NLP con FastAI

SaturdayAI - Kerri Rapes

Programa

- Sobre mi
- Conversica
- NLP Basics
  - Que es NLP
  - Idiomas son dificiles
- Big Data vs Small Data
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- Big Data
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Sobre Mi

“La gringa de gringolandia”

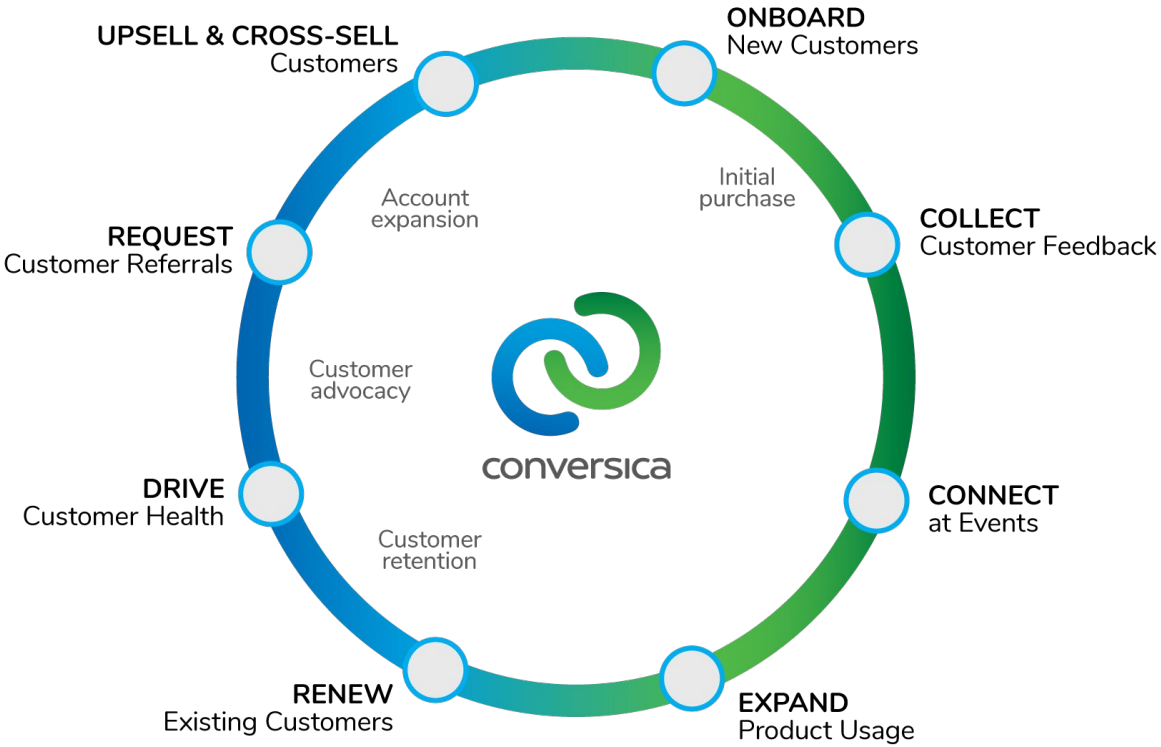
Sobre Mi

PURDUE MECHANICAL ENGINEERING

Schlumberger

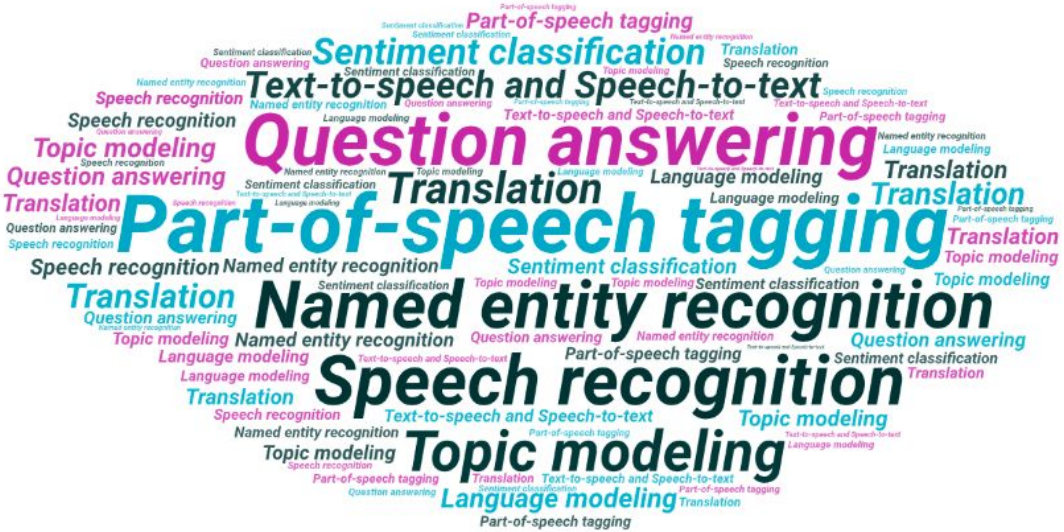
Dynamic English

Conversica


ONBOARD
New Customers
COLLECT
Customer Feedback
CONNECT
at Events
EXPAND
Product Usage
RENEW
Existing Customers
DRIVE
Customer Health
REQUEST
Customer Referrals
UPSELL & CROSS-SELL
Customers
Initial purchase
Account expansion
Customer retention
Customer advocacy
conversica

NLP Basics

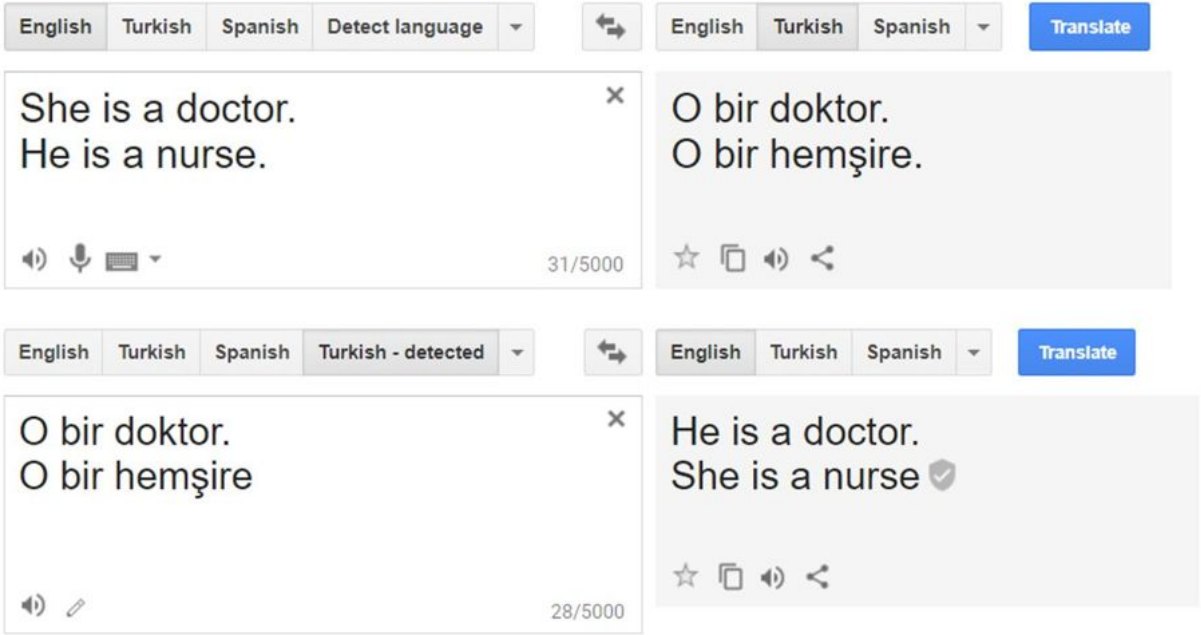
Que es NLP?



1. Chat Bots
2. Interpretación automática de encuestas
3. Medición de la magnitud de los terremotos

NLP Basics

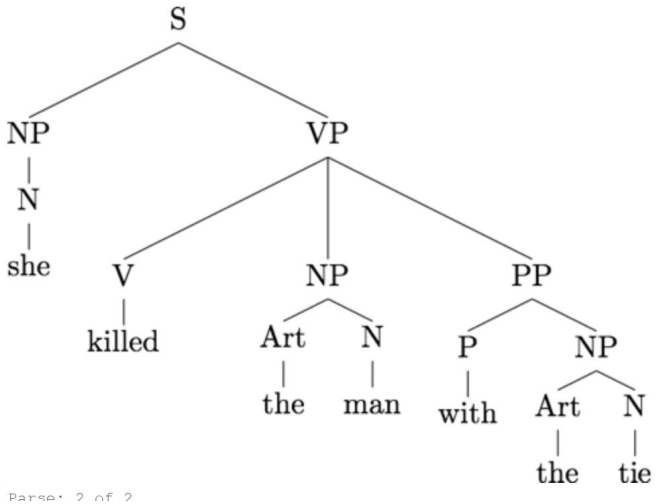
Idiomas son dificiles?

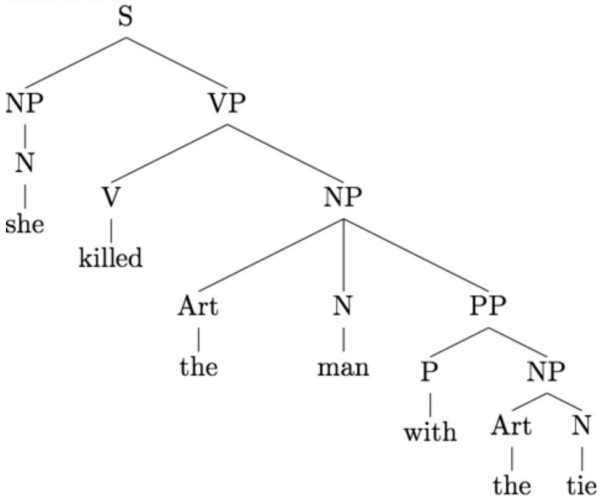


NLP Basics

Idiomas son dificiles?

She killed the man with the tie.





La corbata era instrumento usado para matar el hombre

El hombre tenía una corbata

Big Data vs Small Data

Small Data

Stop Words


```
In [134]: vectorizer = TfidfVectorizer(input='filename', stop_words='english')
          dtm = vectorizer.fit_transform(filenames).toarray()
          vocab = np.array(vectorizer.get_feature_names())
          dtm.shape, len(vocab)
```

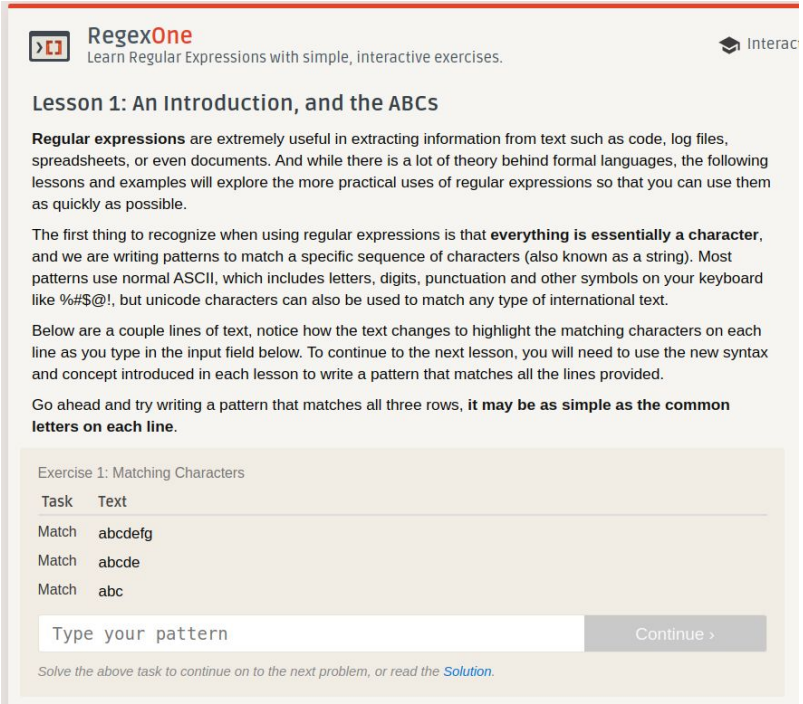
Small Data

Regex - “Regular expressions is a pattern matching language.”

Problema: Identificar números del teléfono

- 123-456-7890
- 123 456 7890
- (123)456-7890
- 101 Howard

https://regexone.com/



Small Data

Stemming and Lemmatization

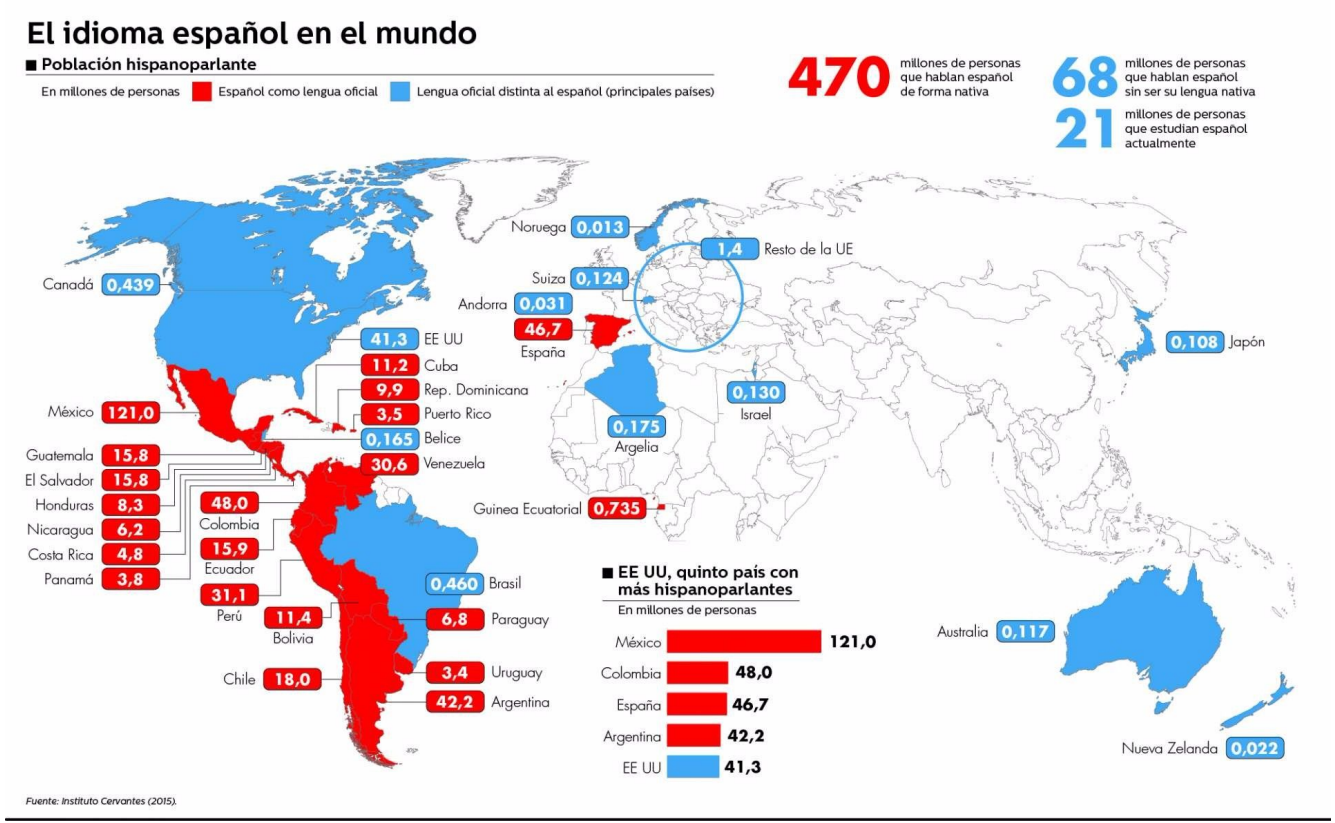
```
In [143]: from nltk import stem

In [144]: wnl = stem.WordNetLemmatizer()
          porter = stem.porter.PorterStemmer()

In [145]: word_list = ['feet', 'foot', 'foots', 'footing']

In [146]: [wnl.lemmatize(word) for word in word_list]

Out[146]: ['foot', 'foot', 'foot', 'footing']

In [147]: [porter.stem(word) for word in word_list]

Out[147]: ['feet', 'foot', 'foot', 'foot']
```

```
In [9]: import spacy

In [80]: from spacy.lemmatizer import Lemmatizer
         lemmatizer = Lemmatizer()

In [81]: [lemmatizer.lookup(word) for word in word_list]

Out[81]: ['feet', 'foot', 'foots', 'footing']
```

NLP y Español

NLP y Español

Poblaciones de hablantes nativos

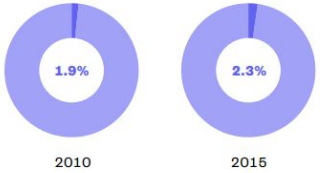


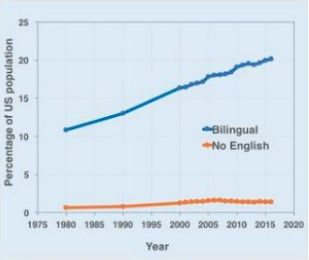
NLP y Español

Poblaciones futuros de hablantes nativos en EEUU

Employers were seeking **far more bilingual workers** in 2015 than they were in 2010.

FIGURE 3: SHARE OF ONLINE JOB LISTINGS FOR BILINGUALS

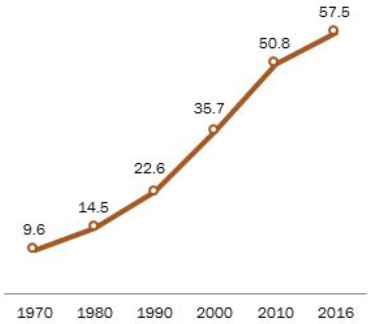




Percentage of bilinguals in the US since 1980
Source: ACS / F. Grosjean

U.S. Hispanic population hits new high

In millions

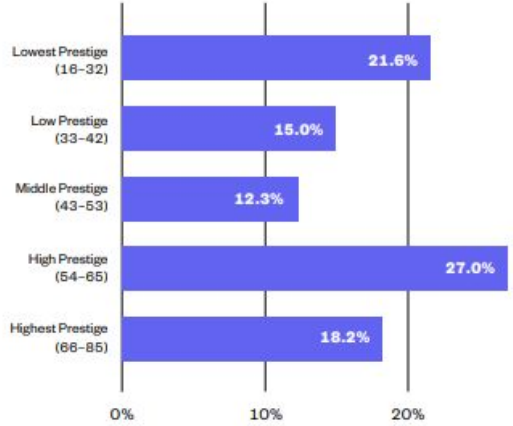


Note: 1990-2016 estimates are for July 1.
Source: 1970-1980 estimates based on decennial censuses (see Passel & Cohn 2008). 1990-2016 estimates based on intercensal population estimates and Vintage 2014.

PEW RESEARCH CENTER

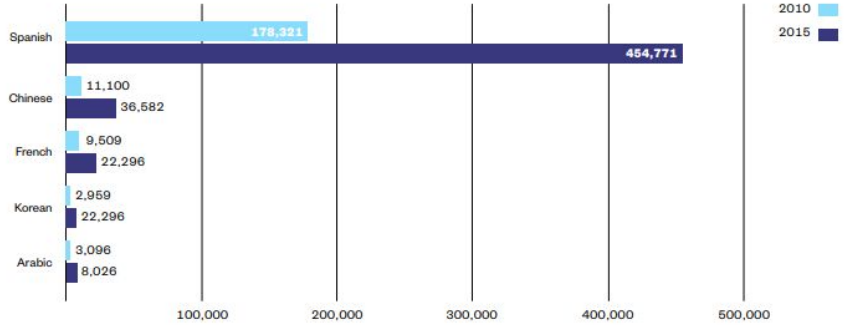
Demand for bilingual skills is not limited to one end of the skills-spectrum but instead is **spread across the economy** as a whole.

FIGURE 6: CHANGE IN SHARE OF JOBS TARGETING BILINGUAL WORKERS, 2010-2015



Source: Burning Glass Technologies, Labor Insight. Data pulled on April 13, 2016

FIGURE 10: NUMBER OF ONLINE JOB LISTINGS FOR WORKERS WITH BILINGUAL SKILLS IN SPECIFIC LANGUAGE



http://www.newamericaneconomy.org/wp-content/uploads/2017/03/NAE_Bilingual_V8.pdf

NLP y Español

Talento en las américas

- Chile (27th)
- EEUU (28th)
- Brasil (38th)
- Argentina (39th)
- Colombia (45th)

Which Country Has the Best Developers?

Ranked by Average Score Across All HackerRank Challenges

Rank	Country	Score Index	Rank	Country	Score Index
1	China	100.0	26	Netherlands	78.9
2	Russia	99.9	27	Chile	78.4
3	Poland	98.0	28	United States	78.0
4	Switzerland	97.9	29	United Kingdom	77.7
5	Hungary	93.9	30	Turkey	77.5
6	Japan	92.1	31	India	76.0
7	Taiwan	91.2	32	Ireland	75.9
8	France	91.2	33	Mexico	75.7
9	Czech Republic	90.7	34	Denmark	75.6
10	Italy	90.2	35	Israel	74.8
11	Ukraine	88.7	36	Norway	74.6
12	Bulgaria	87.2	37	Portugal	74.2
13	Singapore	87.1	38	Brazil	73.4
14	Germany	84.3	39	Argentina	72.1
15	Finland	84.3	40	Indonesia	71.8
16	Belgium	84.1	41	New Zealand	71.6
17	Hong Kong	83.6	42	Egypt	69.3
18	Spain	83.4	43	South Africa	68.3
19	Australia	83.2	44	Bangladesh	67.8
20	Romania	81.9	45	Colombia	66.0
21	Canada	81.7	46	Philippines	63.8
22	South Korea	81.7	47	Malaysia	61.8
23	Vietnam	81.1	48	Nigeria	61.3
24	Greece	80.8	49	Sri Lanka	60.4
25	Sweden	79.9	50	Pakistan	57.4

HackerRank

HACKERRANK PROGRAMMER OLYMPICS (2016)

Big Data

FastAI - IMBD Classifier

Problema:

Vamos a ver críticas de películas de IMDB. Queremos determinar si una revisión es negativa o positiva, según el texto. Para hacer esto, utilizaremos el aprendizaje de transferencia.

WIKIPEDIA
La enciclopedia libre

+

IMDb

=

Big Data

FastAI - IMBD Classifier - español

Problema:

Queremos determinar si una revisión es negativa o positiva, según el texto, pero no tenemos un base de datos equitado

+ (IMDb + G 文) =