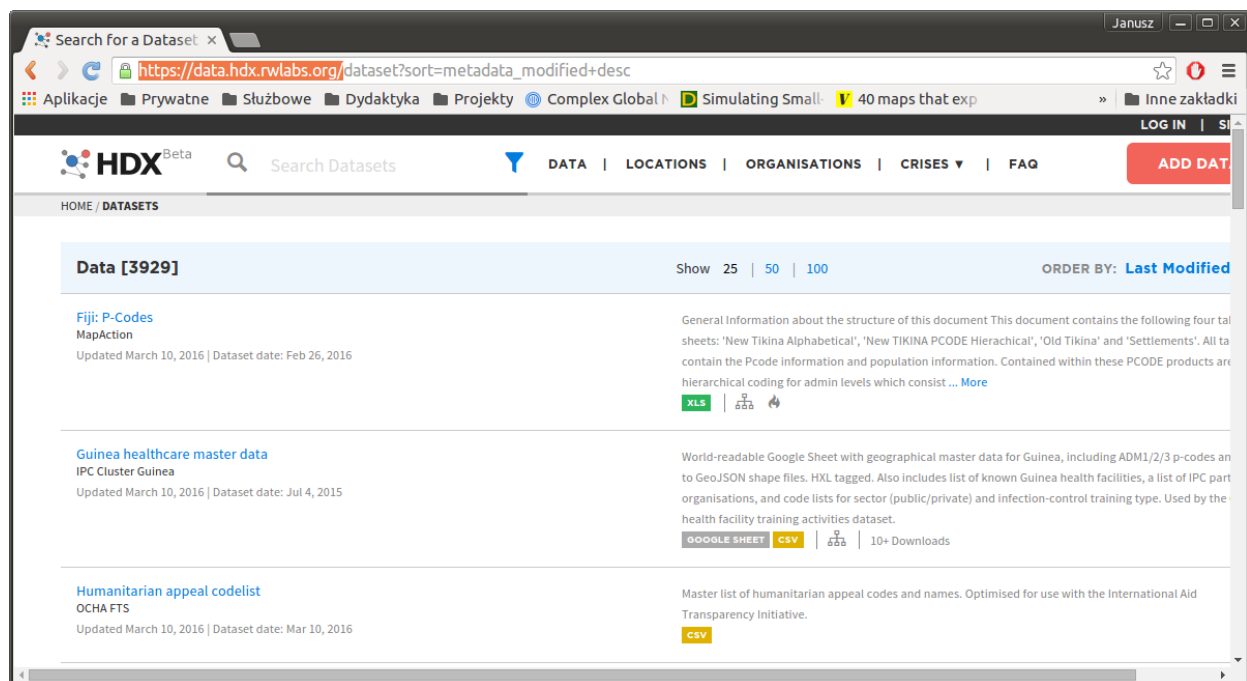
- Where to look for data?
- Reading files in different formats
- Screen scrapping
- Using of existing APIs
- Platforms for extracting data
- Online surveys

## Where to look for data?

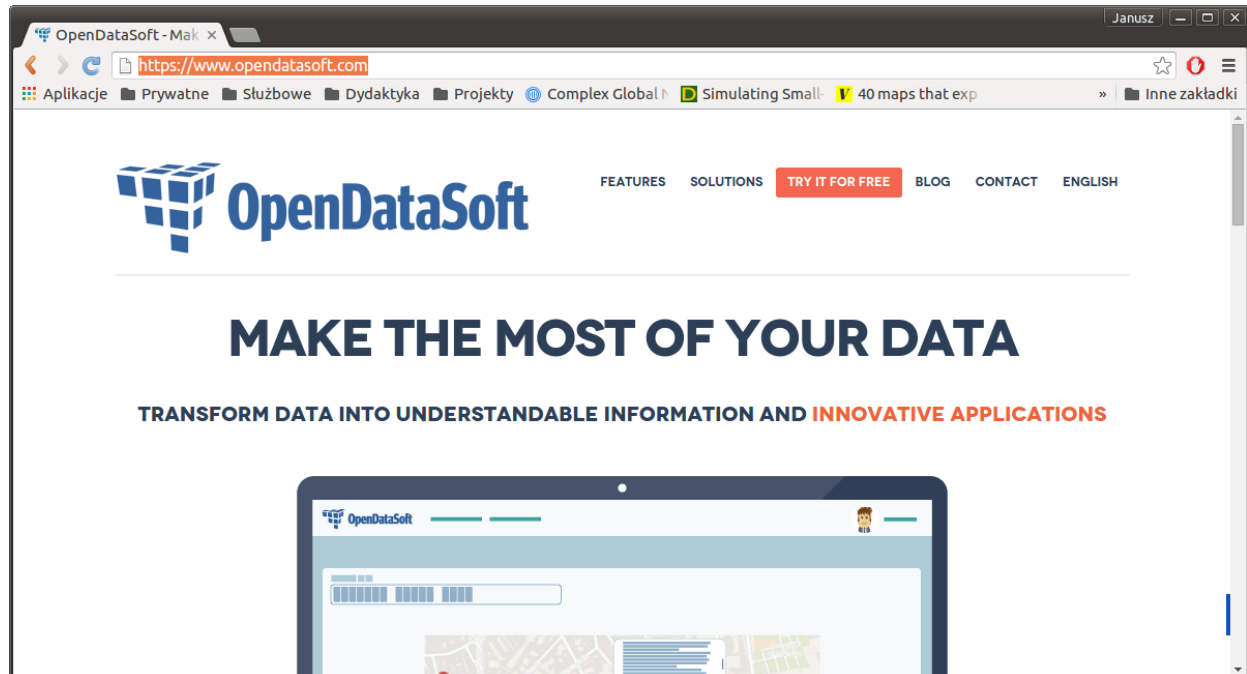
- in short - **everywhere**
- in particular:
  - documents, maps, image files online
  - databases and warehouses
  - government portals
  - NGO portals
  - data scientists' webpages
  - other webpages
  - blogs

## Worth a visit

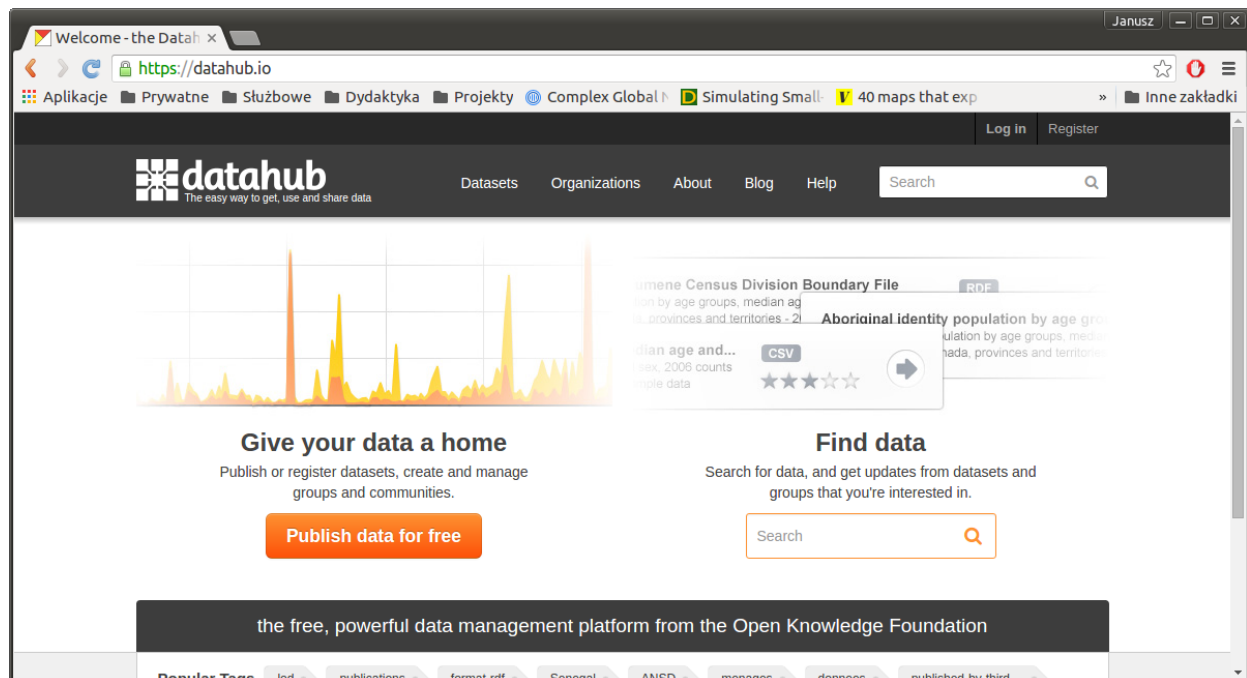
- Humanitarian Data Exchange, <https://data.humdata.org/> (<https://data.humdata.org/>)



- OpenDataSoft, <https://www.opendatasoft.com/> (<https://www.opendatasoft.com/>)



- Datahub.io, <https://datahub.io/> (<https://datahub.io/>)



## How to collect data?

- file downloads
- screen scrapping
- existing APIs
- custom methods (surveys, sensors, crowdsourcing)

From Wikipedia:

**Crowdsourcing** – a specific sourcing model in which individuals or organizations use contributions from Internet users to obtain needed services or ideas.

## Reading files in different formats

If our file...

... is a CSV file

In [1]:

```
!head bikes.csv
```

- structured data
- some cleaning usually required
- easy to analyze
- Python modules available

In [2]:

```
import csv
with open('bikes.csv', 'r', encoding='latin1') as csvfile: #we know already that
    the file is in latin1 encoding
    reader = csv.reader(csvfile, delimiter=';')
    for row in reader:
        print(row)
```

```

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'6104']  
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2']  
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```
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554']  
['24/10/2012', '3744', '', '1868', '2625', '4900', '3035', '649', '3  
622']  
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767']  
['26/10/2012', '4290', '', '1987', '2754', '5246', '3000', '1456',  
'4578']  
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6']  
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795']  
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790']  
['31/10/2012', '2634', '', '1294', '1835', '3453', '2220', '245', '2  
570']  
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461']  
['02/11/2012', '1582', '', '737', '1109', '2277', '1392', '97', '188  
8']  
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2']  
['04/11/2012', '966', '', '446', '710', '1277', '692', '197', '137  
4']  
['05/11/2012', '2247', '', '1170', '1705', '3221', '2143', '179', '2  
430']
```

In [3]:

```
import pandas as pd
bikes = pd.read_csv('bikes.csv', sep=';', encoding='latin1', parse_dates=
['Date'], dayfirst=True, index_col='Date')
bikes[:3]
```

Out[3]:

	Berri 1	Brébeuf (données non disponibles)	Côte- Sainte- Catherine	Maisonnette 1	Maisonnette 2	du Parc	Pierre- Dupuy	Rach
Date								
2012-01-01	35	NaN	0	38	51	26	10	16
2012-01-02	83	NaN	1	68	153	53	6	43
2012-01-03	135	NaN	2	104	248	89	3	58

... contains a lot of curly brackets, {}

Most probably it is a file in JSON format:

In [4]:

```
!cat employees.json
```

```
{"employees": [
  {"firstName": "John", "lastName": "Doe"},
  {"firstName": "Anna", "lastName": "Smith"},
  {"firstName": "Peter", "lastName": "Jones"}
]}
```

- Python modules available
- easy to transform to other formats

In [5]:

```
import json
from pprint import pprint

with open('employees.json') as data_file:
    data = json.load(data_file)

pprint(data)
```

```
{'employees': [{'firstName': 'John', 'lastName': 'Doe'},
                 {'firstName': 'Anna', 'lastName': 'Smith'},
                 {'firstName': 'Peter', 'lastName': 'Jones'}]}
```

In [6]:

```
df = pd.read_json('employees.json')  
df
```

Out[6]:

	employees
0	{'firstName': 'John', 'lastName': 'Doe'}
1	{'firstName': 'Anna', 'lastName': 'Smith'}
2	{'firstName': 'Peter', 'lastName': 'Jones'}

In [7]:

```
from pandas.io.json import json_normalize  
  
with open('employees.json') as data_file:  
    data = json.load(data_file)  
json_normalize(data['employees'])
```

Out[7]:

	firstName	lastName
0	John	Doe
1	Anna	Smith
2	Peter	Jones

**... contains a lot of angle brackets, <>**

Most probably it is a file in XML/HTML format:

In [8]:

```
!head kursy.xml
```

- again, there are already Python modules available

In [9]:

```
import xmltodict #not in standard library  
with open('kursy.xml', encoding='latin2') as fd:  
    doc = xmltodict.parse(fd.read())
```



In [10]:

```
for k in doc.keys():  
    print(k)
```

tabela\_kursow

In [11]:

```
for item in doc['tabela_kursow']:  
    print(item)
```

```
@typ  
numer_tabeli  
data_publicacji  
pozycja
```

In [12]:

```
from xml.dom import minidom  
xmldoc = minidom.parse('kursy.xml')  
itemlist = xmldoc.getElementsByTagName('pozycja')  
print(len(itemlist))  
for s in itemlist:  
    kraj = s.childNodes[1]  
    print(kraj.childNodes[0].data)
```

```
26  
Australia  
Austria  
Belgia  
Czechy  
Dania  
Estonia  
Finlandia  
Francja  
Grecja  
Hiszpania  
Holandia  
Irlandia  
Japonia  
Kanada  
Luksemburg  
Norwegia  
Portugalia  
RFN  
USA  
Szwajcaria  
Szwecja  
Węgry  
W. Brytania  
Włochy  
UGW  
MFW (SDR)
```

... is a PDF file

## Unit Count and Square Footage

First Quarter, Fiscal Year 2014

As of April 30, 2013

Format	New	Closed	Relocation/ Expansion/ Conversion	Ending Square Footage	Total Locations
Walmart Discount Stores	1		(8)	58,277,925	554
Walmart Supercenters	16	-	8	574,058,937	3,182
Neighborhood Markets	17	-	-	11,700,094	284
Neighborhood Markets	17	-	-	10,948,346	258
Amigo	-	-	-	672,148	24
Supermercado	-	-	-	79,600	2
Small Formats	4	-	-	294,308	23

- pdftables (commercial)
- Tabula (<https://github.com/tabulapdf/tabula>)
- pdftotext
- pdf-table-extract (<https://github.com/ashima/pdf-table-extract>), Python 2.7.X)
- pdfplumber (<https://github.com/jsvine/pdfplumber>)
- in case the above programs do not work:
  - OCR (e.g. <https://github.com/tesseract-ocr>)
  - manual rewriting

In [13]:

```
import pandas as pd
import pdfplumber

with pdfplumber.open("data/example.pdf") as pdf:
    page = pdf.pages[0]
    table = page.extract_table()

df = pd.DataFrame(table[1:], columns=table[0])
df
```

Out[13]:

	Format	New	Closed	Relocation/ Expansion/ Conversion*	Ending Square Footage	Total Locations
0	Walmart Discount Stores	1		(8)	58,277,925	5 54
1	Walmart Supercenters	16	-	8	574,058,937	3 ,182
2	Neighborhood Markets	17	-	-	11,700,094	2 84
3	Neighborhood Markets	17	-	-	10,948,346	2 58
4	Amigo	-	-	-	672,148	2 4
5	Supermercado	-	-	-	79,600	2
6	Small Formats	4	-	-	294,308	2 3
7	Marketside	-	-	-	-	-
8	Super Ahorros	-	-	-	46,349	3
9	Walmart Express	4	-	-	239,702	1 7
10	Walmart on Campus	-	-	-	8,257	3
11	Walmart U.S.	38	-		644,331,264	4 ,043
12	Sam's Club		-	-	82,669,348	6 20
13	Total U.S.	38	-	-	727,000,612	4 ,663
14	International	50	( 3)	(1)	349,900,213	6 ,194
15	Total Walmart	88	( 3)	(1)	1,076,900,825	1 0,857

In [14]:

```
for column in df.columns:
    df[column] = df[column].str.replace(" ", "")
df
```

Out[14]:

	Format	New	Closed	Relocation/ Expansion/ Conversion*	Ending Square Footage	Total Locations
0	WalmartDiscountStores	1		(8)	58,277,925	554
1	WalmartSupercenters	16	-	8	574,058,937	3,182
2	NeighborhoodMarkets	17	-	-	11,700,094	284
3	NeighborhoodMarkets	17	-	-	10,948,346	258
4	Amigo	-	-	-	672,148	24
5	Supermercado	-	-	-	79,600	2
6	SmallFormats	4	-	-	294,308	23
7	Marketside	-	-	-	-	-
8	SuperAhorros	-	-	-	46,349	3
9	WalmartExpress	4	-	-	239,702	17
10	WalmartonCampus	-	-	-	8,257	3
11	WalmartU.S.	38	-		644,331,264	4,043
12	Sam'sClub		-	-	82,669,348	620
13	TotalU.S.	38	-	-	727,000,612	4,663
14	International	50	(3)	(1)	349,900,213	6,194
15	TotalWalmart	88	(3)	(1)	1,076,900,825	10,857

... is a map



- shapefiles (.shp), geojson (.json), geotiff (.tiff)
- can contain interesting data
- Quantum GIS (<http://www.qgis.org/pl/site/> (<http://www.qgis.org/pl/site/>))
- ogr2ogr (<http://www.gdal.org/> (<http://www.gdal.org/>))

In [16]:

```
!ogr2ogr -f CSV florida.csv data/florida/intersection.shp -lco GEOMETRY=AS_XYZ
```

In [17]:

```
!head florida.csv
```

```
X,Y,Z,ROADWAY,INTSEC_ROA,INTSEC_DIR,ROAD_SURF_,OLD_KEY,surface_de,in
tsec_des,BEGIN_POST
465256.85986718442291,3176275.000456310808659,0,77000032,HEARTHSTONE
LN,2,,,INTERSECTING STREET 90 DEGREES TO THE LEFT,1.7560
577439.59264366235584,2858089.087327975779772,0,87000337,NW 18 AV,5,
A,28,ASPHALTIC CONCRETE,INTERSECTING STREET 90 DEGREES TO THE RIGHT,
0.4690
577892.025412083603442,2858107.435359993949533,0,87000337,NW 14 PL,
2,A,28,ASPHALTIC CONCRETE,INTERSECTING STREET 90 DEGREES TO THE LEF
T,0.7500
580471.267142485827208,2858212.333280090242624,0,87000337,NW MIAMI C
T,2,A,28,ASPHALTIC CONCRETE,INTERSECTING STREET 90 DEGREES TO THE LE
FT,2.3520
581147.522503116168082,2858238.537824114784598,0,87000337,NE 3 AV,5,
A,28,ASPHALTIC CONCRETE,INTERSECTING STREET 90 DEGREES TO THE RIGHT,
2.7720
578320.828612483106554,2861939.633763562887907,0,87000338,NW 108 TE
R,5,A,28,ASPHALTIC CONCRETE,INTERSECTING STREET 90 DEGREES TO THE RI
GHT,0.3480
551164.5057711917907,2816250.52012101188302,0,87000416,SOUTH POINT C
ROSSING,5,A,28,ASPHALTIC CONCRETE,INTERSECTING STREET 90 DEGREES TO
THE RIGHT,0.6610
551425.308459434658289,2816252.892217013984919,0,87000416,NW 7 PL,5,
A,28,ASPHALTIC CONCRETE,INTERSECTING STREET 90 DEGREES TO THE RIGHT,
0.8240
561397.268276722170413,2854967.945693070068955,0,87000417,RAMP 87471
534,4,A,28,ASPHALTIC CONCRETE,INTERSECTING STREET 45 DEGREES TO THE
RIGHT,0.0890
```

In [18]:

```
roads = pd.read_csv('florida.csv', sep=',')
roads[:3]
```

Out[18]:

	X	Y	Z	ROADWAY	INTSEC_ROA	INTSEC_DIR	ROAD_
0	465256.859867	3.176275e+06	0	77000032	HEARTHSTONE LN	2	NaN
1	577439.592644	2.858089e+06	0	87000337	NW 18 AV	5	A
2	577892.025412	2.858107e+06	0	87000337	NW 14 PL	2	A

In [19]:

```
roads['X'].count()
```

Out[19]:

207133

## Screen scraping

From Wikipedia:

**Screen scraping** - a technique in which a computer program extracts data from human-readable output coming from another program.

The key element that distinguishes data scraping from regular parsing is that the output being scraped was intended for display to an end-user, rather than as input to another program, and is therefore usually neither documented nor structured for convenient parsing. Data scraping often involves ignoring binary data (usually images or multimedia data), display formatting, redundant labels, superfluous commentary, and other information which is either irrelevant or hinders automated processing

## Google Docs as a basic screen scraper

The screenshot shows a web browser window displaying the FIDE Online website. The page title is "Standard Top 100 Players March 2016". The website header includes the FIDE logo and the World Chess Federation name. The main content area displays a table of chess players ranked by their FIDE rating as of March 2016. The table has columns for Rank, Name, Title, Country, Rating, Games, and B-Year. The top players listed are Carlsen, Magnus (NOR, 2851), Kramnik, Vladimir (RUS, 2801), Caruana, Fabiano (USA, 2794), Giri, Anish (NED, 2793), Vachier-Lagrave, Maxime (FRA, 2792), Nakamura, Hikaru (USA, 2790), Aronian, Levon (ARM, 2786), Topalov, Veselin (BUL, 2780), Ding, Liren (CHN, 2777), So, Wesley (USA, 2773), Elianov, Pavel (UKR, 2765), Anand, Viswanathan (IND, 2762), Kariakin, Sergey (RUS, 2760), Harkrishna, P. (IND, 2758), Li, Chao b. (CHN, 2757), Svidler, Peter (RUS, 2757), Grischuk, Alexander (RUS, 2752), Mamedyarov, Shakhriyar (AZE, 2747), Yu, Yangyi (CHN, 2738), and Gelfand, Boris (ISR, 2735). A sidebar on the right contains links to various FIDE resources, including Top Players, Top Countries, Top Chart, Players & Arbiters, Transfers, Tournaments, Tournaments Archive, Download Rating List, and Rating Calculators.

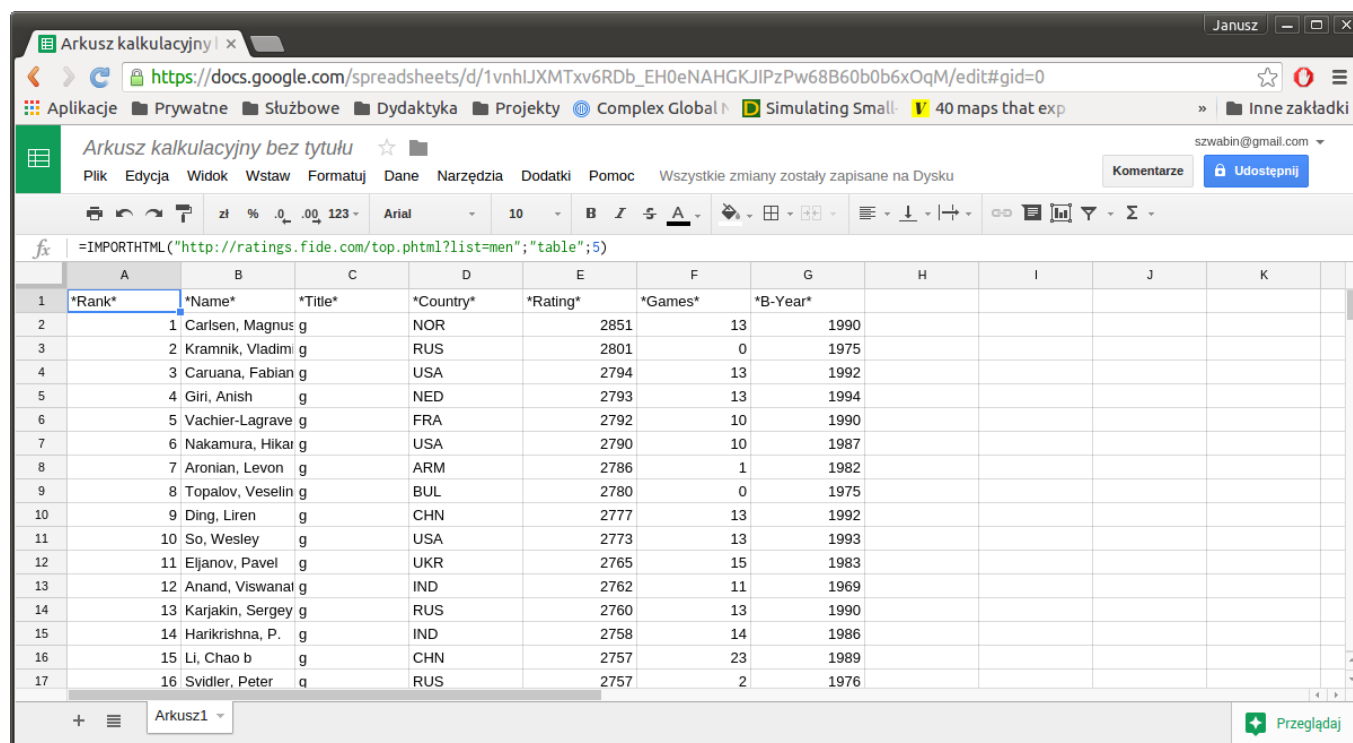
Rank	Name	Title	Country	Rating	Games	B-Year
1	Carlsen, Magnus	g	NOR	2851	13	1990
2	Kramnik, Vladimir	g	RUS	2801	0	1975
3	Caruana, Fabiano	g	USA	2794	13	1992
4	Giri, Anish	g	NED	2793	13	1994
5	Vachier-Lagrave, Maxime	g	FRA	2792	10	1990
6	Nakamura, Hikaru	g	USA	2790	10	1987
7	Aronian, Levon	g	ARM	2786	1	1982
8	Topalov, Veselin	g	BUL	2780	0	1975
9	Ding, Liren	g	CHN	2777	13	1992
10	So, Wesley	g	USA	2773	13	1993
11	Elianov, Pavel	g	UKR	2765	15	1983
12	Anand, Viswanathan	g	IND	2762	11	1969
13	Kariakin, Sergey	g	RUS	2760	13	1990
14	Harkrishna, P.	g	IND	2758	14	1986
15	Li, Chao b.	g	CHN	2757	23	1989
16	Svidler, Peter	g	RUS	2757	2	1976
17	Grischuk, Alexander	g	RUS	2752	0	1983
18	Mamedyarov, Shakhriyar	g	AZE	2747	13	1985
19	Yu, Yangyi	g	CHN	2738	10	1994
20	Gelfand, Boris	g	ISR	2735	0	1968

We are going to use the IMPORTHTML function to extract the table,

`IMPORTHTML(url;type;index)`

where:

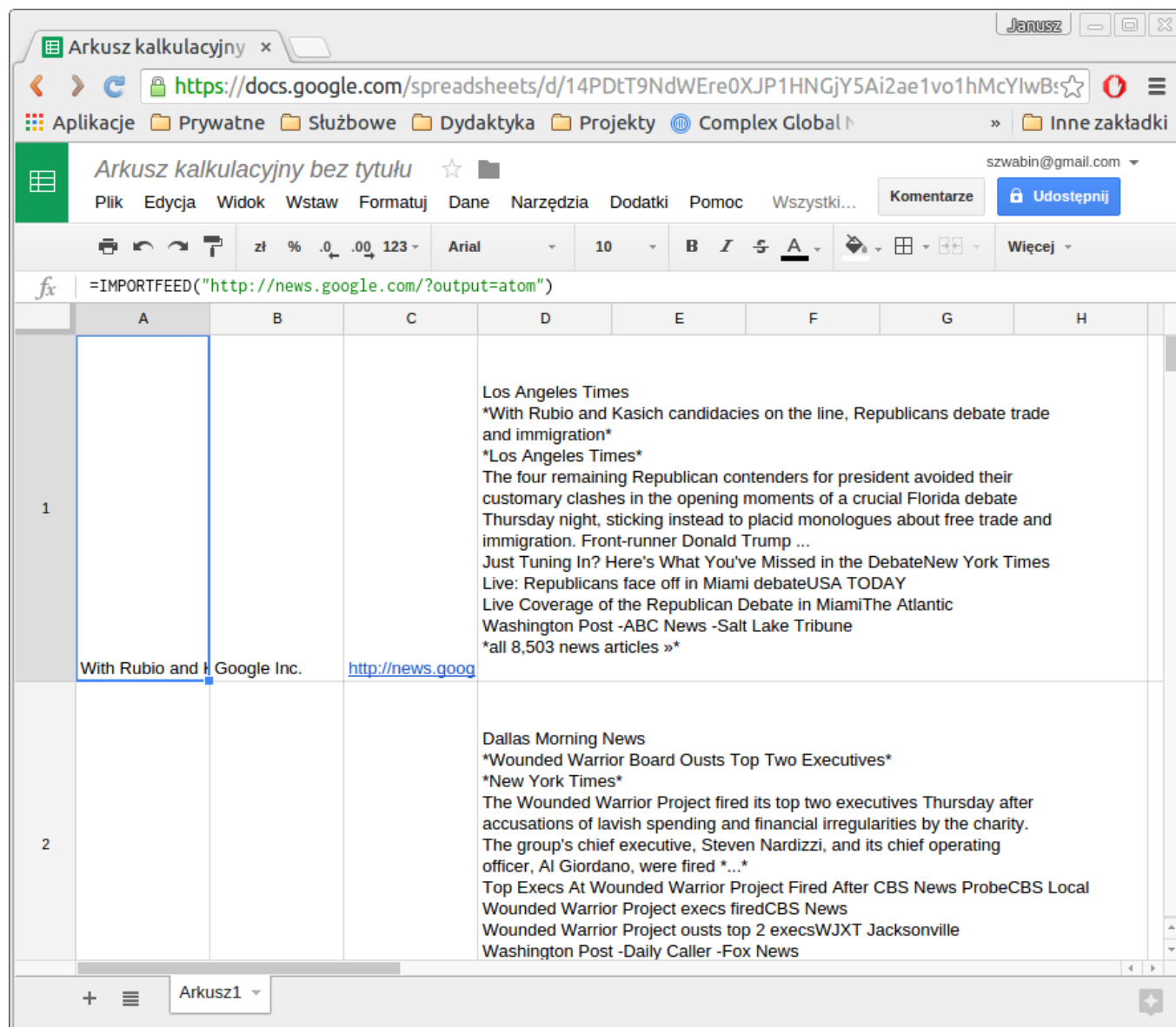
- **url** - URL of the page to examine, including protocol (e.g. http://)
- **type** - either "list" or "table" depending on what type of structure contains the desired data.
- **index** - the index, starting at 1, which identifies which table or list as defined in the HTML source should be returned



	A	B	C	D	E	F	G	H	I	J	K
1	*Rank*	*Name*	*Title*	*Country*	*Rating*	*Games*	*B-Year*				
2	1	Carlsen, Magnus	g	NOR	2851	13	1990				
3	2	Kramnik, Vladimir	g	RUS	2801	0	1975				
4	3	Caruana, Fabian	g	USA	2794	13	1992				
5	4	Giri, Anish	g	NED	2793	13	1994				
6	5	Vachier-Lagrave	g	FRA	2792	10	1990				
7	6	Nakamura, Hikaru	g	USA	2790	10	1987				
8	7	Aronian, Levon	g	ARM	2786	1	1982				
9	8	Topalov, Veselin	g	BUL	2780	0	1975				
10	9	Ding, Liren	g	CHN	2777	13	1992				
11	10	So, Wesley	g	USA	2773	13	1993				
12	11	Eljanov, Pavel	g	UKR	2765	15	1983				
13	12	Anand, Viswanath	g	IND	2762	11	1969				
14	13	Karjakin, Sergey	g	RUS	2760	13	1990				
15	14	Harikrishna, P.	g	IND	2758	14	1986				
16	15	Li, Chao b	g	CHN	2757	23	1989				
17	16	Svidler, Peter	g	RUS	2757	2	1976				

Similarly, we can use IMPORTXML or IMPORTFEED to read data from xml files and RSS feeds:





Arkusz kalkulacyjny x

https://docs.google.com/spreadsheets/d/14PDtT9NdWEre0XJP1HNGjY5Ai2ae1vo1hMcYlwB:☆

Aplikacje Prywatne Służbowe Dydaktyka Projekty Complex Global » Inne zakładki

Arkusz kalkulacyjny bez tytułu ☆

szwabini@gmail.com

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$\text{fx}$  =IMPORTFEED("http://news.google.com/?output=atom")

	A	B	C	D	E	F	G	H
1				Los Angeles Times *With Rubio and Kasich candidacies on the line, Republicans debate trade and immigration* *Los Angeles Times* The four remaining Republican contenders for president avoided their customary clashes in the opening moments of a crucial Florida debate Thursday night, sticking instead to placid monologues about free trade and immigration. Front-runner Donald Trump ... Just Tuning In? Here's What You've Missed in the DebateNew York Times Live: Republicans face off in Miami debateUSA TODAY Live Coverage of the Republican Debate in MiamiThe Atlantic Washington Post -ABC News -Salt Lake Tribune *all 8,503 news articles »*				
2	With Rubio and Google Inc.		<a href="http://news.google.com/">http://news.google.com/</a>	Dallas Morning News *Wounded Warrior Board Ousts Top Two Executives* *New York Times* The Wounded Warrior Project fired its top two executives Thursday after accusations of lavish spending and financial irregularities by the charity. The group's chief executive, Steven Nardizzi, and its chief operating officer, Al Giordano, were fired *...* Top Execs At Wounded Warrior Project Fired After CBS News ProbeCBS Local Wounded Warrior Project execs firedCBS News Wounded Warrior Project ousts top 2 execsWJXT Jacksonville Washington Post -Daily Caller -Fox News				

+ ≡ Arkusz1

Arkusz kalkulacyjny x

https://docs.google.com/spreadsheets/d/14PDtT9NdWEre0XJP1HNGjY5Ai2ae1vo1hMcYlwB:☆

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Plik Edycja Widok Wstaw Formatuj Dane Narzędzia Dodatki Pomoc Wszystkie... Komentarze Udostępnij

zł % .0 .00 123 Arial 10 B I A

$\text{fx}$  =IMPORTFEED("http://sport.wp.pl/rss.xml")

	A	B	C	D	E	F	G	H	
1	Tyson Fury wyw	<a href="http://sport.wp.pl">http://sport.wp.pl</a>	Sat, 5 Dec 2015	"Najlepsze miejsce dla kobiet jest w kuchni" - wypalił nowy mistrz świata wagi ciężkiej. W boksie pań najbardziej podobają mu się ring girls, zaś swojej żonie czasem miałby ochotę... wymierzyć cios podbródkowy. sport.wp.pl					
2	Zabawny film z p	<a href="http://sport.wp.pl/...iadomosc.html">http://sport.w...iadomosc.html</a>		Polski zawodnik MMA Maciej Browarski pozwolił sobie na odrobinę szaleństwa z okazji "Mikołajków". sport.wp.pl					
3	Znany tenisista i	<a href="http://sport.wp.pl">http://sport.wp.pl</a>	Wed, 18 Nov 2015	27-letni tenisista Grigor Dimitrow ma nową dziewczynę. To dobrze znana fanom Formuły 1 Nicole Scherzinger, która w przeszłości spotykała się z kierowcą Mercedesa, Lewisem Hamiltonem. sport.wp.pl					
4	Niewiarygodna h	<a href="http://sport.wp.pl">http://sport.wp.pl</a>	Tue, 3 Nov 2015	Rolf Bantle, fan FC Basel, w 2004 roku wybrał się na wyjazdowe spotkanie z Interem Mediolan. Zgubił się na stadionie, a potem... pozostał we Włoszech. Aż na 11 lat. sport.wp.pl					
5	Wojownicza UF	<a href="http://sport.wp.pl">http://sport.wp.pl</a>	Tue, 3 Nov 2015	Angela Magana wylądowała w szpitalu. Wszystko wskazuje na to, że zawodniczka UFC w kategorii słomkowej (w tej samej wadze mistrzynią jest Joanna Jędrzejczyk) nabawiła się kontuzji karku podczas treningu. sport.wp.pl					
6	Klopp błysnął po	<a href="http://sport.wp.pl">http://sport.wp.pl</a>	Sat, 31 Oct 2015	Do zabawnej scenki doszło podczas piątkowego treningu Liverpoolu. Widać gołym okiem, że atmosfera w drużynie z Anfield Road jest wyśmienita. sport.wp.pl					
7	Wpadka piłkarzy	<a href="http://sport.wp.pl">http://sport.wp.pl</a>	Mon, 5 Oct 2015	Młodzi piłkarze Schalke 04 - Daniel Geissler oraz Christian Mauersberger - znaleźli się w ogniu krytyki kibiców swojego klubu po tym jak opublikowali na Instagramie zdjęcie w koszulkach i szalikach znienawidzonego Bayernu Monachium. sport.wp.pl					
8	De Bruyne zosta	<a href="http://sport.wp.pl">http://sport.wp.pl</a>	Tue, 29 Sep 2015	Bohater jednego z najgłośniejszych transferów minionego lata wkrótce doczeka się potomka. Radosną nowinę przekazała fanom jego partnerka. sport.wp.pl					
9				Od prawie dwóch tygodni Justyna Kowalczyk przebywa w kompleksie sportowym w Raubiczach. Regularnie wrzuca na portal społecznościowy zdjęcia. Najnowsze					

+ ≡ Arkusz1

## Custom scrapers

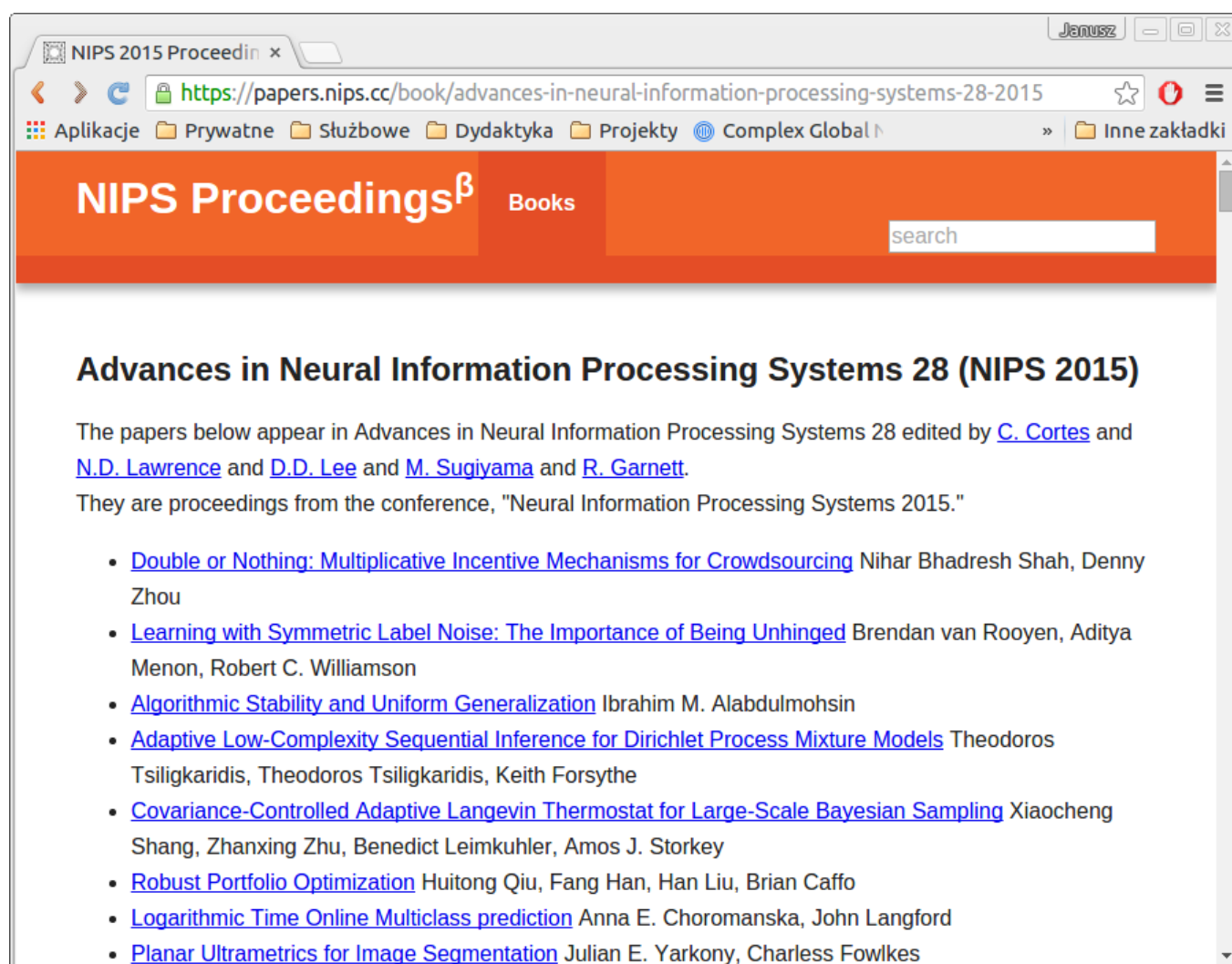
Python offers several libraries that may be used for scraping:

- `requests` (<http://docs.python-requests.org/en/master/>)
- `BeautifulSoup` (<http://www.crummy.com/software/BeautifulSoup/>)
- `scrapy` (<http://scrapy.org/>)

### Example - Requests and BeautifulSoup

In the 1st lecture, we talked (among other things) about papers from the NIPS 2015 conference. Our goal is now to download all these papers in pdf.

The website looks like this:



First of all we have to look at the source of the webpage in order to gain insight into the structure of the HTML code:

In [20]:

```
import requests  
  
base_url = "http://papers.nips.cc"  
index_url = "http://papers.nips.cc/book/advances-in-neural-information-processing-systems-28-2015"  
  
r = requests.get(index_url)  
print(r.text)
```

```

<!DOCTYPE html>
  <!--[if lt IE 7]>      <html class="no-js lt-ie9 lt-ie8 lt-ie7">
<![endif]-->
  <!--[if IE 7]>          <html class="no-js lt-ie9 lt-ie8"> <![end
if]-->
  <!--[if IE 8]>          <html class="no-js lt-ie9"> <![endif]-->
  <!--[if gt IE 8]><!--> <html class="no-js"> <!--<![endif]-->
  <head>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=
1">
    <title>NIPS 2015 Proceedings</title>

    <meta name="description" content="Eletronic Proceedings of N
eural Information Processing Systems">
    <meta name="viewport" content="width=device-width">

    <link rel="stylesheet" href="//media.nips.cc/nipsbooks/nipsp
apers/css/normalize.min.css">
    <link rel="stylesheet" href="//media.nips.cc/nipsbooks/nipsp
apers/css/main.css">

    <script src="//media.nips.cc/nipsbooks/nipspapers/js/vendor/
modernizr-2.6.2-respond-1.1.0.min.js"></script>

  </head>
  <body>
    <!--[if lt IE 7]>
      <p class="chromeframe">You are using an <strong>outdated
</strong> browser. Please <a href="http://browsehappy.com/">upgrade
your browser</a> or <a href="http://www.google.com/chromeframe/?red
irect=true">activate Google Chrome Frame</a> to improve your experie
nce.</p>
    <![endif]-->

    <div class="header-container">
      <header class="wrapper clearfix">

        <h1 class="sitename"><a href="/">NIPS Proceeding
s</a><sup>β</sup></h1>

        <form action="/search/" class="search">
          <input name="q" value="" class="search" placehol
der="search" />
        </form>

        <nav>
          <ul>

            <li><a href="/">Books</a></li>

          </ul>
        </nav>
      </header>
    </div>

```

```
<div class="main-container">
  <div class="main wrapper clearfix">
```

```
    <h2 class="subtitle">Advances in Neural Information Proc
essing Systems 28 (NIPS 2015)</h2>
```

The papers below appear in Advances in Neural Information Processing Systems 28 edited by [C. Cortes](/author/corinna-cortes-1046) and [N.D. Lawrence](/author/neil-d-lawrence-1612) and [D.D. Lee](/author/daniel-d-lee-1464) and [M. Sugiyama](/author/masashi-sugiyama-1885) and [R. Garnett](/author/romana-garnett-7864).

They are proceedings from the conference, "Neural Information Processing Systems 2015."

```
<ul>
```

```
  <li><a href="/paper/5677-double-or-nothing-multiplicative-in
centive-mechanisms-for-crowdsourcing">Double or Nothing: Multiplicat
ive Incentive Mechanisms for Crowdsourcing</a> <a href="/author/niha
r-bhadresh-shah-7956" class="author">Nihar Bhadrish Shah</a>, <a href="/author/denny-zhou-2649" class="author">Denny Zhou</a></li>
```

```
  <li><a href="/paper/5941-learning-with-symmetric-label-noise
-the-importance-of-being-unhinged">Learning with Symmetric Label Noi
se: The Importance of Being Unhinged</a> <a href="/author/brendan-van-rooyen-8299" class="author">Brendan van Rooyen</a>, <a href="/author/aditya-menon-8300" class="author">Aditya Menon</a>, <a href="/author/robert-c-williamson-575" class="author">Robert C. Williamson</a></li>
```

```
  <li><a href="/paper/6019-algorithmic-stability-and-uniform-g
eneralization">Algorithmic Stability and Uniform Generalization</a>
  <a href="/author/ibrahim-m-alabdulmohsin-8419" class="author">Ibrah
im M. Alabdulmohsin</a></li>
```

```
  <li><a href="/paper/6035-adaptive-low-complexity-sequential-
inference-for-dirichlet-process-mixture-models">Adaptive Low-Complex
ity Sequential Inference for Dirichlet Process Mixture Models</a> <a href="/author/theodoros-tsiligkaridis-8437" class="author">Theodoros Tsiligkaridis</a>, <a href="/author/theodoros-tsiligkaridis-8437" class="author">Theodoros Tsiligkaridis</a>, <a href="/author/keith-forsythe-8438" class="author">Keith Forsythe</a></li>
```

```
  <li><a href="/paper/5978-covariance-controlled-adaptive-lang
evin-thermostat-for-large-scale-bayesian-sampling">Covariance-Contro
lled Adaptive Langevin Thermostat for Large-Scale Bayesian Sampling
</a> <a href="/author/xiaocheng-shang-8366" class="author">Xiaocheng
Shang</a>, <a href="/author/zhanxing-zhu-8367" class="author">Zhanxi
ng Zhu</a>, <a href="/author/benedict-leimkuhler-8368" class="author">Benedict Leimkuhler</a>, <a href="/author/amos-j-storkey-2459" class="author">Amos J. Storkey</a></li>
```

```
  <li><a href="/paper/5714-robust-portfolio-optimization">Robu
st Portfolio Optimization</a> <a href="/author/huitong-qiu-8012" class="author">Huitong Qiu</a>, <a href="/author/fang-han-5637" class="author">Fang Han</a>, <a href="/author/han-liu-3555" class="author">Han Liu</a>, <a href="/author/brian-caffo-8013" class="author">Brian Caffo</a></li>
```

[Logarithmic Time Online Multiclass prediction](/paper/5937-logarithmic-time-online-multiclass-prediction) [Anna E. Choromanska](/author/anna-e-choromanska-8068), [John Langford](/author/john-langford-2139)

[Planar Ultrametrics for Image Segmentation](/paper/5802-planar-ultrametrics-for-image-segmentation) [Julian E. Yarkony](/author/julian-e-yarkony-8130), [Charless Fowlkes](/author/charless-fowlkes-8131)

[Expressing an Image Stream with a Sequence of Natural Sentences](/paper/5776-expressing-an-image-stream-with-a-sequence-of-natural-sentences) [Cesc C. Park](/author/cesc-c-park-8090), [Gunhee Kim](/author/gunhee-kim-4225)

[Parallel Correlation Clustering on Big Graphs](/paper/5814-parallel-correlation-clustering-on-big-graphs) [Xinghao Pan](/author/xinghao-pan-6551), [Dimitris Papailiopoulos](/author/dimitris-papailiopoulos-8142), [Samet Oymak](/author/samet-oymak-7243), [Benjamin Recht](/author/benjamin-recht-3537), [Kannan Ramchandran](/author/kannan-ramchandran-7986), [Michael I. Jordan](/author/michael-i-jordan-6338)

[Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks](/paper/5638-faster-r-cnn-towards-real-time-object-detection-with-region-proposal-networks) [Shaoqing Ren](/author/shaoqing-ren-7875), [Kaiming He](/author/kaiming-he-7876), [Ross Girshick](/author/ross-girshick-7398), [Jian Sun](/author/jian-sun-7877)

[Space-Time Local Embeddings](/paper/5971-space-time-local-embeddings) [Ke Sun](/author/ke-sun-8354), [Jun Wang](/author/jun-wang-5143), [Alexandros Kalousis](/author/alexandros-kalousis-5146), [Stephane Marchand-Maillet](/author/stephane-marchand-maillet-8355)

[A Convergent Gradient Descent Algorithm for Rank Minimization and Semidefinite Programming from Random Linear Measurements](/paper/5830-a-convergent-gradient-descent-algorithm-for-rank-minimization-and-semidefinite-programming-from-random-linear-measurements) [Qinqing Zheng](/author/qinqing-zheng-8151), [John Lafferty](/author/john-lafferty-7158)

[Smooth Interactive Submodular Set Cover](/paper/6002-smooth-interactive-submodular-set-cover) [Bryan D. He](/author/bryan-d-he-8395), [Yisong Yue](/author/yisong-yue-5193)

[Galileo: Perceiving Physical Object Properties by Integrating a Physics Engine with Deep Learning](/paper/5780-galileo-perceiving-physical-object-properties-by-integrating-a-physics-engine-with-deep-learning) [Jiajun Wu](/author/jiajun-wu-8096)

=<a href="/author/ilker-yildirim-8097" class="author">Jiajun Wu</a>, <a href="/author/joseph-j-lim-5207" class="author">Ilker Yildirim</a>, <a href="/author/bill-freeman-4274" class="author">Joseph J. Lim</a>, <a href="/author/josh-tenenbaum-6308" class="author">Bill Freeman</a>, <a href="/author/josh-tenenbaum-6308" class="author">Josh Tenenbaum</a></li>

<li><a href="/paper/5766-on-the-pseudo-dimension-of-nearly-optimal-auctions">On the Pseudo-Dimension of Nearly Optimal Auctions</a> <a href="/author/jamie-h-morgenstern-8075" class="author">Jamie H. Morgenstern</a>, <a href="/author/tim-roughgarden-6426" class="author">Tim Roughgarden</a></li>

<li><a href="/paper/5790-unlocking-neural-population-non-stationarities-using-hierarchical-dynamics-models">Unlocking neural population non-stationarities using hierarchical dynamics models</a> <a href="/author/mijung-park-5030" class="author">Mijung Park</a>, <a href="/author/gergo-bohner-8115" class="author">Gergo Bohner</a>, <a href="/author/jakob-h-macke-3422" class="author">Jakob H. Macke</a></li>

<li><a href="/paper/5973-bayesian-manifold-learning-the-locally-linear-latent-variable-model-ll-lvm">Bayesian Manifold Learning: The Locally Linear Latent Variable Model (LL-LVM)</a> <a href="/author/mijung-park-5030" class="author">Mijung Park</a>, <a href="/author/wittawat-jitkrittum-8358" class="author">Wittawat Jitkrittum</a>, <a href="/author/ahmad-qamar-8359" class="author">Ahmad Qamar</a>, <a href="/author/zoltan-szabo-8041" class="author">Zoltan Szabo</a>, <a href="/author/lars-buesing-3516" class="author">Lars Buesing</a>, <a href="/author/maneesh-sahani-1670" class="author">Maneesh Sahani</a></li>

<li><a href="/paper/5864-color-constancy-by-learning-to-predict-chromaticity-from-luminance">Color Constancy by Learning to Predict Chromaticity from Luminance</a> <a href="/author/ayan-chakrabarti-8197" class="author">Ayan Chakrabarti</a></li>

<li><a href="/paper/5681-fast-and-accurate-inference-of-plackett-luce-models">Fast and Accurate Inference of Plackett–Luce Models</a> <a href="/author/lucas-maystre-7961" class="author">Lucas Maystre</a>, <a href="/author/matthias-grossglauser-7962" class="author">Matthias Grossglauser</a></li>

<li><a href="/paper/5753-probabilistic-line-searches-for-stochastic-optimization">Probabilistic Line Searches for Stochastic Optimization</a> <a href="/author/maren-mahsereci-8059" class="author">Maren Mahsereci</a>, <a href="/author/philipp-hennig-5163" class="author">Philipp Hennig</a></li>

<li><a href="/paper/5857-inferring-algorithmic-patterns-with-stack-augmented-recurrent-nets">Inferring Algorithmic Patterns with Stack-Augmented Recurrent Nets</a> <a href="/author/armand-joulin-4503" class="author">Armand Joulin</a>, <a href="/author/tomas-mikolov-6523" class="author">Tomas Mikolov</a></li>

<li><a href="/paper/5848-where-are-they-looking">Where are they looking?</a> <a href="/author/adria-recasens-8180" class="author">Adria Recasens</a>, <a href="/author/aditya-khosla-5335" class="author">Aditya Khosla</a>, <a href="/author/carl-vondrick-4933" class="author">Carl Vondrick</a>, <a href="/author/antonio-torralba-2458" class="author">Antonio Torralba</a></li>



[The Pareto Regret Frontier for Bandits](/paper/6032-the-pareto-regret-frontier-for-bandits) [Tor Lattimore](/author/tor-lattimore-7451)

[On the Limitation of Spectral Methods: From the Gaussian Hidden Clique Problem to Rank-One Perturbations of Gaussian Tensors](/paper/5719-on-the-limitation-of-spectral-methods-from-the-gaussian-hidden-clique-problem-to-rank-one-perturbations-of-gaussian-tensors) [Andrea Montanari](/author/andrea-montanari-4355), [Daniel Reichman](/author/daniel-reichman-8017), [Ofer Zeitouni](/author/ofar-zeitouni-7079)

[Measuring Sample Quality with Stein's Method](/paper/5768-measuring-sample-quality-with-stein-method) [Jackson Gorham](/author/jackson-gorham-8078), [Lester Mackey](/author/lester-mackey-8079)

[Bidirectional Recurrent Convolutional Networks for Multi-Frame Super-Resolution](/paper/5778-bidirectional-recurrent-convolutional-networks-for-multi-frame-super-resolution) [Yan Huang](/author/yan-huang-8094), [Wei Wang](/author/wei-wang-4613), [Liang Wang](/author/liang-wang-6455)

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189" class="author">Marijn F. Stollenga</a>, <a href="/author/wonmin-byeon-7884" class="author">Wonmin Byeon</a>, <a href="/author/marcus-liwicki-3585" class="author">Marcus Liwicki</a>, <a href="/author/juergen-schmidhuber-583" class="author">Juergen Schmidhuber</a></li>

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<li><a href="/paper/5940-matrix-completion-with-noisy-side-information">Matrix Completion with Noisy Side Information</a> <a href="/author/kai-yang-chiang-8298" class="author">Kai-Yang Chiang</a>, <a href="/author/cho-jui-hsieh-6366" class="author">Cho-Jui Hsieh</a>, <a href="/author/inderjit-s-dhillon-6368" class="author">Inderjit S. Dhillon</a></li>

<li><a href="/paper/5660-dependent-multinomial-models-made-easy-stick-breaking-with-the-polya-gamma-augmentation">Dependent Multinomial Models Made Easy: Stick-Breaking with the Polya-gamma Augmentation</a> <a href="/author/scott-linderman-7186" class="author">Scott Linderman</a>, <a href="/author/matthew-johnson-6559" class="author">Matthew Johnson</a>, <a href="/author/ryan-p-adams-3862" class="author">Ryan P. Adams</a></li>

<li><a href="/paper/5860-on-the-job-learning-with-bayesian-decision-theory">On-the-Job Learning with Bayesian Decision Theory</a> <a href="/author/keenon-werling-8192" class="author">Keenon Werling</a>, <a href="/author/arun-tejasvi-chaganty-7993" class="author">Arun Tejasvi Chaganty</a>, <a href="/author/percy-s-liang-3559" class="author">Percy S. Liang</a></li>

=<a href="/author/christopher-d-manning-2133" class="author">Percy S. Liang</a>, <a href="/author/christopher-d-manning-2133" class="author">Christopher D. Manning</a></li>

<li><a href="/paper/5658-calibrated-structured-prediction">Calibrated Structured Prediction</a> <a href="/author/volodymyr-kuleshov-7927" class="author">Volodymyr Kuleshov</a>, <a href="/author/percy-s-liang-3559" class="author">Percy S. Liang</a></li>

<li><a href="/paper/5775-learning-structured-output-representation-using-deep-conditional-generative-models">Learning Structured Output Representation using Deep Conditional Generative Models</a> <a href="/author/kihyuk-sohn-7195" class="author">Kihyuk Sohn</a>, <a href="/author/honglak-lee-3292" class="author">Honglak Lee</a>, <a href="/author/xinchen-yan-8089" class="author">Xinchen Yan</a></li>

<li><a href="/paper/5979-time-sensitive-recommendation-from-recurrent-user-activities">Time-Sensitive Recommendation From Recurrent User Activities</a> <a href="/author/nan-du-5356" class="author">Nan Du</a>, <a href="/author/yichen-wang-8060" class="author">Yichen Wang</a>, <a href="/author/niao-he-7138" class="author">Niao He</a>, <a href="/author/jimeng-sun-8369" class="author">Jimeng Sun</a>, <a href="/author/le-song-3161" class="author">Le Song</a></li>

<li><a href="/paper/5772-learning-stationary-time-series-using-gaussian-processes-with-nonparametric-kernels">Learning Stationary Time Series using Gaussian Processes with Nonparametric Kernels</a> <a href="/author/felipe-tobar-8084" class="author">Felipe Tobar</a>, <a href="/author/thang-d-bui-7448" class="author">Thang D. Bui</a>, <a href="/author/richard-e-turner-7449" class="author">Richard E. Turner</a></li>

<li><a href="/paper/5995-a-market-framework-for-eliciting-private-data">A Market Framework for Eliciting Private Data</a> <a href="/author/bo-waggoner-8386" class="author">Bo Waggoner</a>, <a href="/author/rafael-frongillo-6349" class="author">Rafael Frongillo</a>, <a href="/author/jacob-d-abernethy-4782" class="author">Jacob D. Abernethy</a></li>

<li><a href="/paper/5900-lifted-inference-rules-with-constraints">Lifted Inference Rules With Constraints</a> <a href="/author/happy-mittal-7499" class="author">Happy Mittal</a>, <a href="/author/anuj-mahajan-8263" class="author">Anuj Mahajan</a>, <a href="/author/vibhav-g-gogate-7474" class="author">Vibhav G. Gogate</a>, <a href="/author/parag-singla-7501" class="author">Parag Singla</a></li>

<li><a href="/paper/5899-gradient-estimation-using-stochastic-computation-graphs">Gradient Estimation Using Stochastic Computation Graphs</a> <a href="/author/john-schulman-8261" class="author">John Schulman</a>, <a href="/author/nicolas-heess-5523" class="author">Nicolas Heess</a>, <a href="/author/theophane-weber-8262" class="author">Theophane Weber</a>, <a href="/author/pieter-abbeel-2686" class="author">Pieter Abbeel</a></li>

<li><a href="/paper/5672-model-based-relative-entropy-stochastic-search">Model-Based Relative Entropy Stochastic Search</a> <a href="/author/abbas-abdolmaleki-7947" class="author">Abbas Abdolmaleki</a>, <a href="/author/rudolf-lioutikov-7948" class="author">Rudolf Lioutikov</a>, <a href="/author/jan-r-peters-6745" class="author">Jan R. Peters</a>, <a href="/author/nuno-lau-7949" class="author">Nuno Lau</a>, <a href="/author/luis-pualo-reis-7950" class="author">Lui

s Paulo Reis</a>, <a href="/author/gerhard-neumann-3982" class="author">Gerhard Neumann</a></li>

<li><a href="/paper/5947-semi-supervised-learning-with-ladder-networks">Semi-supervised Learning with Ladder Networks</a> <a href="/author/antti-rasmus-8307" class="author">Antti Rasmus</a>, <a href="/author/mathias-berglund-7903" class="author">Mathias Berglund</a>, <a href="/author/mikko-honkala-7904" class="author">Mikko Honkala</a>, <a href="/author/harri-valpola-2813" class="author">Harri Valpola</a>, <a href="/author/tapani-raiko-7190" class="author">Tapani Raiko</a></li>

<li><a href="/paper/5675-embedding-inference-for-structured-multilabel-prediction">Embedding Inference for Structured Multilabel Prediction</a> <a href="/author/farzaneh-mirzazadeh-7954" class="author">Farzaneh Mirzazadeh</a>, <a href="/author/siamak-ravanbakhsh-7658" class="author">Siamak Ravanbakhsh</a>, <a href="/author/nan-ding-4524" class="author">Nan Ding</a>, <a href="/author/dale-schuurman-1904" class="author">Dale Schuurmans</a></li>

<li><a href="/paper/5669-copula-variational-inference">Copula variational inference</a> <a href="/author/dustin-tran-7944" class="author">Dustin Tran</a>, <a href="/author/david-blei-6452" class="author">David Blei</a>, <a href="/author/edo-m-airoldi-4085" class="author">Edo M. Airoldi</a></li>

<li><a href="/paper/5636-recursive-training-of-2d-3d-convolutional-networks-for-neuronal-boundary-prediction">Recursive Training of 2D-3D Convolutional Networks for Neuronal Boundary Prediction</a> <a href="/author/kisuk-lee-7872" class="author">Kisuk Lee</a>, <a href="/author/aleksandar-zlateski-7873" class="author">Aleksandar Zlateski</a>, <a href="/author/vishwanathan-ashwin-7874" class="author">Vishwanathan Ashwin</a>, <a href="/author/h-sebastian-seung-863" class="author">H. Sebastian Seung</a></li>

<li><a href="/paper/5924-a-dual-augmented-block-minimization-framework-for-learning-with-limited-memory">A Dual Augmented Block Minimization Framework for Learning with Limited Memory</a> <a href="/author/ian-en-hsu-yen-7160" class="author">Ian En-Hsu Yen</a>, <a href="/author/shan-wei-lin-8290" class="author">Shan-Wei Lin</a>, <a href="/author/shou-de-lin-7476" class="author">Shou-De Lin</a></li>

<li><a href="/paper/5839-optimal-testing-for-properties-of-distributions">Optimal Testing for Properties of Distributions</a> <a href="/author/jayadev-acharya-5296" class="author">Jayadev Acharya</a>, <a href="/author/constantinos-daskalakis-8166" class="author">Constantinos Daskalakis</a>, <a href="/author/gautam-c-kamath-8167" class="author">Gautam C. Kamath</a></li>

<li><a href="/paper/5792-efficient-learning-of-continuous-time-hidden-markov-models-for-disease-progression">Efficient Learning of Continuous-Time Hidden Markov Models for Disease Progression</a> <a href="/author/yu-ying-liu-8118" class="author">Yu-Ying Liu</a>, <a href="/author/shuang-li-7967" class="author">Shuang Li</a>, <a href="/author/fuxin-li-4523" class="author">Fuxin Li</a>, <a href="/author/le-song-3161" class="author">Le Song</a>, <a href="/author/james-m-rehg-2077" class="author">James M. Rehg</a></li>

<li><a href="/paper/5674-expectation-particle-belief-propagation">Expectation Particle Belief Propagation</a> <a href="/author/t

```
hibaut-lienart-7953" class="author">Thibaut Lienart</a>, <a href="/author/yee-whyte-teh-1925" class="author">Yee Whye Teh</a>, <a href="/author/arnaud-doucet-1821" class="author">Arnaud Doucet</a></li>
```

```
<li><a href="/paper/5756-latent-bayesian-melding-for-integrating-individual-and-population-models">Latent Bayesian melding for integrating individual and population models</a> <a href="/author/min-gjun-zhong-3402" class="author">Mingjun Zhong</a>, <a href="/author/nigel-goddard-7541" class="author">Nigel Goddard</a>, <a href="/author/charles-sutton-7542" class="author">Charles Sutton</a></li>
```

```
</ul>
```

```
<aside>
  <h3>Neural Information Processing Systems (NIPS)
</h3>
  <p>Papers published at the Neural Information Processing Systems Conference.</p>
</aside>
```

```
</div> <!-- #main -->
</div> <!-- #main-container -->
```

```
<div class="footer-container">
  <footer class="wrapper">
```

```
    <h3>&copy; 1987 – 2017 Neural Information Processing Systems Foundation, Inc.</h3>
```

```
  </footer>
</div>
```

```
<script src="//media.nips.cc/nipsbooks/nipspapers/js/vendor/jquery-1.10.2.min.js"></script>
<script src="//media.nips.cc/nipsbooks/nipspapers/js/main.js"></script>
```

```
<script type="text/javascript">
```

```
// using jQuery
function getCookie(name) {
  var cookieValue = null;
  if (document.cookie && document.cookie != '') {
    var cookies = document.cookie.split(';');
    for (var i = 0; i < cookies.length; i++) {
      var cookie = jQuery.trim(cookies[i]);
      // Does this cookie string begin with the name we want?
      if (cookie.substring(0, name.length + 1) == (name + '=')) {
        cookieValue = decodeURIComponent(cookie.substring(name.length + 1));
        break;
      }
    }
  }
  return cookieValue;
}
```

```

}
var csrftoken = getCookie('csrftoken');
function csrfSafeMethod(method) {
    // these HTTP methods do not require CSRF protection
    return (/^(GET|HEAD|OPTIONS|TRACE)$/.test(method));
}
function sameOrigin(url) {
    // test that a given url is a same-origin URL
    // url could be relative or scheme relative or absolute
    var host = document.location.host; // host + port
    var protocol = document.location.protocol;
    var sr_origin = '//' + host;
    var origin = protocol + sr_origin;
    // Allow absolute or scheme relative URLs to same origin
    return (url == origin || url.slice(0, origin.length + 1) == origin + '/') ||
        (url == sr_origin || url.slice(0, sr_origin.length + 1) == sr_origin + '/') ||
        // or any other URL that isn't scheme relative or absolute
        // i.e relative.
        !(/^(\/\//|http:|https:).*/.test(url));
}
$.ajaxSetup({
    beforeSend: function(xhr, settings) {
        if (!csrfSafeMethod(settings.type) && sameOrigin(settings.url)) {
            // Send the token to same-origin, relative URLs only.
            // Send the token only if the method warrants CSRF protection
            // Using the CSRFToken value acquired earlier
            xhr.setRequestHeader("X-CSRFToken", csrftoken);
        }
    }
});

```

</script>

```

<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/autocomplete.js"></script>
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/widget.js"></script>
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/addanother.js"></script>
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/text_widget.js"></script>
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/remote.js"></script>
<link rel="stylesheet" type="text/css" href="//media.nips.cc/nipsbooks/autocomplete_light/style.css" />

```

```

<script>
    (function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
        (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
        m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
    })(window,document,'script','//www.google-analytics.com/an

```



```
alytics.js','ga');
```

```
ga('create', 'UA-2097757-2', 'nips.cc');  
ga('send', 'pageview');
```

```
</script>
```

```
</body>
```

```
</html>
```

```
<!-- Do not remove: This comment is monitored to verify that the site  
is working properly -->
```

The piece of code with the information about the paper is in the following format:

```
<li><a href="/paper/5677-double-or-nothing-multiplicative-incentive-mechanisms-for-crowdsourcing">Double or Nothing: Multiplicative Incentive Mechanisms for Crowdsourcing</a> <a href="/author/nihar-bhadresh-shah-7956" class="author">Nihar Bhadresh Shah</a>, <a href="/author/denny-zhou-2649" class="author">Denny Zhou</a></li>
```

We may also check the webpage indicated by this code:

In [21]:

```
paper_ref = "/paper/5677-double-or-nothing-multiplicative-incentive-mechanisms-f  
or-crowdsourcing"  
paper_url = base_url + paper_ref  
r = requests.get(paper_url)  
print(r.text)
```

```

<!DOCTYPE html>
  <!--[if lt IE 7]>      <html class="no-js lt-ie9 lt-ie8 lt-ie7">
<![endif]-->
  <!--[if IE 7]>          <html class="no-js lt-ie9 lt-ie8"> <![end
if]-->
  <!--[if IE 8]>          <html class="no-js lt-ie9"> <![endif]-->
  <!--[if gt IE 8]><!--> <html class="no-js"> <!--<![endif]-->
  <head>
    <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=
1">
    <title>Double or Nothing: Multiplicative Incentive Mechanism
s for Crowdsourcing</title>

    <meta name="citation_title" content="Double or Nothing: Multipli
cative Incentive Mechanisms for Crowdsourcing">

    <meta name="citation_author" content="Nihar Bhadresh Shah">

    <meta name="citation_author" content="Denny Zhou">

    <meta name="citation_publication_date" content="2015">
    <meta name="citation_conference_title" content="Advances in Neur
al Information Processing Systems">

    <meta name="citation_firstpage" content="1">

    <meta name="citation_lastpage" content="9">

    <meta name="citation_pdf_url" content="http://papers.nips.cc/pap
er/5677-double-or-nothing-multiplicative-incentive-mechanisms-for-cr
owdsourcing.pdf">

    <meta name="description" content="Eletronic Proceedings of N
eural Information Processing Systems">
    <meta name="viewport" content="width=device-width">

    <link rel="stylesheet" href="//media.nips.cc/nipsbooks/nipsp
apers/css/normalize.min.css">
    <link rel="stylesheet" href="//media.nips.cc/nipsbooks/nipsp
apers/css/main.css">

    <script src="//media.nips.cc/nipsbooks/nipspapers/js/vendor/
modernizr-2.6.2-respond-1.1.0.min.js"></script>

  </head>
  <body>
    <!--[if lt IE 7]>

```

```

    <p class="chromeiframe">You are using an <strong>outdated
  </strong> browser. Please <a href="http://browsehappy.com/">upgrade
    your browser</a> or <a href="http://www.google.com/chromeiframe/?red
  irect=true">activate Google Chrome Frame</a> to improve your experie
  nce.</p>

```

```

    <![endif]-->

```

```

    <div class="header-container">
      <header class="wrapper clearfix">

```

```

        <h1 class="sitename"><a href="/">NIPS Proceeding
  s</a><sup>β</sup></h1>

```

```

        <form action="/search/" class="search">
          <input name="q" value="" class="search" placehol
  der="search" />
        </form>

```

```

        <nav>
          <ul>

```

```

            <li><a href="/">Books</a></li>

```

```

            <li><a href="/book/advances-in-neural-information-processing-sys
  tems-28-2015">2015</a></li>

```

```

          </ul>
        </nav>
      </header>
    </div>

```

```

    <div class="main-container">
      <div class="main wrapper clearfix">

```

```

    <h2 class="subtitle">Double or Nothing: Multiplicative Incentive Mec
  hanisms for Crowdsourcing</h2>

```

```

    <p>Part of: <a href="/book/advances-in-neural-information-processing
  -systems-28-2015">Advances in Neural Information Processing Systems
  28 (NIPS 2015)</a></p>

```

```

    <p><small><blockquote><b>A note about reviews:</b> "heavy" r
  eview comments were provided by reviewers in the program committee a
  s part of the evaluation process for NIPS 2015, along with posted re
  sponses during the author feedback period. Numerical scores from bot
  h "heavy" and "light" reviewers are not provided in the review link
  below.</blockquote></small></p>

```

```

    <a href="/paper/5677-double-or-nothing-multiplicative-incentive-
  mechanisms-for-crowdsourcing.pdf">[PDF]</a>

```

[\[BibTeX\]](/paper/5677-double-or-nothing-multiplicative-incentive-mechanisms-for-crowdsourcing/bibtex)

[\[Supplemental\]](/paper/5677-double-or-nothing-multiplicative-incentive-mechanisms-for-crowdsourcing-supplemental.zip)

[\[Reviews\]](//media.nips.cc/nipsbooks/nipspapers/paper_files/nips28/reviews/2.html)

### Authors

- 

- [Nihar Bhadresh Shah](/author/nihar-bhadresh-shah-7956)

- [Denny Zhou](/author/denny-zhou-2649)



### Conference Event Type: Poster

### Abstract

Crowdsourcing has gained immense popularity in machine learning applications for obtaining large amounts of labeled data. Crowdsourcing is cheap and fast, but suffers from the problem of low-quality data. To address this fundamental challenge in crowdsourcing, we propose a simple payment mechanism to incentivize workers to answer only the questions that they are sure of and skip the rest. We show that surprisingly, under a mild and natural no-free-lunch requirement, this mechanism is the one and only incentive-compatible payment mechanism possible. We also show that among all possible incentive-compatible mechanisms (that may or may not satisfy no-free-lunch), our mechanism makes the smallest possible payment to spammers. Interestingly, this unique mechanism takes a multiplicative form. The simplicity of the mechanism is an added benefit. In preliminary experiments involving over several hundred workers, we observe a significant reduction in the error rates under our unique mechanism for the same or lower monetary expenditure.

<aside>

<h3>Neural Information Processing Systems (NIPS)

</h3>

<p>Papers published at the Neural Information Processing Systems Conference.</p>

</aside>

```

    </div> <!-- #main -->
</div> <!-- #main-container -->

<div class="footer-container">
    <footer class="wrapper">

        <h3>&copy; 1987 – 2017 Neural Information Processing
Systems Foundation, Inc.</h3>

    </footer>
</div>

    <script src="//media.nips.cc/nipsbooks/nipspapers/js/vendor/
jquery-1.10.2.min.js"></script>
    <script src="//media.nips.cc/nipsbooks/nipspapers/js/main.j
s"></script>

<script type="text/javascript">

// using jQuery
function getCookie(name) {
    var cookieValue = null;
    if (document.cookie && document.cookie != '') {
        var cookies = document.cookie.split(';');
        for (var i = 0; i < cookies.length; i++) {
            var cookie = jQuery.trim(cookies[i]);
            // Does this cookie string begin with the name we want?
            if (cookie.substring(0, name.length + 1) == (name +
'=')) {
                cookieValue = decodeURIComponent(cookie.substring(na
me.length + 1));
                break;
            }
        }
    }
    return cookieValue;
}
var csrftoken = getCookie('csrftoken');
function csrfSafeMethod(method) {
    // these HTTP methods do not require CSRF protection
    return (/^(GET|HEAD|OPTIONS|TRACE)$/.test(method));
}
function sameOrigin(url) {
    // test that a given url is a same-origin URL
    // url could be relative or scheme relative or absolute
    var host = document.location.host; // host + port
    var protocol = document.location.protocol;
    var sr_origin = '//' + host;
    var origin = protocol + sr_origin;
    // Allow absolute or scheme relative URLs to same origin
    return (url == origin || url.slice(0, origin.length + 1) == orig
in + '/') ||
        (url == sr_origin || url.slice(0, sr_origin.length + 1) == s
r_origin + '/') ||
        // or any other URL that isn't scheme relative or absolute
        i.e relative.
        !(/^(\/|http:|https:).*/.test(url));
}

```

```
$.ajaxSetup({
  beforeSend: function(xhr, settings) {
    if (!csrfSafeMethod(settings.type) && sameOrigin(settings.url)) {
      // Send the token to same-origin, relative URLs only.
      // Send the token only if the method warrants CSRF protection
      // Using the CSRFToken value acquired earlier
      xhr.setRequestHeader("X-CSRFToken", csrftoken);
    }
  }
});
```

</script>

```
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/autocomplete.js"></script>
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/widget.js"></script>
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/addanother.js"></script>
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/text_widget.js"></script>
<script type="text/javascript" src="//media.nips.cc/nipsbooks/autocomplete_light/remote.js"></script>
<link rel="stylesheet" type="text/css" href="//media.nips.cc/nipsbooks/autocomplete_light/style.css" />
```

```
<script>
  (function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
    (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new Date();a=s.createElement(o),
    m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
  })(window,document,'script','//www.google-analytics.com/analytics.js','ga');
```

```
ga('create', 'UA-2097757-2', 'nips.cc');
ga('send', 'pageview');
```

</script>

```
<script type="text/javascript" src="//media.nips.cc/nipsbooks/nipspapers/js/MathJax/MathJax.js"></script>
```

</body>

</html>

```
<!-- Do not remove: This comment is monitored to verify that the site is working properly -->
```

Analyzing the above code gives us the source of the pdf file:

```
<a href="/paper/5677-double-or-nothing-multiplicative-incentive-mechanism-s-for-crowdsourcing.pdf">[PDF]</a>
```

So, we will do the scraping in the following steps:

- we extract the subpage, title, id and authors of a paper from the webpage containing the list of all papers
- we build url of the pdf file
- we download the pdf file

The HTML code may be parsed by the BeautifulSoup module:

In [22]:

```
from bs4 import BeautifulSoup

base_url = "http://papers.nips.cc"
index_url = "http://papers.nips.cc/book/advances-in-neural-information-processing-systems-28-2015"

r = requests.get(index_url)

soup = BeautifulSoup(r.content, "lxml")
paper_links = [link for link in soup.find_all('a') if link["href"][:7] == "/paper/"]
print("%d Papers Found" % len(paper_links))
```

403 Papers Found

In [23]:

```
for i in paper_links[:4]:
    print(i)
    print()
```

```
<a href="/paper/5677-double-or-nothing-multiplicative-incentive-mechanisms-for-crowdsourcing">Double or Nothing: Multiplicative Incentive Mechanisms for Crowdsourcing</a>
```

```
<a href="/paper/5941-learning-with-symmetric-label-noise-the-importance-of-being-unhinged">Learning with Symmetric Label Noise: The Importance of Being Unhinged</a>
```

```
<a href="/paper/6019-algorithmic-stability-and-uniform-generalization">Algorithmic Stability and Uniform Generalization</a>
```

```
<a href="/paper/6035-adaptive-low-complexity-sequential-inference-for-dirichlet-process-mixture-models">Adaptive Low-Complexity Sequential Inference for Dirichlet Process Mixture Models</a>
```



In [24]:

```
import re

for link in paper_links[:4]:
    paper_title = link.contents[0]
    info_link = base_url + link["href"]
    pdf_link = info_link + ".pdf"
    pdf_name = link["href"][7:] + ".pdf"
    paper_id = re.findall(r"^\d+-", pdf_name)[0]
    pdf = requests.get(pdf_link)
    pdf_file = open(pdf_name, "wb")
    pdf_file.write(pdf.content)
    pdf_file.close()
    print(paper_id, paper_title)
```

```
5677 Double or Nothing: Multiplicative Incentive Mechanisms for Crow
dsourcing
5941 Learning with Symmetric Label Noise: The Importance of Being Un
hinged
6019 Algorithmic Stability and Uniform Generalization
6035 Adaptive Low-Complexity Sequential Inference for Dirichlet Proc
ess Mixture Models
```

In [25]:

```
!ls *.pdf
```

```
5677-double-or-nothing-multiplicative-incentive-mechanisms-for-crowd
sourcing.pdf
5941-learning-with-symmetric-label-noise-the-importance-of-being-unh
inged.pdf
6019-algorithmic-stability-and-uniform-generalization.pdf
6035-adaptive-low-complexity-sequential-inference-for-dirichlet-proc
ess-mixture-models.pdf
```

Having the pdf files, we can transform them to txt format for further analysis:

In [26]:

```
import subprocess
subprocess.call(["pdftotext", pdf_name, "temp.txt"])
```

Out[26]:

```
0
```

In [27]:

```
!head temp.txt
```

Adaptive Low-Complexity Sequential Inference for  
Dirichlet Process Mixture Models  
Theodoros Tsiligkaridis, Keith W. Forsythe  
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#### Abstract

We develop a sequential low-complexity inference procedure for Dirichlet process mixtures of Gaussians for online clustering and parameter estimation when the number of clusters are unknown a-priori. We present an easily computable,

#### Scrapy

Scrapy (<http://scrapy.org/> (<http://scrapy.org/>)) is an open source and collaborative framework for extracting the data you need from websites.

Before you start scraping, you have to set up a new scrapy project. Enter a directory where you would like to store your code and run:

```
scrapy startproject iftpapers
```

This will create the iftpapers directory with the following content:

```
iftpapers/                                <-- project directory
  scrapy.cfg                             <-- configuration file
  iftpapers/                             <-- project's Python module

  __init__.py

  items.py                               <-- project items definition file

  pipelines.py                           <-- project pipelines file

  settings.py                            <-- project settings file

  spiders/                               <-- a directory where you'll later put your spiders
  __init__.py
  ...
```

Now we can create the items.py file:

In [11]:

```
%%writefile iftpapers/iftpapers/items.py

# -*- coding: utf-8 -*-
import scrapy

class IftpapersItem(scrapy.Item):
    num = scrapy.Field()
    aut = scrapy.Field()
    tit = scrapy.Field()
```

Overwriting iftpapers/iftpapers/items.py

The actual spider may look like this:

In [12]:

```
%%writefile iftpapers/iftpapers/spiders/ift_test.py

# -*- coding: utf-8 -*-
import scrapy

class IFTSpider(scrapy.Spider):
    name = "ift"
    allowed_domains = ["http://www.ift.uni.wroc.pl"]
    start_urls = ["http://www.ift.uni.wroc.pl/publications"]

    def parse(self, response):
        for sel in response.xpath('//table/tr'): #find the table
            num = sel.xpath('td[1]').extract() #first cell contains paper id
            aut = sel.xpath('td[2]/b/text()').extract() #second cell - authors
            tit = sel.xpath('td[3]/i/text()').extract() #third cell - title
            with open("papers.txt", "a") as f: #not very efficient - file closed after each found paper
                txt = aut[0]+ u", " + tit[0].upper() + u"\n"
                f.write(txt.encode('utf8', 'replace'))
```

Overwriting iftpapers/iftpapers/spiders/ift\_test.py

Let us start the spider:

In [14]:

```
import os
os.chdir("iftpapers")
print(os.getcwd())
```

/home/szwabin/Dropbox/Zajecia/UnstructuredData/5-data\_collection/iftpapers

In [15]:

```
!scrapy crawl ift
```

```
2017-09-29 12:09:53 [scrapy.utils.log] INFO: Scrapy 1.4.0 started (bot: iftpapers)
2017-09-29 12:09:53 [scrapy.utils.log] INFO: Overridden settings:
{'BOT_NAME': 'iftpapers', 'NEWSPIDER_MODULE': 'iftpapers.spiders',
 'SPIDER_MODULES': ['iftpapers.spiders'], 'ROBOTSTXT_OBEY': True}
2017-09-29 12:09:53 [scrapy.middleware] INFO: Enabled extensions:
['scrapy.extensions.memusage.MemoryUsage',
 'scrapy.extensions.corestats.CoreStats',
 'scrapy.extensions.logstats.LogStats',
 'scrapy.extensions.telnet.TelnetConsole']
2017-09-29 12:09:53 [scrapy.middleware] INFO: Enabled downloader middlewares:
['scrapy.downloadermiddlewares.robotstxt.RobotsTxtMiddleware',
 'scrapy.downloadermiddlewares.httpauth.HttpAuthMiddleware',
 'scrapy.downloadermiddlewares.downloadtimeout.DownloadTimeoutMiddleware',
 'scrapy.downloadermiddlewares.defaultheaders.DefaultHeadersMiddleware',
 'scrapy.downloadermiddlewares.useragent.UserAgentMiddleware',
 'scrapy.downloadermiddlewares.retry.RetryMiddleware',
 'scrapy.downloadermiddlewares.redirect.MetaRefreshMiddleware',
 'scrapy.downloadermiddlewares.httpcompression.HttpCompressionMiddleware',
 'scrapy.downloadermiddlewares.redirect.RedirectMiddleware',
 'scrapy.downloadermiddlewares.cookies.CookiesMiddleware',
 'scrapy.downloadermiddlewares.httpproxy.HttpProxyMiddleware',
 'scrapy.downloadermiddlewares.stats.DownloaderStats']
2017-09-29 12:09:53 [scrapy.middleware] INFO: Enabled spider middlewares:
['scrapy.spidermiddlewares.httperror.HttpErrorMiddleware',
 'scrapy.spidermiddlewares.offsite.OffsiteMiddleware',
 'scrapy.spidermiddlewares.referer.RefererMiddleware',
 'scrapy.spidermiddlewares.urllength.UrlLengthMiddleware',
 'scrapy.spidermiddlewares.depth.DepthMiddleware']
2017-09-29 12:09:53 [scrapy.middleware] INFO: Enabled item pipelines:
[]
2017-09-29 12:09:53 [scrapy.core.engine] INFO: Spider opened
2017-09-29 12:09:53 [scrapy.extensions.logstats] INFO: Crawled 0 pages (at 0 pages/min), scraped 0 items (at 0 items/min)
2017-09-29 12:09:53 [scrapy.extensions.telnet] DEBUG: Telnet console listening on 127.0.0.1:6023
2017-09-29 12:09:53 [scrapy.core.engine] DEBUG: Crawled (200) <GET http://www.ift.uni.wroc.pl/robots.txt> (referer: None)
2017-09-29 12:09:53 [scrapy.core.engine] DEBUG: Crawled (200) <GET http://www.ift.uni.wroc.pl/publications> (referer: None)
2017-09-29 12:09:53 [scrapy.core.engine] INFO: Closing spider (finished)
2017-09-29 12:09:53 [scrapy.statscollectors] INFO: Dumping Scrapy stats:
{'downloader/request_bytes': 456,
 'downloader/request_count': 2,
 'downloader/request_method_count/GET': 2,
 'downloader/response_bytes': 34518,
 'downloader/response_count': 2,
 'downloader/response_status_count/200': 2,
 'finish_reason': 'finished',
 'finish_time': datetime.datetime(2017, 9, 29, 10, 9, 53, 773515),
 'log_count/DEBUG': 3,
 'log_count/INFO': 7,
 'memusage/max': 52178944,
```

```
'memusage/startup': 52178944,  
'response_received_count': 2,  
'scheduler/dequeued': 1,  
'scheduler/dequeued/memory': 1,  
'scheduler/enqueued': 1,  
'scheduler/enqueued/memory': 1,  
'start_time': datetime.datetime(2017, 9, 29, 10, 9, 53, 358123)}  
2017-09-29 12:09:53 [scrapy.core.engine] INFO: Spider closed (finish  
ed)
```

In [16]:

```
! cat papers.txt
```

D. E. Alvarez-Castillo, M. A. R. Kaltenborn, D. Blaschke, EXCLUDED VOLUME EFFECTS IN THE HYBRID STAR EOS

A. Ayriyan, D. E. Alvarez-Castillo, D. Blaschke, H. Grigorian, MASS-RADIUS CONSTRAINTS FOR THE NEUTRON STAR EOS - BAYESIAN ANALYSIS

A. Ayriyan, D. Blaschke, R. Lastowiecki, PHASE DIAGRAM OF THE THREE-FLAVOR COLOR SUPERCONDUCTING PNJL MODEL

N.-U. Bastian, D. Blaschke, TOWARDS A NEW QUARK-NUCLEAR MATTER EOS FOR APPLICATIONS IN ASTROPHYSICS AND HEAVY-ION COLLISIONS

D. Blaschke, D. E. Alvarez-Castillo, HIGH-MASS TWINS & RESOLUTION OF THE RECONFINEMENT, MASQUERADE AND HYPERON PUZZLES OF COMPACT STAR INTERIORS

D. Blaschke, N. T. Gevorgyan, A. D. Panferov, S. A. Smolyansky, SCHWINGER EFFECT AT MODERN LASER FACILITIES

A. Borowiec, J. Lukierski, V. N. Tolstoy, REAL AND PSEUDOREAL FORMS OF D=4 COMPLEX EUCLIDEAN (SUPER)ALGEBRAS AND SUPER-POINCARÉ/ SUPER-EUCLIDEAN R-MATRICES

A. Borowiec, J. Lukierski, V. N. Tolstoy, QUANTUM DEFORMATIONS OF D = 4 EUCLIDEAN, LORENTZ, KLEINIAN AND QUATERNIONIC  $O^*(4)$  SYMMETRIES IN UNIFIED  $O(4;C)$  SETTING

A. Borowiec, A. Stachowski, M. Szydłowski, A. Wojnar, INFLATIONARY COSMOLOGY WITH CHAPLYGIN GAS IN PALATINI FORMALISM

A. Dubinin, D. Blaschke, A. Radzhabov, PION AND KAON IN THE BETH-UHL ENBECK APPROACH

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J. Jędrzejewski, QUANTUM CRITICALITY IN CONDENSED MATTER. PHENOMENA, MATERIALS AND IDEAS IN THEORY AND EXPERIMENT

A. Jędrzejewski, K. Sznajd-Weron, J. Szwabiński, MAPPING THE QQ-VOTER MODEL: FROM A SINGLE CHAIN TO COMPLEX NETWORKS

M. Matyka, J. Gołembiewski, Z. Koza, POWER-EXPONENTIAL VELOCITY DISTRIBUTIONS IN DISORDERED POROUS MEDIA

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H. Grigorian, D. N. Voskresensky, D. Blaschke, INFLUENCE OF THE STIFFNESS OF THE EQUATION OF STATE AND IN-MEDIUM EFFECTS ON THE COOLING OF COMPACT STARS

L. Jakóbczyk, A. Frydryszak, P. Ługiewicz, QUTRIT GEOMETRIC DISCORD

L. Juchnowski, D. Blaschke, T. Fischer, S. A. Smolyansky, NONEQUILIB



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K. Redlich, H. Satz, THE LEGACY OF ROLF HAGEDORN: STATISTICAL BOOTSTRAP AND ULTIMATE TEMPERATURE

## Using of existing APIs

### Twitter and tweepy

#### Real-time monitoring of Twitter stream

In [ ]:

```
from tweepy.streaming import StreamListener
from tweepy import OAuthHandler
from tweepy import Stream
import time
import pprint

# Twitter account data
consumer_key="XXXX"
consumer_secret="XXXX"

# Generate application data within your Twitter account. Then:
access_token="XXXXX"
access_token_secret="XXXXX"

class StdOutListener(StreamListener):
    """ A listener handles tweets that are received from the stream.
    This is a basic listener that just prints received tweets to stdout.
    """
    def on_data(self, data):
        try:
            with open("twitter.json", 'a') as f:
                f.write(data)
                print(data)
            return True
        except BaseException as e:
            print("Error on_data: %s" % str(e))
            time.sleep(5)
        return True

    def on_error(self, status):
        print(status)

if __name__ == '__main__':
    l = StdOutListener()
    auth = OAuthHandler(consumer_key, consumer_secret)
    auth.set_access_token(access_token, access_token_secret)

    stream = Stream(auth, l)
    stream.filter(track=['python'])
```

```
{
  "created_at": "Wed Oct 11 12:23:28 +0000 2017",
  "id": 918089667584565250,
  "id_str": "918089667584565250",
  "text": "@python \u30b9\u30c8\u30ec\u30c3\u30ab\u30fc\u53cd\u5fdc\n NowTime: 2017/10/11 21:23:28.4773\n TweetCount: 2269",
  "source": "\u003ca href=\"http://twitter.com/download/android\" rel=\"nofollow\" \u003eTwitter for Android\u003c/a\u003e",
  "truncated": false,
  "in_reply_to_status_id": null,
  "in_reply_to_status_id_str": null,
  "in_reply_to_user_id": 765482,
  "in_reply_to_user_id_str": "765482",
  "in_reply_to_screen_name": "Python",
  "user": {
    "id": 2449488770,
    "id_str": "2449488770",
    "name": "Ferix",
    "screen_name": "nfz6",
    "location": null,
    "url": "http://twpf.jp/nfz6",
    "description": "Razer/PUBG/R6S/Ryzen \u9593\u9055\u3048\u305f\u9053\u3092\u6b69\u3093\u3067\u308b\u4eba\u3067\u3059\u3002",
    "translator_type": "regular",
    "protected": false,
    "verified": false,
    "followers_count": 64447,
    "friends_count": 17,
    "listed_count": 0,
    "favourites_count": 7682,
    "statuses_count": 111207,
    "created_at": "Thu Apr 17 10:35:46 +0000 2014",
    "utc_offset": 32400,
    "time_zone": "Seoul",
    "geo_enabled": false,
    "lang": "ja",
    "contributors_enabled": false,
    "is_translator": false,
    "profile_background_color": "000000",
    "profile_background_image_url": "http://abs.twimg.com/themes/theme1/bg.png",
    "profile_background_image_url_https": "https://abs.twimg.com/themes/theme1/bg.png",
    "profile_background_tile": false,
    "profile_link_color": "FF0080",
    "profile_sidebar_border_color": "000000",
    "profile_sidebar_fill_color": "000000",
    "profile_text_color": "000000",
    "profile_use_background_image": false,
    "profile_image_url": "http://pbs.twimg.com/profile_images/917741971917094913/Tna0Rd5R_normal.jpg",
    "profile_image_url_https": "https://pbs.twimg.com/profile_images/917741971917094913/Tna0Rd5R_normal.jpg",
    "profile_banner_url": "https://pbs.twimg.com/profile_banners/2449488770/1507702130",
    "default_profile": false,
    "default_profile_image": false,
    "following": null,
    "follow_request_sent": null,
    "notifications": null,
    "geo": null,
    "coordinates": null,
    "place": null,
    "contributors": null,
    "is_quote_status": false,
    "quote_count": 0,
    "reply_count": 0,
    "retweet_count": 0,
    "favorite_count": 0,
    "entities": {
      "hashtags": [],
      "urls": [],
      "user_mentions": [
        {
          "screen_name": "Python",
          "name": "Python",
          "id": 765482,
          "id_str": "765482",
          "indices": [0, 7]
        }
      ],
      "symbols": []
    },
    "favorited": false,
    "retweeted": false,
    "filter_level": "low",
    "lang": "ja",
    "timestamp_ms": "1507724608690"
  }
}
```

```
{
  "created_at": "Wed Oct 11 12:23:29 +0000 2017",
  "id": 918089672600952833,
  "id_str": "918089672600952833",
  "text": "@ashemedai @dstufft @ncoghlan @dev @DRMacIver @hynek @tintvrtkovic i.e. a python app shipped with PEX that uses twis\u2026 https://t.co/fEuXE6pbUy",
  "display_text_range": [66, 140],
  "source": "\u003ca href=\"http://twitter.com\" rel=\"nofollow\" \u003eTwitter Web Client\u003c/a\u003e",
  "truncated": true,
  "in_reply_to_status_id": 918089500235939845,
  "in_reply_to_status_id_str": "918089500235939845",
  "in_reply_to_user_id": 1143919728,
  "in_reply_to_user_id_str": "1143919728",
  "in_reply_to_screen_name": "hawkieowl",
  "user": {
    "id": 1143919728,
    "id_str": "1143919728",
    "name": "owl sez yes",
    "screen_name": "hawkieowl",
    "location": "melburnia, 'straya",
    "url": "http://atleastfornow.net",
    "description": "Miss Amber Brown, @twistedmatrix's owl-themed release management simulator. Keynote speaker, sometimes. Opinions mine, even the bad ones. \ud83e\udd89\ud83d\udc26 [she/her]",
    "translator_type": "none",
    "protected": false,
    "verified": false,
    "followers_count": 929,
    "friends_count": 308,
    "listed_count": 61,
    "favourites_count": 4807,
    "statuses_count": 3781,
    "created_at": "Sun Feb 03 01:57:19 +0000 2013",
    "utc_offset": 39600,
    "time_zone": "Melbourne",
    "geo_enabled": false,
    "lang": "en",
    "contributors_enabled": false,
    "is_translator": false,
    "profile_background_color": "000000",
    "profile_background_image_url": "http://pbs.twimg.com/profile_background_images/452780958622560257/b3lFr0jZ.png",
    "profile_background_image_url_https": "https://pbs.twimg.com/profile_background_images/452780958622560257/b3lFr0jZ.png",
    "profile_..."
  }
}
```

```
background_tile":true,"profile_link_color":"FF0000","profile_sidebar_border_color":"000000","profile_sidebar_fill_color":"E6F6F9","profile_text_color":"333333","profile_use_background_image":false,"profile_image_url":"http://pbs.twimg.com/profile_images/910750562508972032/0VQIs8Kz_normal.jpg","profile_image_url_https":"https://pbs.twimg.com/profile_images/910750562508972032/0VQIs8Kz_normal.jpg","profile_banner_url":"https://pbs.twimg.com/profile_banners/1143919728/1424238152","default_profile":false,"default_profile_image":false,"following":null,"follow_request_sent":null,"notification_settings":null,"geo":null,"coordinates":null,"place":null,"contributors":null,"is_quote_status":false,"extended_tweet":{"full_text":"@ashemedai @dstufft @ncoghlan_dev @DRMacIver @hynek @tintvrtkovic i.e. a python app shipped with PEX that uses twisted.web will still ship the rest of twisted, and such, and its hard to strip it out","display_text_range":[66,198],"entities":{"hashtags":[],"urls":[],"user_mentions":[{"screen_name":"ashemedai","name":"Jeroen Ruigrok","id":196518052,"id_str":"196518052","indices":[0,10]},{"screen_name":"dstufft","name":"Donald Stufft","id":250397632,"id_str":"250397632","indices":[11,19]},{"screen_name":"ncoghlan_dev","name":"Nick Coghlan","id":261665936,"id_str":"261665936","indices":[20,33]},{"screen_name":"DRMacIver","name":"DRMacIver's Monster","id":14368342,"id_str":"14368342","indices":[34,44]},{"screen_name":"hynek","name":"Hynek Schlawack \ud83c\uddff\u00d83c\u00de6","id":14914177,"id_str":"14914177","indices":[45,51]},{"screen_name":"tintvrtkovic","name":"Tin Tvrtkovi\u0107","id":1380016717,"id_str":"1380016717","indices":[52,65]]},"symbols":[]},"quote_count":0,"reply_count":0,"retweet_count":0,"favorite_count":0,"entities":{"hashtags":[],"urls":[{"url":"https://t.co/fEuXE6pbUy","expanded_url":"https://twitter.com/i/web/status/918089672600952833","display_url":"twitter.com/i/web/status/918089672600952833","indices":[117,140]}],"user_mentions":[{"screen_name":"ashemedai","name":"Jeroen Ruigrok","id":196518052,"id_str":"196518052","indices":[0,10]},{"screen_name":"dstufft","name":"Donald Stufft","id":250397632,"id_str":"250397632","indices":[11,19]},{"screen_name":"ncoghlan_dev","name":"Nick Coghlan","id":261665936,"id_str":"261665936","indices":[20,33]},{"screen_name":"DRMacIver","name":"DRMacIver's Monster","id":14368342,"id_str":"14368342","indices":[34,44]},{"screen_name":"hynek","name":"Hynek Schlawack \ud83c\uddff\u00d83c\u00de6","id":14914177,"id_str":"14914177","indices":[45,51]},{"screen_name":"tintvrtkovic","name":"Tin Tvrtkovi\u0107","id":1380016717,"id_str":"1380016717","indices":[52,65]]},"symbols":[]},"favorited":false,"retweeted":false,"filter_level":"low","lang":"en","timestamp_ms":"1507724609886"}
```

```
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\u00a0mp2consult https://t.co/MYu4hVxbE9","source":"\u003ca href=
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ence in my field which gives me the privilege of a better edge into
knowing what the market perfectly","translator_type":"none","protec
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        "description": "family friendly pet mom | instagram & snapchat: taylorndean | newest video below !!!!!",
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In [1]:

```
import json

with open('twitter.json', 'r') as f:
    line = f.readline() # only first tweet
    tweet = json.loads(line) # as a dict
    print(json.dumps(tweet, indent=4)) # output formatting
```



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      }
    ]
  },
  "text": "Sjoveste film nogensinde? Dit bud? Mit - ubetinget: Mon
ty Python's Life of Brian! #dkpol #dkmedier https://t.co/waCZ39x8I
h",
  "truncated": false,
  "id": 708280801398562816,
  "retweet_count": 0,
  "in_reply_to_user_id_str": null,
  "is_quote_status": false,
  "filter_level": "low",
  "retweeted": false,
  "id_str": "708280801398562816"
}

```

In [3]:

```

with open('twitter.json', 'r') as f:
    for line in f:
        tweet = json.loads(line) # each tweet as a dict
        print(tweet["text"])

```

RT @QrnaJnyynpr: #100DaysOfCode - Actually I'm still in bed. I promise, more HTML and Python after just <lies>five</lies> more minutes.

## Looking for tweets on a given topic

In [4]:

```
import tweepy

consumer_key="XXXX"
consumer_secret="XXXXX"
access_token="XXXXX"
access_token_secret="XXXXX"

auth = tweepy.auth.OAuthHandler(consumer_key, consumer_secret)
auth.set_access_token(access_token,access_token_secret)
api = tweepy.API(auth)
search_results = api.search(q="python", count=100)

for i in search_results:
    print(i.created_at, i.text)
    print()
```

2017-10-11 12:31:04 MySQL workbench utilities administer #MySQL with python scripts

<https://t.co/004dL5PcEj>

2017-10-11 12:31:03 @ncoghlan\_dev @ashemedai @dstufft @DRMacIver @hynek @tintvrtkovic (I also don't have robust internet access, I have...  
<https://t.co/bfEdyc8kAi>

2017-10-11 12:31:00 evoke 5.9: a simple and powerful python web framework with pythonic "evo" templating <https://t.co/BhKxax77Jb>

2017-10-11 12:30:49 A python that cannot dance in sambisa forest, is that one a python?

2017-10-11 12:30:38 Soup, biscuits and Monty Python ☺

2017-10-11 12:30:38 ほしくうん♥

2017-10-11 12:30:27 RT @HOSHIBACKYARD: ぱいにき///

2017-10-11 12:30:26 RT @analyticbridge: R and Python cheatsheets <https://t.co/iauHYElmeZ> <https://t.co/m97FQ0nQ0J>

2017-10-11 12:30:25 What are the best GitHub repositories that anyone can contribute to? <https://t.co/XopAWJcsGm> #Python

I'd like to take part in DigitalOce...

2017-10-11 12:30:22 try:  
    python\_brasil\*2  
except:  
    outubro.replace('semana das crianças', 'Python Brasil')  
#pybr13 #uaipython

2017-10-11 12:30:19 Operation Python Dance in the SE arrested 8 suspected cult members, vandals & a drug peddler <https://t.co/YdwRxf6xyj> Great ROI. BH nko?

2017-10-11 12:30:14 the inventor of your brother's Python code is NP-complete

2017-10-11 12:30:04 @Riklin10 <https://t.co/7ZGYkiA0Gr>

2017-10-11 12:30:03 barisuke がQiitaに投稿しました。  
[python] 複数行の標準入力の処理  
Python  
<https://t.co/IzyVSAVZH9>

2017-10-11 12:30:02 nori-dev-akg がQiitaに投稿しました。  
Bluetoothシャットダウンボタンを作る #300円でIoTボタン  
Python・RaspberryPi・IoT・ダイソー  
<https://t.co/b1V75mtj9S>

2017-10-11 12:30:01 Стрим по майнкрафту в 10 часов вечера по Киеву

2017-10-11 12:30:01 @ncoghlan\_dev @ashemedai @dstufft @DRMacIver @hynek @tintvrtkovic So the theoretical user here is one that both use...  
<https://t.co/NrMvDlRrVL>

2017-10-11 12:29:49 RT @lucazav: You can finally query #SQLServer ta

bles using #regex with #R in 2016 and 2017 (or even #Python in 2017), and #TSQL <https://t.co/...>

2017-10-11 12:29:41 (ちょっとそこからよく分かんないけど) 同じ号を二冊買ってしまったとかで日経ソフトウェアを一冊貰ったので試しにpythonとやらをさわってみたんだけど、ホントにサンプル動かしてから紙面に乗せてんだろうな...と疑ってしまう。

2017-10-11 12:29:41 RT @PythonIreland: Retweet this for a chance to win 1 of 2 free tickets for PyConIE 2017 (closing date : Sat 14th Oct Noon) #Python <https://t.co/...>

2017-10-11 12:29:16 RT @abhaga: Hiring a developer at <https://t.co/RfsEKy60VT>. Please help spread the word. Prior Python experience not necessary. <https://t.co/...>

2017-10-11 12:29:11 Bluetoothシャットダウンボタンを作る #300円でIoTボタン - <https://t.co/lyfphTrhc4>

2017-10-11 12:29:01 RT @analyticbridge: R and Python cheatsheets <https://t.co/iauHYElmeZ> <https://t.co/m97FQ0nQ0J>

2017-10-11 12:28:55 RT @BiafraHerald: BIAFRA: " OPERATION PYTHON DANCE 11" AND WHY NIGERIAN GOVERNMENT/ARMY MUST PROVIDE MAZI NNAMDI KANU <https://t.co/1QZDpw6D...>

2017-10-11 12:28:44 【定期】沖縄でPythonのイベント開催に興味ある方、コミュニティに参加してみたい方、Python始めてみたいけどどうしたら良いかわからない方、リプライいただければなにかお手伝いできるかもしれないです。気軽にどうぞ。

2017-10-11 12:28:39 緋色の大人達の信念と幸せを何よりも誰よりも願う共犯者達の話

残党は居るものの実質組織の破壊に成功した後幸せを噛みしめたのも束の間何も知りもしない身勝手な大人達は知りすぎた青年を危険視。情報を流す事もましてや大切な人が守る国を裏切るつもりなぞないがお偉い方はそうは思わなかった

2017-10-11 12:28:06 ほしくん好きだよこれ

2017-10-11 12:28:05 RT @pythonbot\_: Hands-on Data Science And Python Machine Learning <https://t.co/XIU0ZkzTPT> #machine #learning #python @pythonbot\_

2017-10-11 12:28:00 tf-nightly 1.4.0.dev20171011: TensorFlow helps the tensors flow <https://t.co/PHC43bGUAf>

2017-10-11 12:28:00 snipsskills 0.1.6.21: Snips Skills Manager <https://t.co/Pi8cxj0fw7>

2017-10-11 12:27:36 Hands-on Data Science And Python Machine Learning <https://t.co/XIU0ZkzTPT> #machine #learning #python @pythonbot\_

2017-10-11 12:27:35 A Concise Introduction To Programming In Python (chapman & Hall/crc Tex <https://t.co/NjgWSuS7EX> #software #development #python @pythonbot\_

2017-10-11 12:27:30 @python\_klfn 油のかたまりだからね。ゆりさんも気をつけてくださいね😊😊😊

2017-10-11 12:27:19 [Python] 请问哪里可以找到在爬虫的 pipelines.py 中将数据写入 MYSQL 数据库的例子?: 想在 pipelines.py 中将爬到的数据写入 MYSQL 数据库, 希望能有这样的范例代码可供学习,

恳请大家... <https://t.co/ra6IdIbL6Z>

2017-10-11 12:27:02 From bytes to strings in #Python and back again  
<https://t.co/tEcpeXGUCW> <https://t.co/xK1j0wtrkI>

2017-10-11 12:26:57 RT @analyticbridge: R and Python cheatsheets <https://t.co/iauHYElmeZ> <https://t.co/m97FQ0nQ0J>

2017-10-11 12:26:50 PYTHON EATS A PORCUPINE AND INSTANTLY REGRETS HIS DECISION ! <https://t.co/jLCT8jpEeq> via @YouTube

2017-10-11 12:26:49 RT @RNPYM\_ : 【急募】11/12に絶対絶望少女の併せを行います。此方カメラマン様揃っておりますがレイヤー様が切実に足りておりません。FF内外問わず募集致しておりますので、お気軽にお声掛け下さい。宜しくお願い致します！！#拡散希望 #併せ募集 <https://t.co/...>

2017-10-11 12:26:43 RT @IBMResearch: Developers, check out QISKit! & explore #IBMQ Experience using a Python interface. <https://t.co/9wJymvDZX8> <https://t.co/tY...>

2017-10-11 12:26:42 RT @HOSHIBACKYARD: 当時巨峰食べながら無表情無言であのツイートしてました...すみません許してください

2017-10-11 12:26:33 RT @HOSHIBACKYARD: 巨峰を食べた人「キョッホ-wwwwww」

2017-10-11 12:26:01 RT @PythonWeekly: PySyft - Encrypted Deep Learning Library. <https://t.co/hwHsmEUepd> #python

2017-10-11 12:26:00 Pareidoscope 0.10.2: A collection of tools for determining the association between arbitrary linguistic s... <https://t.co/M6hX4Ke5b0>

2017-10-11 12:26:00 aiobfd 0.1: Asynchronous BFD Daemon <https://t.co/OXYWpjR2Hq>

2017-10-11 12:26:00 django-powerbank 0.2.15: Extra power for included batteries <https://t.co/KPNigP3K0H>

2017-10-11 12:25:58 RT @thefronthat: Software Developer at YouGov #workfromhome #Python #MongoDB <https://t.co/DvQ0c7KB5x>

2017-10-11 12:25:44 @dstufft @ashemedai @ncoghlan\_dev @DRMacIver @hynek @tintvrtkovic ship your python platform installer to install so... <https://t.co/KXKrUwVsFo>

2017-10-11 12:25:09 @kyran\_dale we thought you might like to attend our free Intel Code Modernization Workshop, 1-2 Nov, Oxford <https://t.co/4eAwVlqlsq> #Python

2017-10-11 12:25:05 Software Engineer Python Generalist @Landing\_jobs Lisbon Portugal <https://t.co/0CUIsPiTEU> #Linux #Machinelearning #Permanent

2017-10-11 12:24:55 SickRage: Download Finished: Highway Thru Hell - 6x06 - Python Unleashed - SDTV

2017-10-11 12:24:48 RT @barrysmyth: How did I miss this? Great resource of code and examples. The Python Graph Gallery – #python #DataScience <https://t.co/s02A...>

2017-10-11 12:24:30 Werkzaamheden aan Python #Efteling <https://t.co/>

KevwHaC9rH

2017-10-11 12:24:25 @kalafina8 美味しいけど仕方ないね...

2017-10-11 12:24:12 RT @taylorndean: what would u rather have, 10,000 for a Louis Vuitton dead python purse or 2,000 for my living python Louis <https://t.co/CL...>

2017-10-11 12:24:08 3 Python web scrapers and crawlers <https://t.co/KMdUBYWMDp> via @opensourceway by @jehb #webscraping #python

2017-10-11 12:23:56 Looking for Python projects to assist with. <https://t.co/Xu0uuKE8YV>

Hello I am a self taught Python programmer. I am looking for any help...

2017-10-11 12:23:47 RT @rochacbruno: Preciso de ajuda para manter a lib #python @pagseguro algumas issues abertas e o @pagseguro não dá nenhuma ajuda <https://t.co/...>

2017-10-11 12:23:46 Hire a Python Developer by mp2consult <https://t.co/amg0zD4mkL>

2017-10-11 12:23:29 @ashemedai @dstufft @ncoghlan\_dev @DRMacIver @hynek @tintvrtkovic i.e. a python app shipped with PEX that uses twis... <https://t.co/fEuXE6pbUy>

2017-10-11 12:23:27 RT @itzskizy: Nigerian Rappers tempted to diss Buhari but are conscious of python dance like... <https://t.co/nlpHwg5XEt>

2017-10-11 12:23:14 RT @MBNjobs: Modelling Manager-Customer Contact - Bristol <https://t.co/KVHmIu6JuK> #Modelling #SAS #SQL #R #Python #Analytics #BigData #NoSQL...

2017-10-11 12:23:08 Anyone going to see Monty Python Spamalot @gohbel fast this week? Come join us for our pre-theatre menu.... <https://t.co/o/BCSrsWv08q>

2017-10-11 12:23:02 Keen coder? Don't miss DigiCode Club tomorrow 4-6pm #Java #Ruby #Python #programming #techtalk @csmcr @UoMLibrary... <https://t.co/HFRVit730l>

2017-10-11 12:23:01 RT @jodirowley: Some lovely #reptiles seen during frog surveys on the Northern Tablelands of NSW- Carpet Python (Morelia spilota) & Pink-to...

2017-10-11 12:22:54 RT @MBNjobs: Modelling Manager-Customer Contact - Bristol <https://t.co/KVHmIu6JuK> #Modelling #SAS #SQL #R #Python #Analytics #BigData #NoSQL...

2017-10-11 12:22:52 RT @jrhunt: Relevant for my #AWS talk @ServerlessConf tomorrow: we just open sourced the python x-ray sdk <https://t.co/3mc93fbyQz>

2017-10-11 12:22:48 @ashemedai @dstufft @ncoghlan\_dev @DRMacIver @hynek @tintvrtkovic if you have a smart linker you can only use parts... <https://t.co/h2yzMNRqq6>

2017-10-11 12:22:33 @hawkieowl @ashemedai @ncoghlan\_dev @DRMacIver @



hynek @tintvrtkovic E.g. you can have Python Core (the interpreter...  
<https://t.co/U41z5lfsRx>

2017-10-11 12:22:20 Colt Python Double Action Revolver <https://t.co/9DC4dv00UE>

2017-10-11 12:22:02 Análisis de RAID: World War II. Ni los Monty Python al completo podrían salvar este desaguado <https://t.co/KBBAbUyPhg>

2017-10-11 12:21:53 @ashemedai @dstufft @ncoghlan\_dev @DRMacIver @hynek @tintvrtkovic the thing about such stdlibs is that they are com...  
<https://t.co/C9nb6Ma7oJ>

2017-10-11 12:21:39 RT @Timthadon01: Python Dance: Nigerian Army planted bombs in Nnamdi Kanu's house – IPOB Alleges <https://t.co/emV8Wm5jyz> <https://t.co/BAwCl...>

2017-10-11 12:21:32 RT @PythonIreland: Retweet this for a chance to win 1 of 2 free tickets for PyConIE 2017 (closing date : Sat 14th Oct Noon) #Python <https://t.co/...>

2017-10-11 12:21:15 Depths of an emotional Swamp <https://t.co/fZhv7hc80P> #python #code #data #datascience #pandas #learn

2017-10-11 12:21:03 @python\_klfn 特に皮は中性脂肪の大敵なのですよ🐼🐼🐼🐼  
🐼🐼

2017-10-11 12:20:49 RT @KirkDBorne: 6 Easy Steps to Learn Naive Bayes Algorithm (with #Python) <https://t.co/ui8NHHTAly> #abdsc #BigData #DataScience #Statistics...

2017-10-11 12:20:44 RT @KirkDBorne: #Python vs R: Which programming language is better for #DataScience? <https://t.co/0ByswCIisNh> #BigData #MachineLearning #Rst...

2017-10-11 12:20:40 RT @4orgexcellence: Here's how #bigdata can help your business!

#analytics #center4oe #iot #datascience #python #hadoop #marketing #cmo #c...

2017-10-11 12:20:39 SHOCKING: Worlds Largest Snake 49ft. Indonesian Reticulated Python. <https://t.co/0KwHErqFec> via @YouTube

2017-10-11 12:20:24 RT @ahmedjr\_16: 7 Best #Programming Language Courses

<https://t.co/m6B7CD0qxj>

#SmallBusiness #Programmer #IIoT #Python #Java #HTML5 #tec...

2017-10-11 12:20:20 RT @JohnSnowLabs: Credible Sources of Accurate Information About #AI - <https://t.co/M6QzFZBXNo>  
#datascience #Python #machinelearning #IoT #...

2017-10-11 12:20:19 RT @itzskizy: Nigerian Rappers tempted to diss Buhari but are conscious of python dance like... <https://t.co/nlpHwg5XEt>

2017-10-11 12:20:13 R And Python: Two Growing Languages - <https://t.co/...>

t.co/7HjKTP8HD8 #CuratedSQL

2017-10-11 12:20:12 Checking out "6 Easy Steps to Learn Naive Bayes #Algorithm (with code in #Python" on Data Science Central:... [http s://t.co/oBnJyaUwhP](http://t.co/oBnJyaUwhP)

2017-10-11 12:20:00 @kalafina8 そういえばそんなお話お聞きしたような... 早く制限とれるといいですね👉

2017-10-11 12:20:00 csvfilecleaner 0.5: A very simple utility class for cleaning csv files <https://t.co/ksr6m0VaTh>

2017-10-11 12:19:59 RT @torysmasher: The tea lady has been detained Jackie detained for unlawfully making tea, another Monty Python moment from North Yorkshire...

2017-10-11 12:19:50 RT @NkirukaNistoran: BREAKING!! Over 30 Soldiers Killed, Time For The 'Python' To Dance In The North And Leave The South-East(Graphic ... h...

2017-10-11 12:19:39 RT @4orgexcellence: Here's how #bigdata can help your business!

#analytics #center4oe #iot #datascience #python #hadoop #marketing #cmo #c...

2017-10-11 12:19:30 RT @yutakashino: The Python Graph Gallery [http s://t.co/BZ0UrpD0s2](http://t.co/BZ0UrpD0s2) Pythonにおけるプロット大全. おお, これは素晴らしい. [ht tps://t.co/3EzY3L0dMC](https://t.co/3EzY3L0dMC)

2017-10-11 12:19:11 @davidfrum @Lawrence Did you say Monty Python scenario near the end because now I'm worried about killer rabbits?

2017-10-11 12:18:53 RT @JohnSnowLabs: Credible Sources of Accurate Information About #AI - <https://t.co/M6QzFZBXNo> #datascience #Python #machinelearning #IoT #...

2017-10-11 12:18:51 RT @4orgexcellence: Here's how #bigdata can help your business!

#analytics #center4oe #iot #datascience #python #hadoop #marketing #cmo #c...

2017-10-11 12:18:49 Reticulated Python/Anaconda Comparison <https://t.co/N9akcFN0e4> via @YouTube

2017-10-11 12:18:46 Senior Manager, Software Engineering at Comcast (@comcastcareers) [New York, NY] <https://t.co/FnhrhuxocR> #python

2017-10-11 12:18:43 Check out new e-book 'Learn #Python in One Week' from one of our members @trustonailende: <https://t.co/nnde5HtgGf...> [ht tps://t.co/wCXPgFz0Gn](https://t.co/wCXPgFz0Gn)

2017-10-11 12:18:43 人生を楽しむにはPythonを学ぶしかねえ！

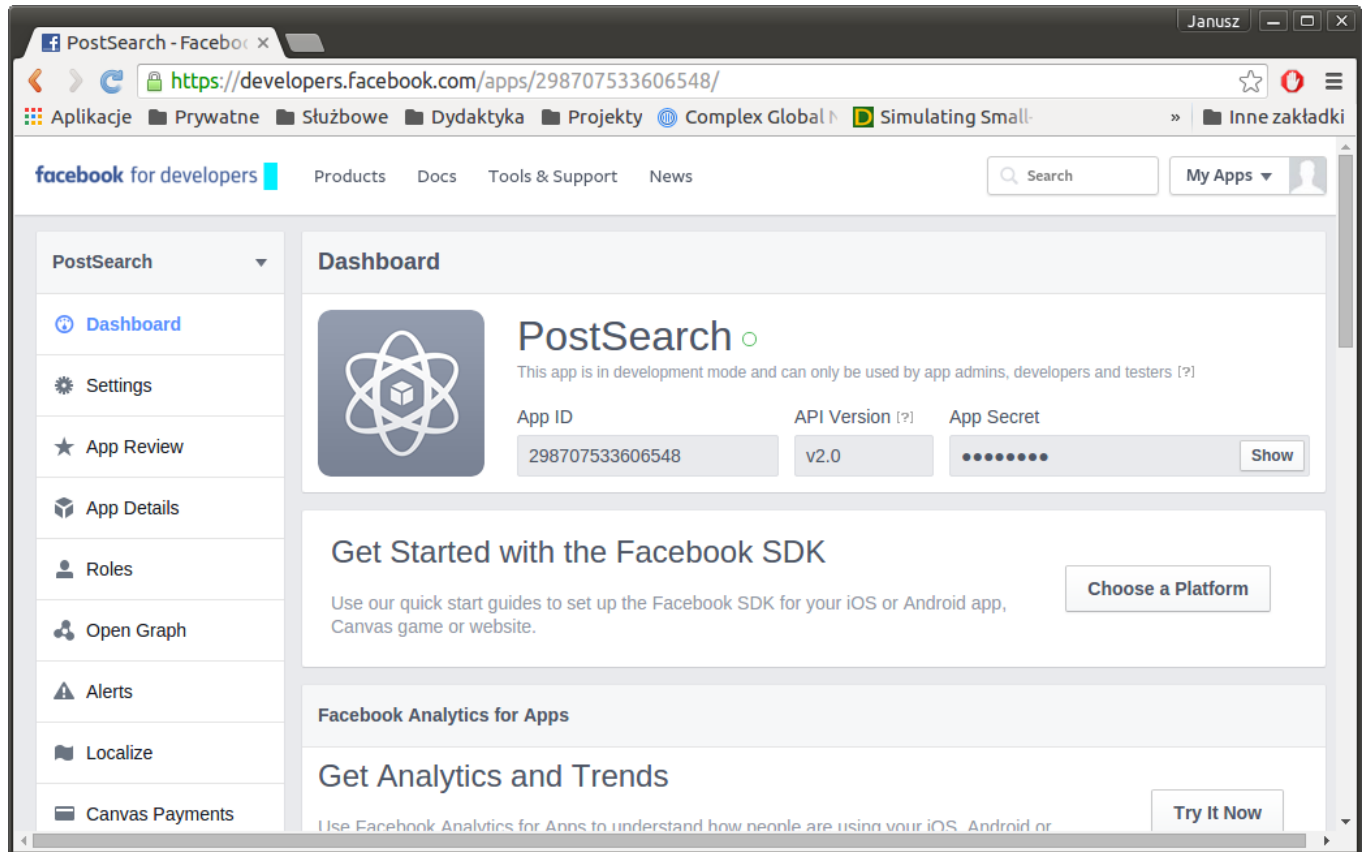
2017-10-11 12:18:38 @makoto0218ne56 Python強いですね笑

2017-10-11 12:18:19 Job - Senior Python Developer - Bengaluru, Hyderabad, Mumbai - Squareroot Consulting Pvt Ltd. - 3 - 7 Years of [http s://t.co/LA7Ho9pNLR](http://t.co/LA7Ho9pNLR)

2017-10-11 12:18:11 Erstmal meinen Downloads-Ordner mit nem Python-Skript aufgeräumt.

## Facebook

As in the case of Twitter, we need a Facebook account. Then, we create a new application:



In [9]:

```
app_id = "XXXX"
app_secret = "XXXX"
access_token = app_id + "|" + app_secret
```

In [10]:

```
page_id = 'wfiauwr'
```

In [11]:

```
import json
import requests

# we want to access the WFA UWr fanpage
# we build the address
base = "https://graph.facebook.com/v2.4"
node = "/" + page_id
parameters = "?access_token=%s" % access_token
url = base + node + parameters

# and download the data
r = requests.get(url)
print(r.content)
```

```
b'{"name":"Wydzia\u0142 Fizyki i Astronomii Uniwersytetu Wroc\u0142awskiego","id":"687027717991014"}'
```

In [21]:

```
#we are looking for posts
base = "https://graph.facebook.com/v2.4"
node = "/" + page_id + "/feed"           # "/feed" added
parameters = "?access_token=%s" % access_token
url = base + node + parameters

# we download the data
import codecs

r = requests.get(url)
result = r.json()

for i in result["data"]:
    print('- '*20)
    print(i.get(u'message'))
    print()
```

-----

Praca dla fizyków we Wrocławiu (od naszego absolwenta):

Job: Application Scientist – Single Crystal X-ray Diffraction

Location: Wrocław, Poland

Salary: Competitive package

Closing Date: October 16, 2017

#### Description:

Rigaku Oxford Diffraction is an international manufacturer of scientific instrumentation priding itself on being a customer relationship focused business whilst offering the best in engineering and software solutions. The advertised role will be based at Rigaku Polska, located in Wrocław, Poland.

In your role as an application scientist, you will be responsible for training users worldwide on the operation of their instruments and conducting demonstrations at our new demo facility in Poland. Your ability to produce high quality scientific reports tailored to the exacting standards of customers will be a key part of your job. As an application scientist you will be required to communicate our message to other scientists by way of presenting at conferences and user meetings. The ability for you to travel both in Europe and outside of Europe is essential and it is estimated that travel will be no more than 50% of the time.

You will become the face of Rigaku Oxford Diffraction, promoting through science our single crystal X-ray diffraction equipment. Your ability to share with others your enthusiasm will be advantageous to the business by forging bonds with scientists. Your knowledge of the current market situation for single crystal X-ray diffraction will be beneficial in helping to understand how to engage customers.

#### Main Duties:

- Working with the sales team to conduct demonstrations for customers
- Produce reports in a timely fashion after the demonstration
- Training users on software and how to best operate the hardware
- Maintaining the instrument(s) in the laboratory
- Maintaining the user forum and responding to queries
- Attending and presenting at conferences and user meetings worldwide
- Providing feedback to the software team
- Assisting with marketing activities
- Managing to completion smaller individual projects

#### Experience and Skills:

You will have good knowledge of using X-ray crystallography as a research tool and be able to engage customers in a positive and enthusiastic manner. Attention to detail is critical for accurate reporting of scientific facts.

#### Essential

- Ph.D. in a relevant scientific field
- Experience of operating single crystal X-ray diffraction instruments

- Skilled in data processing and structure solution of single crystal diffraction data
- Excellent people skills to interact with both colleagues and customers
- Accuracy in delivering reports
- Written and spoken fluency in English
- Ability to travel up to 50% of the time

#### Desirable

- Good knowledge of chemical crystallography preferred
- Experience of both protein and chemical crystallography would be beneficial
- Experience of maintaining single crystal X-ray diffraction instruments
- Proven experience of presenting to a scientific audience
- Written and spoken fluency in German
- Polish language skills would be an advantage

#### Benefits

- Employment contract in a stable, international company
- Attractive social benefits package (private medical care, Benefit Sport card, group insurance)
- Motivational salary system

Please submit your cover letter and résumé in PDF only to HR@RIGAKU.COM.

<http://www.rigaku.com/en/rigakuoxford>

-----

Artykuł Prof. Bernarda Jancewicza, emerytowanego pracownika Wydziału Fizyki i Astronomii o ostatnim Zjeździe Fizyków Polskich. Zapraszamy do lektury:

<https://wszystkoconajwazniejsze.pl/prof-bernard-jancewicz-laureaci-nagrody-nobla-we-wroclawiu/>

Uniwersytet Wrocławski Gazeta Wrocławska

-----

Garść inspiracji do Bulwaru Fizyków (projekt WBO na nadodrz).

Głosujemy do 2. października na stronie  
[www.wroclaw.pl/wbo](http://www.wroclaw.pl/wbo)

Nasze projekty to:

Projekt #12 (ogólnomiejski za 1mln PLN)  
Projekt #15 (lokalny za 250tys. PLN)  
Projekt #263 (lokalny za 750tys. PLN)  
(można zagłosować na wszystkie)

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Też tam będziemy, a konkretniej Instytut Astronomiczny Uniwersytetu Wrocławskiego

Zapraszamy! <http://worldspaceweek.pl/>

-----

Nasze działania w sprawie WBOBulwarFizykov wsparł CRZ Krzywy Komin, serdecznie pozdrawiamy i dziękujemy:)

-----

Od naszego absolwenta dostaliśmy taką wiadomość:

"W następną sobotę (7 października) organizujemy wraz ze Stowarzyszeniem Wrocławskich Użytkowników R

6-cio godzinne warsztaty wprowadzające do analizy danych w języku R.

Więcej informacji można znaleźć tutaj: <https://stwur.github.io/STWUR//blog/eRementarz/>

Pewnie część studentów WFiA, zarówno fizyki jak i ISSP mogłaby być tym zainteresowana."

Serdecznie polecamy, to nie pierwsza impreza organizowana przez Kubę i naprawdę warto!

- MM

Mały remont pracowni na Wydział Fizyki i Astronomii Uniwersytetu Wrocławskiego już prawie gotowy na nowy semestr!

Akcja Miasto wsparła nasz projekt WBOBulwarFizykow, zapraszamy do głosowania! <http://www.wroclaw.pl/wbo>

Nasze numery projektów to:

Projekt #12 (ogólnomiejski za 1mln PLN)

Projekt #15 (lokalny za 250tys. PLN)

Projekt #263 (lokalny za 750tys. PLN)

U nas #naprawdejestfajnie :-)

Kiermasz Fizyczny 2017 - zapraszamy na Wydział Fizyki i Astronomii Uniwersytetu Wrocławskiego jeszcze 26.09 od godz. 9:30-14:30. Pl. M. Borna 9

Kilka słów o projekcie Bulwaru Fizyków. Trochę szczegółów nt. wizji tego miejsca i planów. Zapraszamy do głosowania w internecie: <http://www.wroclaw.pl/wbo> lub w dowolnym UM Wrocławia. Nasze projekty to:

#12 (projekt ogólnomiejski)

#15 (projekt lokalny, mały)

#263 (projekt lokalny, duży)

Już od wielu wielu lat (sprecyzujemy - od 20 lat!), na naszym Wydziale odbywa się Cyrk Fizyczny w ramach którego prezentujemy doświadczenia i pokazy zjawisk fizycznych. W tym roku przygotowaliśmy jubileuszowy pokaz pt. 'The best of...'. W ramach DFN mamy premierę tegorocznej edycji, ale zapraszamy przez cały rok! Serdecznie zapraszamy do kontaktu z nami i zapisania się na ten pokaz. Nie prezentujemy zbyt dużo zdjęć by nie zdracać "co będzie" :-)

Już po raz kolejny odbywa się u nas Kiermasz Fizyczny w ramach Dolnośląskiego Festiwalu Nauki. W tym roku mamy dla Was wiele atrakcji, zapraszamy w godzinach 9-14 w dniach 26-27 września!

Dzisiaj o godzinie 12:00 ruszyła rejestracja na Ogólnopolską Sesję Kół Naukowych Fizyków. Serdecznie Zapraszamy do zapisów!



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Dzisiaj kolejne wydarzenia Dolnośląskiego Festiwalu Nauki.

Pogoda nie zachęca do spacerowania, za to my zachęcamy do spędzenia popołudnia z fizyką. Zapraszamy na sobotnie wykłady w budynku Wydziału na pl. Maksa Borna 9.

O godzinie 14, "Mniejsze, gęstsze, gorętsze, jaśniejsze - przepis na najgorętszą substancję we Wszechświecie (Smaller, denser, hotter, brighter - making the hottest stuff in the Universe)" - dr Pasi Huovinen (wykład po angielsku).

O godzinie 15, "Bardzo zimne i bardzo gorące silnie sprzężone ciecze kwantowe (Strongly coupled quantum fluids - ultra cold and super hot)", - dr Marcus Bluhm (wykład po angielsku).

Natomiast o godzinie 16 wyjątkowo ciekawie zapowiadające się spojrzenie na przyrodę oczami fizyką, mgr Artur Rokosa - "Jak wysokie mogą być drzewa i co wspólnego ma krewetka z czajnikiem? Czyli o fizyce w świecie zwierząt i roślin".

Niestety wykład dra Tomasza Greczyło "Co Einstein powiedział swojemu fryzjerowi?", został odwołany.

Niestety

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Miło nam poinformować, że premierę Cyrku Fizycznego w niedzielę o 16:00 zobaczy na naszej sali komplet publiczności. Niestety sala nie jest z gumy, więc zamykamy listę osób na tą imprezę.

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Dolnośląski Festiwal Nauki 2017 już rozpoczęty na naszym Wydziale.

Właśnie trwa wykład dra Tomasza Greczyło "Pobiegaj z fizykiem".

Jeszcze dziś będzie można wziąć udział w wykładach:

"Matematyczne i fizyczne metody szyfrowania" dra hab. Marka Mozrzymasa - godz. 14

"Maria Skłodowska-Curie i jej promieniotwórczy świat" dra hab. Jana Chojcana - godz.15

-----

Już dziś inauguracja jubileuszowego XX Dolnośląskiego Festiwalu Nauki.

Z tej okazji, jak co roku, Nasz wydział przygotował bogatą ofertę.

Zapraszamy serdecznie.

Program w PDF:

<http://wfa.uni.wroc.pl/wp-content/uploads/2017/09/program.pdf>

Edit:

W programie DFN Wydziału zaszły dwie zmiany. Wykłady:

dra Roberta Bryła "Jak powstaje światło? - czyli o fizycznych podstawach świecenia" (piątek, godz. 16)

oraz

dra Tomasza Greczyło "Co Einstein powiedział swojemu fryzjerowi?" (sobota, godz. 12)

ZOSTAŁY ODWOŁANE. Przepraszamy.

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Halo halo, mamy ulotki, dużo ulotek Bulwaru Fizyków, zapraszam do p. 521 - MM

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Projekt otwartego i darmowego dla wszystkich Bulwaru Fizyków we Wroc

ławiu wraca! Zapraszamy do głosowania na nasz projekt WBO w 2017 roku. Namawiajcie znajomych z całego miasta, to m.in. projekt ogólnomiejski. Nasze numery projektów to:

#12 - projekt ogólnomiejski za 1mln PLN

#15 - projekt lokalny za 250tys. PLN

#263 - projekt lokalny za 750tys. PLN

Głosowanie: [www.wroclaw.pl/wbo](http://www.wroclaw.pl/wbo) lub w wybranych jednostkach UM Wrocławia.

Jak widać z ulotki poniżej plan minimum to doświadczenia podobne do tych ze świetnego parku im. S. Lema w Krakowie. Poza tym chcielibyśmy zwierciadła akustyczne. Projekt bardzo rozwojowy, mamy pomysły i plan na dużo więcej - zapraszamy do głosowania!

#wbo2017 #bulwarfizykw WBOBulwarFizykw Wrocławski Budżet Obywatelski Uniwersytet Wrocławski

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mam ciekawe pytanie nad którym pracuję.

Fakty:

- grawitacja to jedno z oddziaływań podstawowych
- to relatywnie słaba siła zależna od masy
- poza galaktyką nikoma ilość materii w przestrzeni
- brak oporu lub jest bardzo słaby
- nie można wykryć czarnej materii.
- wszechświat się stałe rozszerza

Teza:

brak czarnej materii. Jeśli powrócić do scholastycznej metody analizy zjawisk przyjmując, że duże obiekty jak słońce wywierają wpływ na tak duże oraz odległe obiekty jak ziemia, mars czy pluton to czarna dziura o masie kilku miliardów słońc powinna mieć poza zasysaniem także możliwość wytyczania stałej orbity gromadom gwiazd. Jeśli jedno cześnie przyjąć, że teoria wielkiego wybuchu jest prawdziwa to sformułowanie Einsteina, że czarne dziury są aberracją jest bezpodstawne, gdyż to jedyne siły wokół których po wybuchu znów skupiła się materia. A jeśli istnieje ciemna materia to jest ona w rejonie galaktyk skutecznie niwelowana przez siły grawitacyjne ze środka drogi mlecznej. Ktoś mi wytłumaczy jak i gdzie może się mylić?

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Mamy już pierwsze, jeszcze bardzo koncepcyjne plany jak mógłby wyglądać bulwar po instalacji urządzeń. To pewnie nie do końca będzie tak wyglądało, ale przedstawiamy, bo dobrze oddaje ducha zmian i kierunek w jakim chcemy iść. Przypominamy, Bulwar Fizyków to trzy projekty:

#12 - projekt ogólnomiejski za 1mln PLN

#15 - projekt lokalny za 250tys. PLN

#263 - projekt lokalny za 750tys. PLN

Głosowanie trwa w internecie: [www.wroclaw.pl/wbo](http://www.wroclaw.pl/wbo) lub w wybranych jednostkach UM Wrocławia.

Zapraszamy do głosowania już teraz!

A za wizualizacje dziękujemy zaprzyjaźnionej architekt - AK :)

Koło Naukowe Fizyków "Migacz" Fizyka Fizyk wyjaśnia Fizyka i Matematyka w Pęgowie Fizyk w podróży Wydział Fizyki Uniwersytetu Warszawskiego Zapytaj Fizyka Fizyka Dla Każdego Fizyka z klasą Wydział Podstawowych Problemów Techniki (WPPT) Politechnika Wrocławska Politechnika Wrocławska Uniwersytet Wrocławski Wydział Chemii Uniwersytetu Wrocławskiego

wskiego Wydział Informatyki i Zarządzania PWr Wydział Matematyki, Fizyki i Informatyki UMCS Centrum Nauki Kopernik

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Żegnaj Cassini

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Projekt Bulwar Fizyków wraca! Zapraszamy do głosowania na nasz projekt WBO w 2017 roku. Namawiajcie znajomych z całego miasta, to m.in. projekt ogólnomiejski. Nasze numery projektów to:

#12 - projekt ogólnomiejski za 1mln PLN  
#15 - projekt lokalny za 250tys. PLN  
#263 - projekt lokalny za 750tys. PLN

Głosowanie: [www.wroclaw.pl/wbo](http://www.wroclaw.pl/wbo) lub w wybranych jednostkach UM Wrocławia.

Jak widać z ulotki poniżej plan minimum to doświadczenia podobne do tych ze świetnego parku im. S. Lema w Krakowie. Poza tym chcielibyśmy zwierciadła akustyczne. Projekt bardzo rozwojowy, mamy pomysły i plan na dużo więcej - zapraszamy do głosowania!

#wbo2017 #bulwarfizykw

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Co tam na niebie?

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Ważne - o stypendiach.

## RSS feed and feedparser

From Wikipedia:

**RSS** – a type of web feed which allows users to access updates to online content in a standardized, computer-readable format. These feeds can, for example, allow a user to keep track of many different websites in a single news aggregator. The news aggregator will automatically check the RSS feed for new content, allowing the content to be automatically passed from website to website or from website to user.

Feed aggregators:

- news readers (including email clients)
- internet services
- web browsers.

### Example - TVN24 news

In [22]:

```
import feedparser
from time import strftime

d = feedparser.parse('http://www.tvn24.pl/najnowsze.xml')

print("-"*40)
print(d.feed.title)
print(d.feed.link)
print("-"*40)
print()

for e in d.entries:
    print(e.published, e.title)
    print(e.link)
    print()
```

-----  
TVN24.pl - Wiadomości - Najnowsze  
<https://www.tvn24.pl/>  
-----

Fri, 29 Sep 17 11:26:05 +0200 Joanna Krupa dla TVN24 BiS: Hefner nigdy mnie nie podrywał. Zawsze będę mu "grateful"  
<https://www.tvn24.pl/wiadomosci-ze-swiata,2/joanna-krupa-hugh-hefner-nigdy-mnie-nie-podrywaj,777015.html>

Fri, 29 Sep 17 11:00:48 +0200 "Może być problem, żeby dostać się do lekarzy". Rewolucja na SOR-ach  
<https://www.tvn24.pl/wiadomosci-z-kraju,3/rewolucja-na-sor-moze-byc-problem-zeby-dostac-sie-do-lekarzy,776982.html>

Fri, 29 Sep 17 10:45:42 +0200 Maria w natarciu. Czy zagrozi Wyspom Brytyjskim?  
<http://tvnmeteo.tvn24.pl/informacje/prognoza,45/maria-w-natarciu-moze-zagrozic-wyspom-brytyjskim,242238,1,0.html>

Fri, 29 Sep 17 10:00:13 +0200 Centymetry od tragedii. Wjechał na tor y i machał do maszynisty pendolino  
<http://tvnwarszawa.tvn24.pl/informacje,news,centymetry-od-tragedii-w-jechal-na-tory-i-machal-do-maszynisty-pendolino,242291.html>

Fri, 29 Sep 17 08:39:16 +0200 Łabędzi śpiew państwa dżihadu. Zaskakująca ofensywa na Rosjan  
<https://www.tvn24.pl/wiadomosci-ze-swiata,2/ofensywa-dzihadystow-w-syrii-pierwszy-sukces-od-miesiecy,776962.html>

Thu, 28 Sep 17 19:09:13 +0200 Książę Harry i dwulatka. Wspólne kibicowanie, wspólny popcorn  
<https://www.tvn24.pl/ciekawostki-michalki,5/popcorn-ksiecia-harry-ego-i-2-letnia-emily-zawody-invictus,776852.html>

Thu, 28 Sep 17 17:00:55 +0200 Z Wiednia do Warszawy przez Brzeszcze. "A po co? Jak ja do Cieszyna nie mogę się dostać"  
<https://www.tvn24.pl/katowice,51/z-wiednia-do-warszawy-przez-brzeszcze-mieszkanicy-sceptyczni,776785.html>

Thu, 28 Sep 17 15:32:12 +0200 Kopali pod gazociąg, trafili na szkielety.  
"To masowy grób żołnierzy niemieckich"  
<https://www.tvn24.pl/poznan,43/robili-wykop-trafili-na-szkielety-to-masowy-grob-zolnierzy,776783.html>

Thu, 28 Sep 17 13:33:00 +0200 "Usiłował zabić dwóch policjantów". Śledztwo przejęła Prokuratura Krajowa  
<https://www.tvn24.pl/pomorze,42/prokuratura-przejmuje-sprawe-strzelaniny-w-inowroclawiu,776738.html>

Thu, 28 Sep 17 11:36:00 +0200 Google chce uniknąć gigantycznych kar. Szukuje zmiany w wyszukiwarce  
<http://tvn24bis.pl/redirect/google-uginie-sie-pod-presja-ke-i-wprowadza-zmiany-aby-uniknac-kar,776697.html>

Wed, 27 Sep 17 13:23:00 +0200 Motorniczy, który zabił trzy osoby wraca za kraty. Sąd nie złagodził wyroku  
<https://www.tvn24.pl/lodz,69/sad-apelacyjny-podtrzymal-wyrok-motorniczemu-13-5-roku-wiezienia,776390.html>

Sat, 23 Sep 17 22:20:35 +0200 Andrzej Godlewski i prof. Krzysztof Miszczak

<https://www.tvn24.pl/horyzont,46,m/wybory-w-niemczech-andrzej-godlewski-i-krzysztof-miszczak-horyzont,775514.html>

Wed, 20 Sep 17 12:08:02 +0200 Tomasz Fiałkowski (przewodniczący)

<https://www.tvn24.pl/nagroda-literacka-nike-2017,159,m/jury,366/tomasz-fialkowski,774466.html>

Sat, 26 Aug 17 17:00:19 +0200 Nie żyje Grzegorz Miecugow

<https://www.tvn24.pl/wiadomosci-z-kraju,3/grzegorz-miecugow-nie-zyje,767507.html>

Tue, 07 Mar 17 19:25:59 +0100 "Kwota nieprawdopodobnie kosmiczna". Nowy rekord Wielkiej Orkiestry Świątecznej Pomocy

<https://www.tvn24.pl/wosp-2017/25-final-wosp-zebrano-ponad-105-mln-zl,721403.html>

### Example - NBP exchange rates

In [23]:

```
import feedparser
from time import strftime

d = feedparser.parse('http://rss.nbp.pl/kursy/TabelaA.xml')

print("-"*40)
print(d.feed.title)
print(d.feed.link)
print("-"*40)
print()

for e in d.entries:
    print(e.published, e.title)
    print(e.link)
    print()
```

-----  
NBP - Tabela A kursów średnich walut obcych  
<http://www.nbp.pl/home.aspx?f=/Statystyka/kursy.html>  
-----

Fri, 29 Sep 2017 11:46:10 +0100 Tabela nr 189/A/NBP/2017 z dnia 2017-09-29

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a189>

Thu, 28 Sep 2017 11:48:14 +0100 Tabela nr 188/A/NBP/2017 z dnia 2017-09-28

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a188>

Wed, 27 Sep 2017 11:46:47 +0100 Tabela nr 187/A/NBP/2017 z dnia 2017-09-27

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a187>

Tue, 26 Sep 2017 11:46:05 +0100 Tabela nr 186/A/NBP/2017 z dnia 2017-09-26

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a186>

Mon, 25 Sep 2017 11:46:04 +0100 Tabela nr 185/A/NBP/2017 z dnia 2017-09-25

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a185>

Fri, 22 Sep 2017 11:46:10 +0100 Tabela nr 184/A/NBP/2017 z dnia 2017-09-22

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a184>

Thu, 21 Sep 2017 11:46:13 +0100 Tabela nr 183/A/NBP/2017 z dnia 2017-09-21

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a183>

Wed, 20 Sep 2017 11:47:12 +0100 Tabela nr 182/A/NBP/2017 z dnia 2017-09-20

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a182>

Tue, 19 Sep 2017 11:45:52 +0100 Tabela nr 181/A/NBP/2017 z dnia 2017-09-19

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a181>

Mon, 18 Sep 2017 11:46:28 +0100 Tabela nr 180/A/NBP/2017 z dnia 2017-09-18

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a180>

Fri, 15 Sep 2017 11:46:32 +0100 Tabela nr 179/A/NBP/2017 z dnia 2017-09-15

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a179>

Thu, 14 Sep 2017 11:45:57 +0100 Tabela nr 178/A/NBP/2017 z dnia 2017-09-14

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a178>

Wed, 13 Sep 2017 11:46:12 +0100 Tabela nr 177/A/NBP/2017 z dnia 2017-09-13

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a177>

Tue, 12 Sep 2017 11:46:10 +0100 Tabela nr 176/A/NBP/2017 z dnia 2017-09-12

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a176>



Mon, 11 Sep 2017 11:46:02 +0100 Tabela nr 175/A/NBP/2017 z dnia 2017-09-11

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a175>

Fri, 8 Sep 2017 11:46:04 +0100 Tabela nr 174/A/NBP/2017 z dnia 2017-09-08

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a174>

Thu, 7 Sep 2017 11:46:03 +0100 Tabela nr 173/A/NBP/2017 z dnia 2017-09-07

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a173>

Wed, 6 Sep 2017 11:46:39 +0100 Tabela nr 172/A/NBP/2017 z dnia 2017-09-06

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a172>

Tue, 5 Sep 2017 11:45:39 +0100 Tabela nr 171/A/NBP/2017 z dnia 2017-09-05

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a171>

Mon, 4 Sep 2017 11:45:47 +0100 Tabela nr 170/A/NBP/2017 z dnia 2017-09-04

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a170>

Fri, 1 Sep 2017 11:45:57 +0100 Tabela nr 169/A/NBP/2017 z dnia 2017-09-01

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a169>

Thu, 31 Aug 2017 11:45:51 +0100 Tabela nr 168/A/NBP/2017 z dnia 2017-08-31

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a168>

Wed, 30 Aug 2017 11:46:14 +0100 Tabela nr 167/A/NBP/2017 z dnia 2017-08-30

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a167>

Tue, 29 Aug 2017 11:45:35 +0100 Tabela nr 166/A/NBP/2017 z dnia 2017-08-29

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a166>

Mon, 28 Aug 2017 11:46:05 +0100 Tabela nr 165/A/NBP/2017 z dnia 2017-08-28

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a165>

In [24]:

```
link = d.entries[0].link  
print(link)
```

<http://rss.nbp.pl/kursy/TabRss.aspx?n=2017/a/17a189>

In [25]:

```
import requests  
  
r = requests.get(link)  
print(r.content)
```

```
b'\r\n<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//E
N">\r\n<html>\r\n<head>\r\n<meta http-equiv="Content-Type" content
="text/html; charset=iso-8859-2">\r\n<link rel="stylesheet" href="cs
s/kw_rss.css" type="text/css">\r\n<meta http-equiv="expires" content
="0">\r\n<meta http-equiv="cache-control" content="no-cache, must-re
validate">\r\n<meta http-equiv="pragma" content="no-cache">\r\n<meta
http-equiv="window-target" content="_top">\r\n<style type="text/cs
s">\r\n</style>\r\n<title>Archiwum kurs\xf3w walut</title>\r\n</head
>\r\n<body>\r\n<div align="center" width="100%">\r\n<table width="70
0" cellpadding="0" cellspacing="0" border="0">\r\n<tr><td>\r\n<img s
rc="/kursy/img/header-rss.png" alt="" border="0" />\r\n</td></tr>\r
\n</table>\r\n<br />\r\n<table width="700" cellpadding="0" cellspaci
ng="0" border="0" bgcolor="#ffffff">\r\n<tr><td align="center">\r\n<
br />\r\n<table cellpadding="5" cellspacing="0" border="0" width="40
0">\r\n<tr><td class="hdr center">Tabela A kurs\xf3w \xb6rednich wal
ut obcych</td></tr>\r\n<tr><td class="nag center">Tabela nr 189/A/NB
P/2017 z dnia 2017-09-29</td></tr>\r\n</table>\r\n<br />\r\n<table c
ellpadding="4" cellspacing="0" border="0" width="400" class="tabel
a">\r\n<colgroup>\r\n<col width="190" />\r\n<col width="90" />\r\n<c
ol width="80" />\r\n</colgroup>\r\n<tr>\r\n<th class="tabela ar0 lef
t pad5 bold">Nazwa waluty</th>\r\n<th class="tabela ar0 right pad5 b
old">Kod waluty</th>\r\n<th class="tabela ar0 right pad5 bold">Kurs
\b6redni</th>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 left">bat
(Tajlandia)</td>\r\n<td class="tabela ar1 right">1&nbsp;THB</td>\r
\n<td class="tabela ar1 right">0,1095</td>\r\n</tr>\r\n<tr>\r\n<td c
lass="tabela ar2 left">dolar ameryka\xf1ski</td>\r\n<td class="tabel
a ar2 right">1&nbsp;USD</td>\r\n<td class="tabela ar2 right">3,6519
</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 left">dolar australi
jski</td>\r\n<td class="tabela ar1 right">1&nbsp;AUD</td>\r\n<td cla
ss="tabela ar1 right">2,8625</td>\r\n</tr>\r\n<tr>\r\n<td class="tab
ela ar2 left">dolar Hongkongu</td>\r\n<td class="tabela ar2 right">1
&nbsp;HKD</td>\r\n<td class="tabela ar2 right">0,4676</td>\r\n</tr>
\r\n<tr>\r\n<td class="tabela ar1 left">dolar kanadyjski</td>\r\n<td
class="tabela ar1 right">1&nbsp;CAD</td>\r\n<td class="tabela ar1 ri
ght">2,9383</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar2 left">dol
ar nowozelandzki</td>\r\n<td class="tabela ar2 right">1&nbsp;NZD</td
>\r\n<td class="tabela ar2 right">2,6338</td>\r\n</tr>\r\n<tr>\r\n<t
d class="tabela ar1 left">dolar singapurski</td>\r\n<td class="tabel
a ar1 right">1&nbsp;SGD</td>\r\n<td class="tabela ar1 right">2,6888
</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar2 left">euro</td>\r\n<
td class="tabela ar2 right">1&nbsp;EUR</td>\r\n<td class="tabela ar2
right">4,3091</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 left">f
orint (W\xeagry)</td>\r\n<td class="tabela ar1 right">100&nbsp;HUF</
td>\r\n<td class="tabela ar1 right">1,3846</td>\r\n</tr>\r\n<tr>\r\n
<td class="tabela ar2 left">frank szwajcarski</td>\r\n<td class="tab
ela ar2 right">1&nbsp;CHF</td>\r\n<td class="tabela ar2 right">3,761
9</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 left">funt szterlin
g</td>\r\n<td class="tabela ar1 right">1&nbsp;GBP</td>\r\n<td class
="tabela ar1 right">4,8842</td>\r\n</tr>\r\n<tr>\r\n<td class="tabel
a ar2 left">hrywna (Ukraina)</td>\r\n<td class="tabela ar2 right">1&
nbsp;UAH</td>\r\n<td class="tabela ar2 right">0,1373</td>\r\n</tr>\r
\n<tr>\r\n<td class="tabela ar1 left">jen (Japonia)</td>\r\n<td clas
s="tabela ar1 right">100&nbsp;JPY</td>\r\n<td class="tabela ar1 righ
t">3,2439</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar2 left">koron
a czeska</td>\r\n<td class="tabela ar2 right">1&nbsp;CZK</td>\r\n<td
class="tabela ar2 right">0,1655</td>\r\n</tr>\r\n<tr>\r\n<td class
="tabela ar1 left">korona du\xf1ska</td>\r\n<td class="tabela ar1 ri
ght">1&nbsp;DKK</td>\r\n<td class="tabela ar1 right">0,5790</td>\r\n
</tr>\r\n<tr>\r\n<td class="tabela ar2 left">korona islandzka</td>\r
\n<td class="tabela ar2 right">100&nbsp;ISK</td>\r\n<td class="tabel
a ar2 right">3,4597</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 l
```

```

eft">korona norweska</td>\r\n<td class="tabela ar1 right">1&nbsp;NOK
</td>\r\n<td class="tabela ar1 right">0,4594</td>\r\n</tr>\r\n<tr>\r
\r\n<td class="tabela ar2 left">korona szwedzka</td>\r\n<td class="tab
ela ar2 right">1&nbsp;SEK</td>\r\n<td class="tabela ar2 right">0,449
2</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 left">kuna (Chorwac
ja)</td>\r\n<td class="tabela ar1 right">1&nbsp;HRK</td>\r\n<td clas
s="tabela ar1 right">0,5749</td>\r\n</tr>\r\n<tr>\r\n<td class="tabe
la ar2 left">lej rumu\xflski</td>\r\n<td class="tabela ar2 right">1&
nbsp;RON</td>\r\n<td class="tabela ar2 right">0,9368</td>\r\n</tr>\r
\r\n<tr>\r\n<td class="tabela ar1 left">lew (Bu\xb3garia)</td>\r\n<td
class="tabela ar1 right">1&nbsp;BGN</td>\r\n<td class="tabela ar1 r
ight">2,2032</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar2 left">li
ra turecka</td>\r\n<td class="tabela ar2 right">1&nbsp;TRY</td>\r\n<
td class="tabela ar2 right">1,0269</td>\r\n</tr>\r\n<tr>\r\n<td clas
s="tabela ar1 left">nowy izraelski szekel</td>\r\n<td class="tabela
ar1 right">1&nbsp;ILS</td>\r\n<td class="tabela ar1 right">1,0353</
td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar2 left">peso chilijskie
</td>\r\n<td class="tabela ar2 right">100&nbsp;CLP</td>\r\n<td class
="tabela ar2 right">0,5745</td>\r\n</tr>\r\n<tr>\r\n<td class="tabel
a ar1 left">peso filipi\xflskie</td>\r\n<td class="tabela ar1 righ
t">1&nbsp;PHP</td>\r\n<td class="tabela ar1 right">0,0718</td>\r\n</
tr>\r\n<tr>\r\n<td class="tabela ar2 left">peso meksyka\xflskie</td>
\r\n<td class="tabela ar2 right">1&nbsp;MXN</td>\r\n<td class="tabel
a ar2 right">0,2010</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 l
eft">rand (Republika Po\xb3udniowej Afryki)</td>\r\n<td class="tabel
a ar1 right">1&nbsp;ZAR</td>\r\n<td class="tabela ar1 right">0,2708
</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar2 left">real (Brazyli
a)</td>\r\n<td class="tabela ar2 right">1&nbsp;BRL</td>\r\n<td class
="tabela ar2 right">1,1476</td>\r\n</tr>\r\n<tr>\r\n<td class="tabel
a ar1 left">ringgit (Malezja)</td>\r\n<td class="tabela ar1 right">1
&nbsp;MYR</td>\r\n<td class="tabela ar1 right">0,8650</td>\r\n</tr>
\r\n<tr>\r\n<td class="tabela ar2 left">rubel rosyjski</td>\r\n<td c
lass="tabela ar2 right">1&nbsp;RUB</td>\r\n<td class="tabela ar2 rig
ht">0,0631</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 left">rupi
a indonezyjska</td>\r\n<td class="tabela ar1 right">10000&nbsp;IDR</
td>\r\n<td class="tabela ar1 right">2,7115</td>\r\n</tr>\r\n<tr>\r\n
<td class="tabela ar2 left">rupia indyjska</td>\r\n<td class="tabela
ar2 right">100&nbsp;INR</td>\r\n<td class="tabela ar2 right">5,5825
</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 left">won po\xb3udni
owokorea\xflski</td>\r\n<td class="tabela ar1 right">100&nbsp;KRW</t
d>\r\n<td class="tabela ar1 right">0,3192</td>\r\n</tr>\r\n<tr>\r\n<
td class="tabela ar2 left">yuan renminbi (Chiny)</td>\r\n<td class
="tabela ar2 right">1&nbsp;CNY</td>\r\n<td class="tabela ar2 right">
0,5495</td>\r\n</tr>\r\n<tr>\r\n<td class="tabela ar1 left">SDR (MF
W)</td>\r\n<td class="tabela ar1 right">1&nbsp;XDR</td>\r\n<td class
="tabela ar1 right">5,1649</td>\r\n</tr>\r\n</table>\r\n<br /><br />
\r\n</td></tr>\r\n</table>\r\n<table border="0" cellspacing="0" cell
padding="10" width="400">\r\n<tr><td valign="top" align="center"><sp
an class="copy">&copy; 2017 NBP</span></td></tr>\r\n</table>\r\n</di
v>\r\n\r\n</body>\r\n</html>'

```

In [36]:

```
from bs4 import BeautifulSoup
import pandas as pd

soup = BeautifulSoup(r.content, "lxml")
cells = soup.find_all("td", class_="tabela")
curr = [cell.text for cell in cells]
curr_resaped = list(zip(*[iter(curr)]*3))
ex = pd.DataFrame(curr_resaped, columns=["Waluta", "Skrót", "Kurs"])
ex
```

Out[36]:

	<b>Waluta</b>	<b>Skrót</b>	<b>Kurs</b>
<b>0</b>	bat (Tajlandia)	1 THB	0,1095
<b>1</b>	dolar amerykański	1 USD	3,6519
<b>2</b>	dolar australijski	1 AUD	2,8625
<b>3</b>	dolar Hongkongu	1 HKD	0,4676
<b>4</b>	dolar kanadyjski	1 CAD	2,9383
<b>5</b>	dolar nowozelandzki	1 NZD	2,6338
<b>6</b>	dolar singapurski	1 SGD	2,6888
<b>7</b>	euro	1 EUR	4,3091
<b>8</b>	forint (Węgry)	100 HUF	1,3846
<b>9</b>	frank szwajcarski	1 CHF	3,7619
<b>10</b>	funt szterling	1 GBP	4,8842
<b>11</b>	hrywna (Ukraina)	1 UAH	0,1373
<b>12</b>	jen (Japonia)	100 JPY	3,2439
<b>13</b>	korona czeska	1 CZK	0,1655
<b>14</b>	korona duńska	1 DKK	0,5790
<b>15</b>	korona islandzka	100 ISK	3,4597
<b>16</b>	korona norweska	1 NOK	0,4594
<b>17</b>	korona szwedzka	1 SEK	0,4492
<b>18</b>	kuna (Chorwacja)	1 HRK	0,5749
<b>19</b>	lej rumuński	1 RON	0,9368
<b>20</b>	lew (Bułgaria)	1 BGN	2,2032
<b>21</b>	lira turecka	1 TRY	1,0269
<b>22</b>	nowy izraelski szekel	1 ILS	1,0353
<b>23</b>	peso chilijskie	100 CLP	0,5745
<b>24</b>	peso filipińskie	1 PHP	0,0718
<b>25</b>	peso meksykańskie	1 MXN	0,2010
<b>26</b>	rand (Republika Południowej Afryki)	1 ZAR	0,2708
<b>27</b>	real (Brazylia)	1 BRL	1,1476
<b>28</b>	ringgit (Malezja)	1 MYR	0,8650
<b>29</b>	rubel rosyjski	1 RUB	0,0631
<b>30</b>	rupia indonezyjska	10000 IDR	2,7115
<b>31</b>	rupia indyjska	100 INR	5,5825
<b>32</b>	won południowokoreański	100 KRW	0,3192
<b>33</b>	yuan renminbi (Chiny)	1 CNY	0,5495

	Waluta	Skrót	Kurs
34	SDR (MFW)	1 XDR	5,1649

## Platforms for extracting data

import.io (<https://www.import.io/> (<https://www.import.io/>))

The screenshot shows the 'import.io Magic' interface. The browser address bar displays the URL: <https://magic.import.io/?site=http%3F%2F%2Feurosport.onet.pl%2Fsiatkowka>. The interface features a search bar with the URL and buttons for 'Extract data' and 'See examples'. Below the search bar is a table of extracted data with columns: breadcrumbs\_cont..., breadcrumbs\_links, datepublished\_value, link, itemimage\_image, itemtitle\_value, and itemlead\_descripti....

	breadcrumbs_cont...	breadcrumbs_links	datepublished_value	link	itemimage_image	itemtitle_value	itemlead_descripti...
1	Sport	Sport	dzisiaj 14:49	Orlen Liga: ostatnie s...		Orlen Liga: ostatnie s...	W niedzielę siatkarki ...
2	Sport	Sport	dzisiaj 12:45	XIV Memoriał Huberta...		XIV Memoriał Huberta...	W czwartek w Krakow...
3	Sport	Sport	dzisiaj 09:00	Kwalifikacje olimpijski...		Kwalifikacje olimpijski...	Dopingowa wpadka s...
4	Sport	Sport	dzisiaj 08:09	PlusLiga: Stephane A...		PlusLiga: Stephane A...	Cuprum Lubin pokon...
5	Sport	Sport	wczoraj 21:31	PlusLiga: piękna seria...		PlusLiga: piękna seria...	W rozegranym awans...

At the bottom of the table, there are navigation buttons: 'Previous page', 'Next page', and 'I was looking for other data'. On the right side, there are buttons for 'Download CSV' and 'Save API'.

The screenshot shows the 'import.io' interface for configuring an API. The browser address bar displays the URL: <https://import.io/data/mine/?id=fe8c774b-4a8b-4eaa-8077-05cda71d449b>. The interface features a search bar and a sidebar with a search bar and a list of data sources. The main content area displays the 'eurosport.onet.pl API' configuration page. It includes buttons for 'Download our free app', 'Contact us', 'Documentation', 'My account', and 'New'. Below these buttons are options to 'Duplicate' or 'Delete' the API. The 'Export' tab is selected, showing options to 'Export to Google Sheets', 'Create a Plot.ly Graph', and 'Use in Data Set'. At the bottom, there is a section for 'Simple API integration' with a code icon.



In [37]:

```
import requests
import json

api = "https://api.import.io/store/connector/XXXXX/_query?input=webpage/url:http%3A%2F%2Feurosport.onet.pl%2Fsiatkowka&&_apikey=XXXX"

r = requests.get(api)
results = r.json()
for i in results["results"]:
    print(i["link/_title"])
    print()
```

PlusLiga: PGE Skra Bełchatów zagra z uśmiechem o najwyższe cele

PlusLiga: Indykpol AZS Olsztyn chce zagrać w play off

Jastrzębski Węgiel: półfinał pierwszym celem

PlusLiga: MKS Będzin ma poprawić pozycję

PlusLiga: ZAKSA Kędzierzyn-Koźle z nowym trenerem i odmłodzonym zespołem

PlusLiga: Dafi Społem Kielce ma cel minimum, czyli utrzymanie

PlusLiga: BBTS Bielsko-Biała powalczy o czołową ósemkę

PlusLiga: Cuprum Lubin spróbuje trafić w "szóstkę"

PlusLiga: w Cerrad Czarnych Radom nastał czas młodości

PlusLiga: celem Asseco Resovii Rzeszów występ w finale

PlusLiga: Piotra Gruszkę i GKS Katowice czeka sezon ciekawszy i trudniejszy

Jan Such przed startem PlusLigi: będzie ciekawsza

PlusLiga: mniej gwiazd, więcej zagranicznych trenerów

Wraca PlusLiga, osiemnasty sezon w elicie całkiem inny od poprzednich

Lukas Tichacek: wszyscy patrzą na nas nieco inaczej

Mistrzostwa Europy w siatkówce (Gruzja i Azerbejdżan 2017) - terminarz, wyniki i tabele

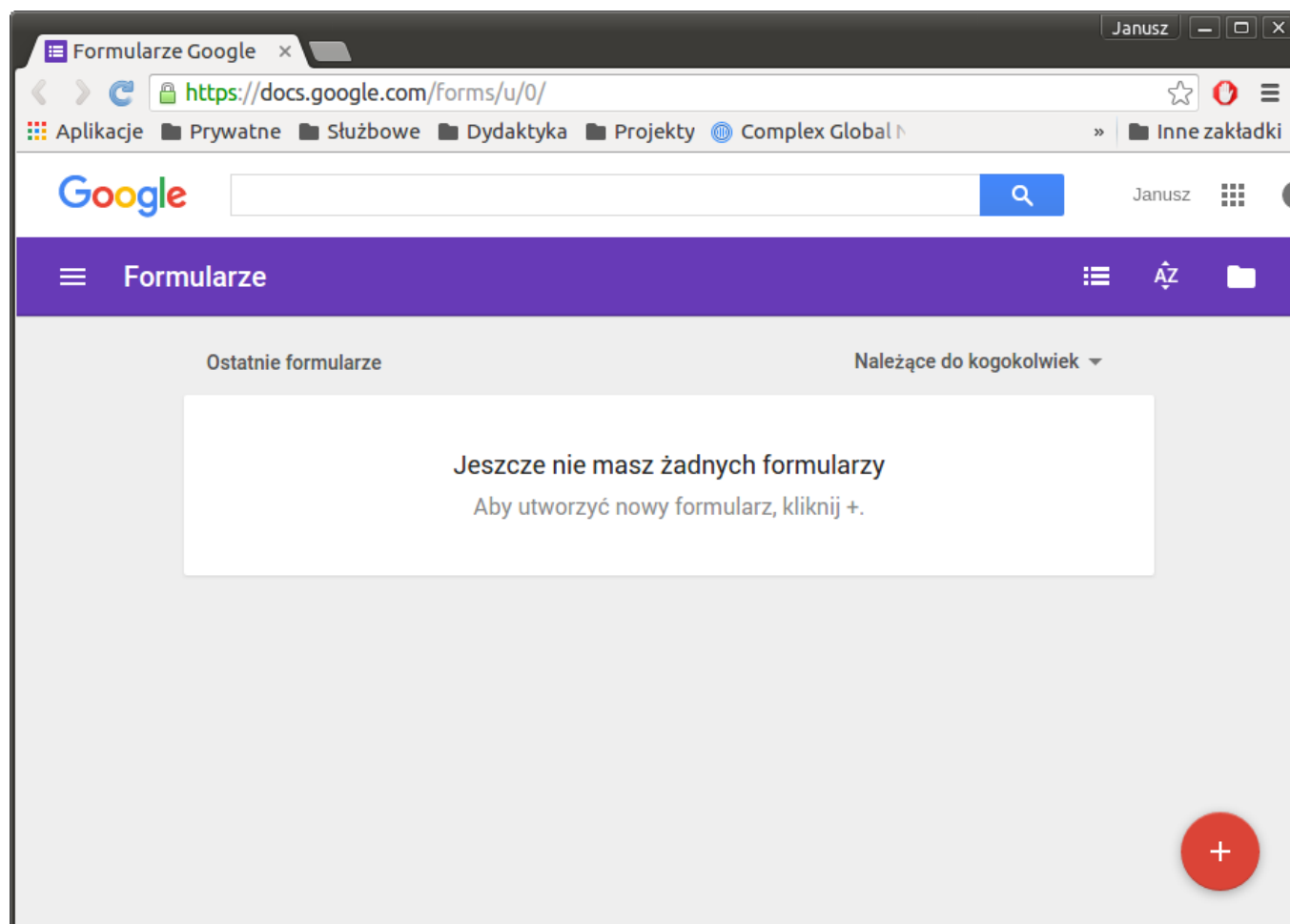
ME siatkarek 2017: Serbia idzie jak burza, Białoruś rozbita w ćwierćfinale

Tokio 2020: FIVB czeka na akceptację systemu kwalifikacji olimpijskich w siatkówce

ME siatkarek 2017: Holandia rozbiła Włochy i wzięła półfinał rozgrywek

Malwina Smarzek: jest nam przykro, kiedy kibice stawiają na kadrze karyzyk

## Online surveys



Formularz bez nazwy

https://docs.google.com/forms/u/0/d/1mAKglcQrZAZAI9J4grcaziSmB9HhERSggbM3ggkUWSw/ec

Aplikacje Prywatne Służbowe Dydaktyka Projekty Complex Global Inne zakładki

PYTANIA ODPOWIEDZI

## Ulubiony język programowania

Formularz na potrzeby wykładu z analizy danych

Jaki jest Twój ulubiony język programowania?

☒ Wielokrotny wybór

☐ c

☐ Fortran

☐ Java

☐ Python

+

Tt

🖼️

📺

☰

Formularz bez nazwy x Ulubiony język progr x

Janusz

https://docs.google.com/forms/d/1mAKglcQrZAZAI9J4grcaziSmB9HhERSggbM3ggkUWSw/viewfc

Aplikacje Prywatne Służbowe Dydaktyka Projekty Complex Global Inne zakładki

## Ulubiony język programowania

Formularz na potrzeby wykładu z analizy danych

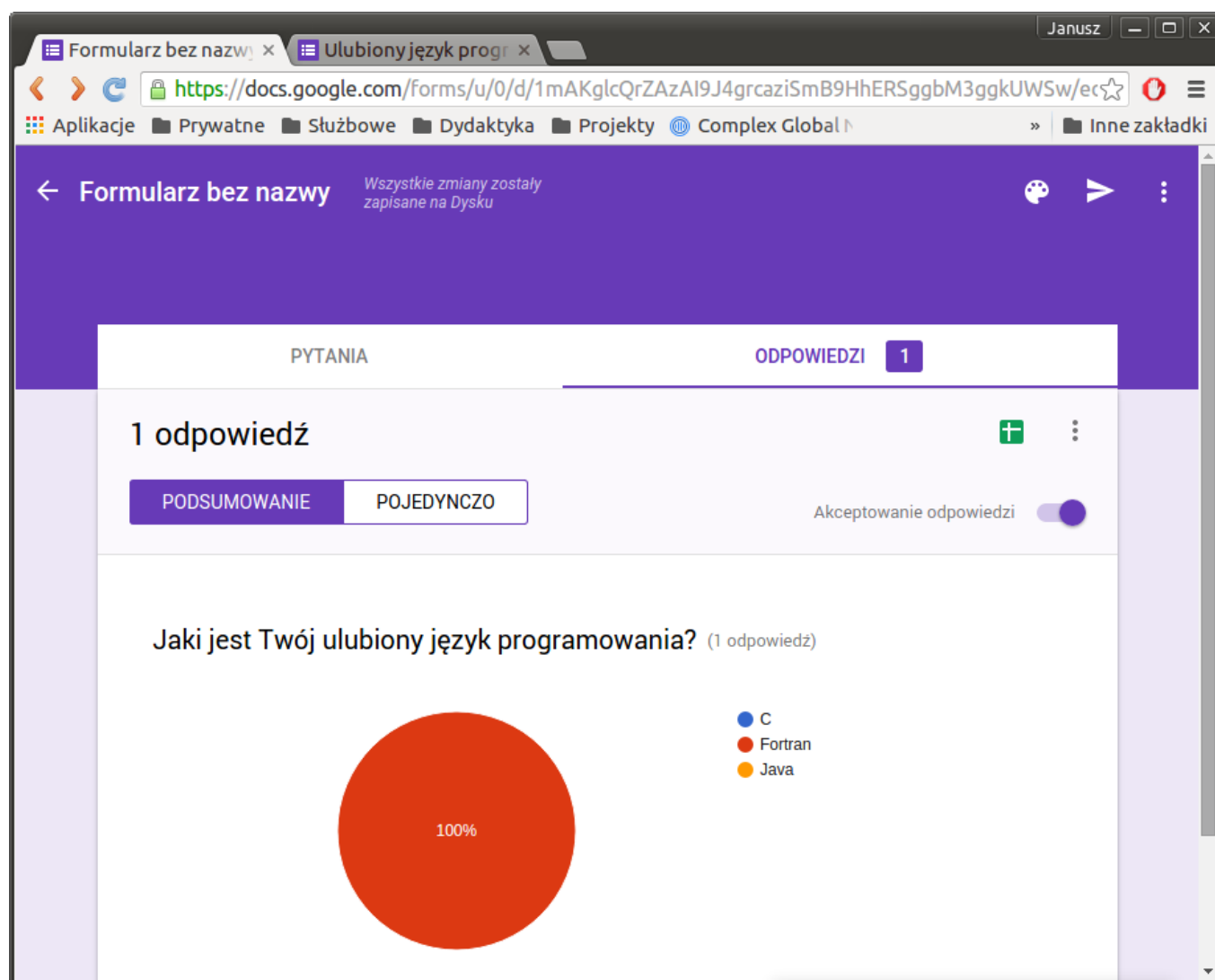
Jaki jest Twój ulubiony język programowania?

☐ c

☐ Fortran

☐ Java

PRZEŚLIJ



In [ ]: