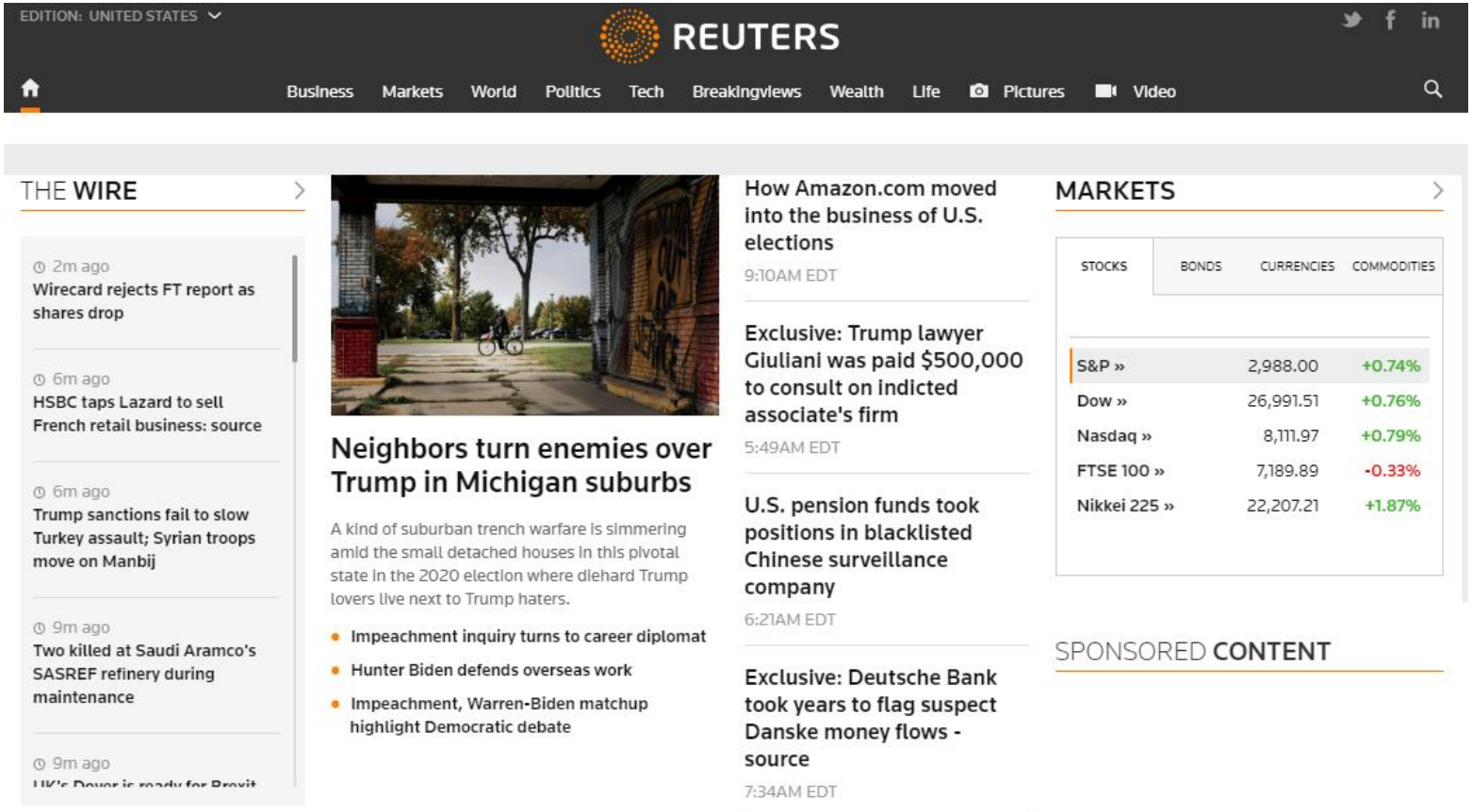
DataLab Cup 1:
Predicting News Popularity

Outline

- Competition Info
- Feature Engineering

Competition Info

- News Popularity



Competition Info

- Dataset
  - Training data(27643)

Id	Popularity	Page content
0	-1	<html><head> <span c...
1	1	<html><head> <span cl...
2	1	<html><head> <span cl...
3	-1	<html><head> <span cl...
4	-1	<html><head> <span cl...

  - Testing data(11847)

Id	Page content
27643	<html><head> <span cl...
27644	<html><head> <span cl...
27645	<html><head> <span cl...
27646	<html><head> <span cl...
27647	<html><head> <span cl...

Competition Info

- Dataset

Default-mBy Sara Roncero-Menendez2014-01-03 13:02:48 UTC

Mobile Advertising Projected to Increase 64% in 2014

As our web presence expands, so does the advertising space. Agencies are using mobile and native advertising to catch consumers' attention on a variety of online platforms.

Companies nearly tripled the amount of money spent on mobile advertising, from $1.2 billion in 2012 to $3 billion in 2013, according to LinkedIn Marketing Solutions. Roughly 65% of both ad agencies and marketers plan to invest in native advertising, for an estimated total of $4.3 billion, in 2014.

See also: 10 Tips for Improving Your Mobile Advertising Campaign

Social and mobile marketing go hand-in-hand, since at least 17% of the time people spend on their mobile devices is on a social network. It's no wonder then that analysts predict mobile and social advertising will increase 64% and 47%, respectively.

Marketers are expected to spend nearly $47.6 billion on online ads alone in 2014, with $13.1 billion of that figure allocated for mobile ads.

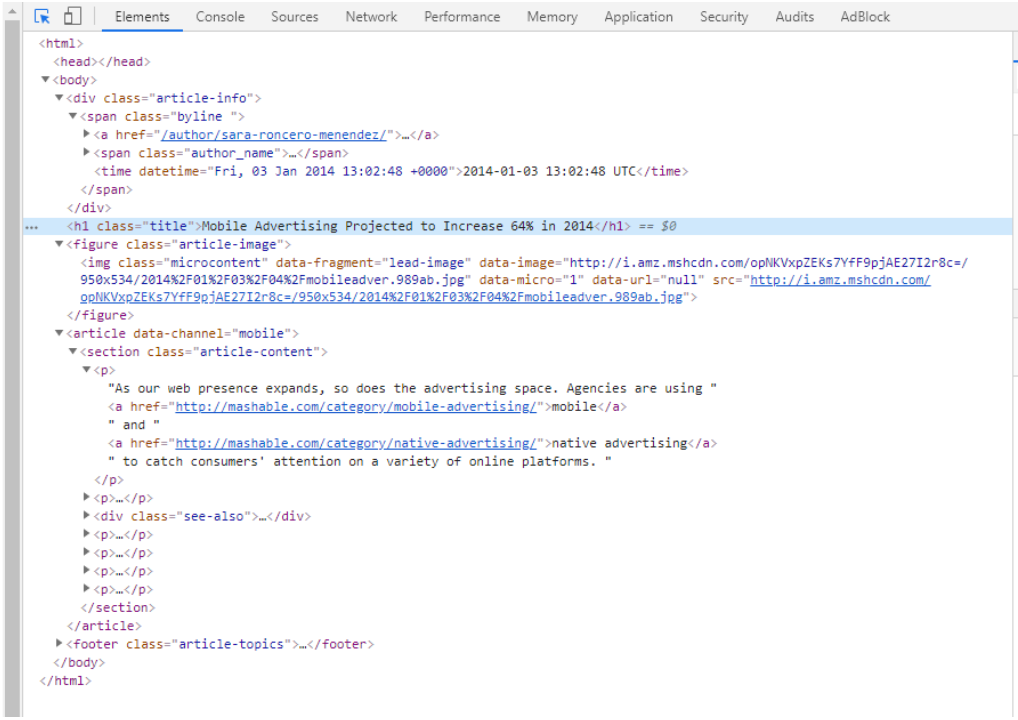
123013-LinkedIn-Mobile-Ads.nr.KF.jcf

Image: LLUIS GENE/AFP/Getty Images

Topics: Advertising, Business, infographics, Marketing, Mobile, mobile advertising

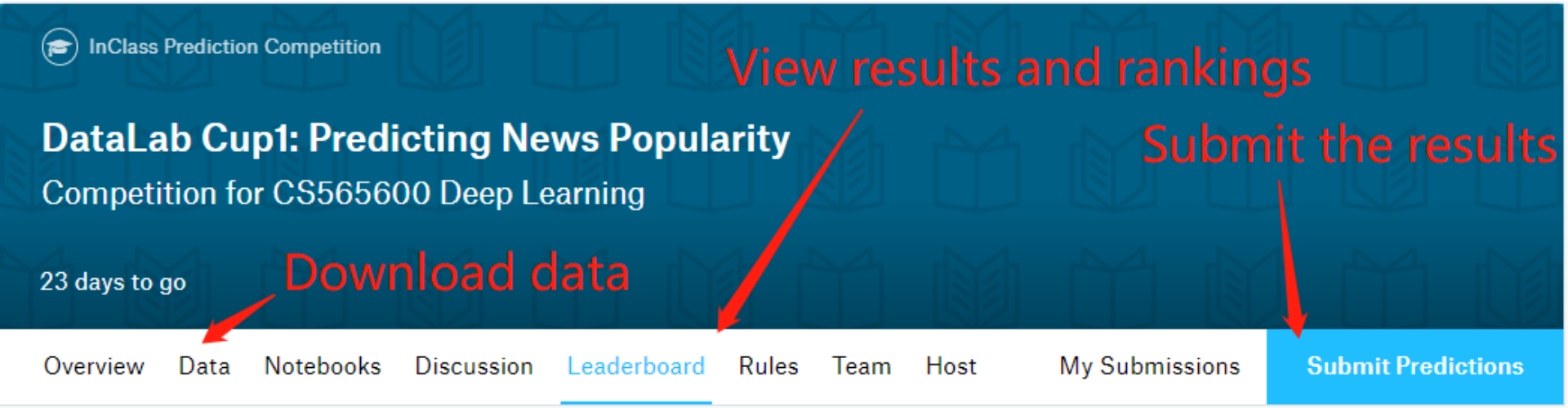
Competition Info

- Dataset



Competition Info

- Evaluation metric
  - AUC



Competition Info

- Evaluation metric
  - AUC

Public Leaderboard Private Leaderboard

This leaderboard is calculated with approximately 50% of the test data.
The final results will be based on the other 50%, so the final standings may be different.

Raw Data Refresh

#	Team Name	Notebook	Team Members	Score	Entries	Last
	BenchMark-80.csv			0.57298		
	BenchMark-60.csv			0.54396		

Competition Info

- Kaggle

How to Submit Results?

You have to predict the correct labels of data points in `test.csv` and submit your predictions to the Kaggle-In-class online judge system to get scores. Following are some example actions:

Action	Description
Data	Get the dataset.
Make a Submission	Your testing performance will be evaluated immediately and shown on the leaderboard.
Leaderboard	The current ranking of participants. Note that this ranking only reflects the performance on part of the testset and may not equal to the final ranking (see below).
Forum	You can ask questions or share findings here.
Kernels	You can create your jupyter notebook, run it, and keep it as private or public here.

Competition Info

- Rules
  - What you can do
    - Use untaught APIs: you can use any machine learning tools you like as well as models/techniques that are not taught in the class.

Competition Info

- Rules
  - What you **can't** do
    - Attempt to make predictions by means other than "learning" from the given dataset X or related sources.
    - Train models using representation learning based on neural networks.

Competition Info

- Honor code
  - Cheating is forbidden
    - Attempting to use datasets and references beyond those made available by the competition
    - Attempting to abuse the competition infrastructure to gain an edge
    - Attempting to copy code from other teams

Competition Info

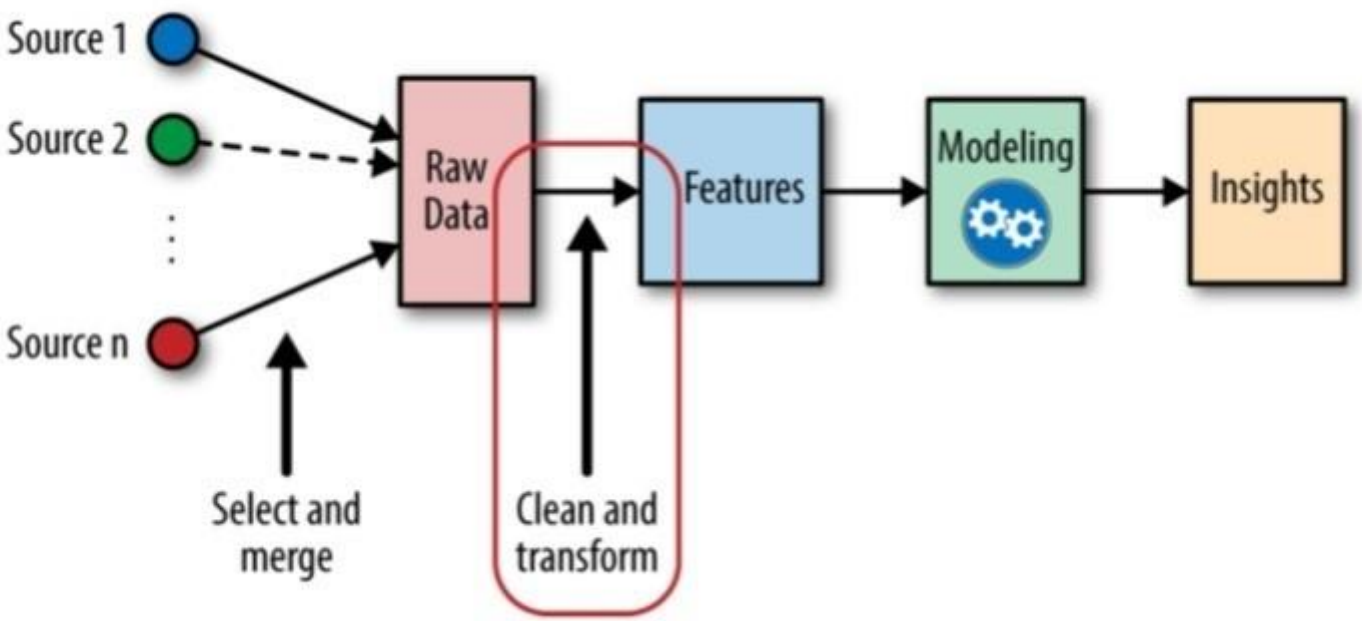
- Important Dates
  - 2019/10/17 (Thur) - competition starts
  - 2019/11/07 (Thur) 23:59pm - competition ends, final score announcement
  - 2019/11/10 (Sun) 23:59pm - report submission (to iLMS)
  - 2019/11/12 (Tue) - competition 1 show off

Competition Info

- Report
  - Student ID, name of each team member
  - How did you preprocess data
  - How did you build the classifier
  - Conclusions

Feature Engineering

- Feature Engineering is More Important Than You Expected



Feature Engineering

- Preprocessing
  - Data Cleaning
  - Extended abbreviation
  - Word Stemming
  - Stop-Word Removal
- Word2Vec
  - BoW
  - TF-IDF
  - Feature Hashing
- Out-of-Core Learning

Feature Engineering

- Preprocessing
  - Data Cleaning

```
I know that Chill Wills usually played lovable old sorts in Westerns. But his role in this segment is some
thing I've remembered for a long time. Wills could be a first rate villain. Yes, Burgess Meredith's Fall w
as correct! That look in Hepplewhite's eye! It expressed porcine greed, ignorance, and the threat of viole
nce all at once. Quite a performance, I think.<br /><br />The segment itself was a good one, too. Questio
n: couldn't the little black bag cure alcoholism? I guess it did, sort of, with Fall. But the doctor would
have been wise to apply the cure, if he had it, as quickly as possible to Hepplewhite.<br /><br />There is
one moment that was annoying but also necessary. And it is something that appears to recur in these Night
Gallery segments. It's Serling's constant need to sermonize. For that's what we got, one more time, with D
r. Fall. I don't know what was more frustrating, losing the black bag and all its miracles or not being to
stop Fall from preaching about the bag's benefit for humanity, all while rubbing Hepplewhite's greedy face
in the mud, and, therefore, all but begging for Hepplewhite to strike out at him. But as I say, it was nec
essary. At least it was for me. Otherwise, we wouldn't have been able to see Wills' performance discussed
above. All done without moving a muscle or speaking a word.
```

Feature Engineering

- Preprocessing
  - Data Cleaning
    - removing all HTML tags
    - removing punctuation marks but emoticons
    - converting all characters to lowercase

```
<a href="example.com">Hello, This :-( is a sanity check ;P!</a>
```

```
hello this is a sanity check  :( ;P
```

Feature Engineering

- Preprocessing
  - Extended abbreviation
    - don't -> do not
    - I'd -> i would

Feature Engineering

- Preprocessing
  - Word Stemming
    - watches/watching/watched -> watch

```
runners like running and thus they run
```

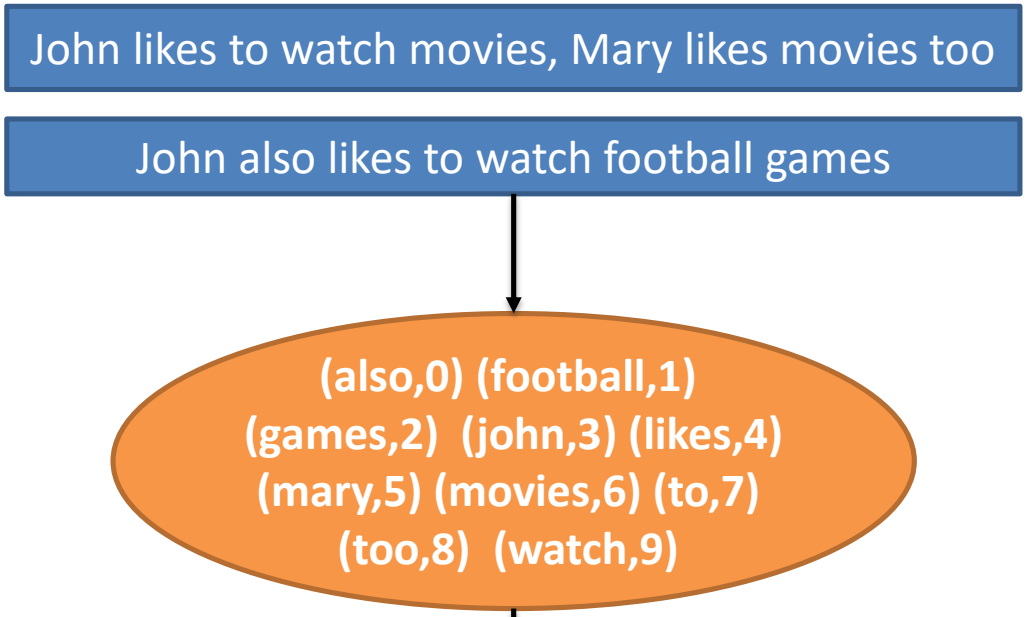
```
['runner', 'like', 'run', 'and', 'thu', 'they', 'run']
```

Feature Engineering

- Preprocessing
  - Stop-Word Removal
    - a/an/the
    - am/is/are

Feature Engineering

- Word2Vec
  - BoW



	also	football	games	john	likes	mary	movies	to	too	watch
s1 = [	0,	0,	0,	1,	2,	1,	2,	1,	1,	1]
s2 = [	1,	1,	1,	1,	1,	0,	0,	1,	0,	1]

Feature Engineering

- Word2Vec
  - TF-IDF
    - TF: Term frequency
    - IDF: Inverse document frequency

$$TF\text{-}IDF = TF \cdot \left(\log \left(\frac{1 + N_{\text{doc}}}{1 + DF} \right) + 1 \right)$$

Feature Engineering

- Word2Vec
  - Feature Hashing
    - (+) no need to store vocabulary dictionary in memory anymore
    - (-) no way to map token index back to token
    - (-) no IDF weighting

Feature Engineering

- Out-of-Core Learning
  - data streaming
  - partial update