

# AI

## Using Machine Learning to Augment your Content



**KALAMUNA**

Angelo Porretta  
Senior Architect  
[angelo@kalamuna.com](mailto:angelo@kalamuna.com)



# Agenda

1. What is machine learning and natural language processing?
2. What 3rd party tools exist that process natural language?
3. What does natural language processing look like in practice?

# About me



Angelo Porretta  
Senior Architect

twitter [@angeloporretta](#)

drupal.org [captainpants](#)

email [angelo@kalamuna.com](mailto:angelo@kalamuna.com)

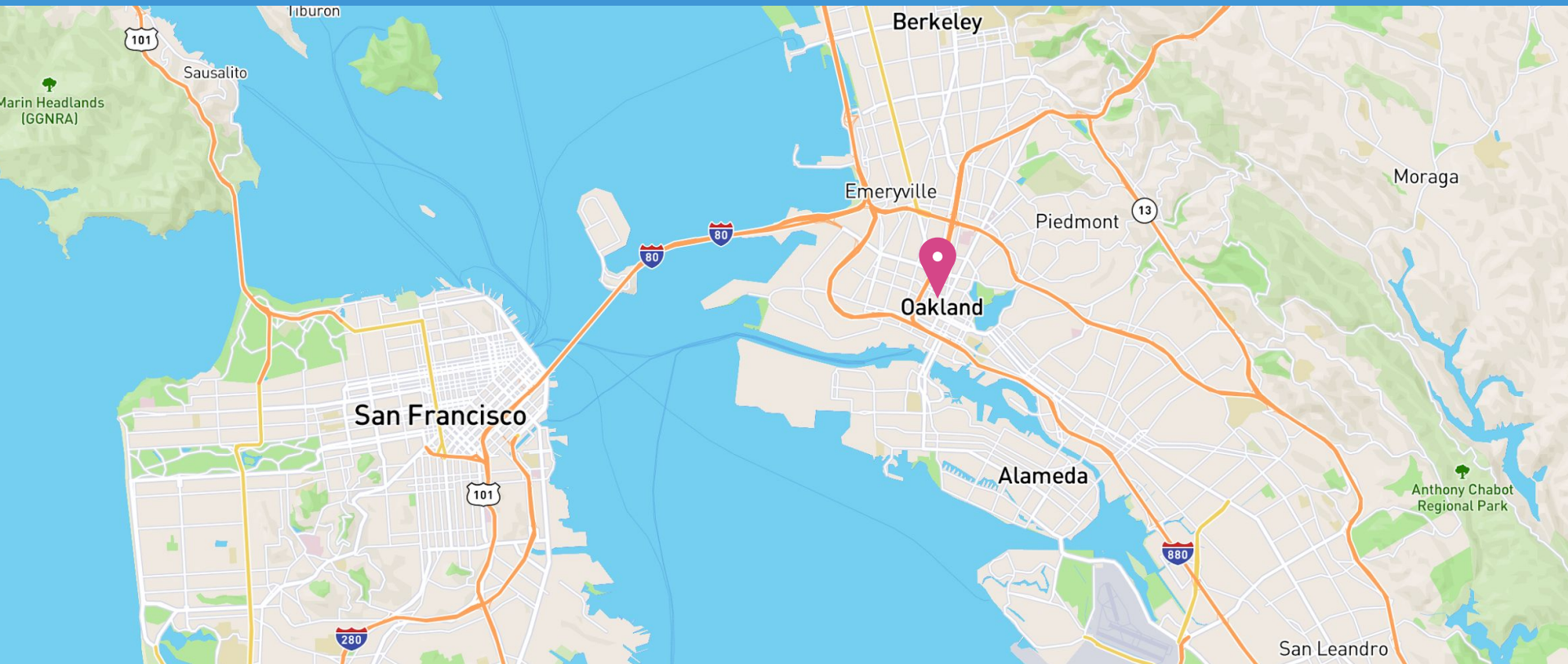


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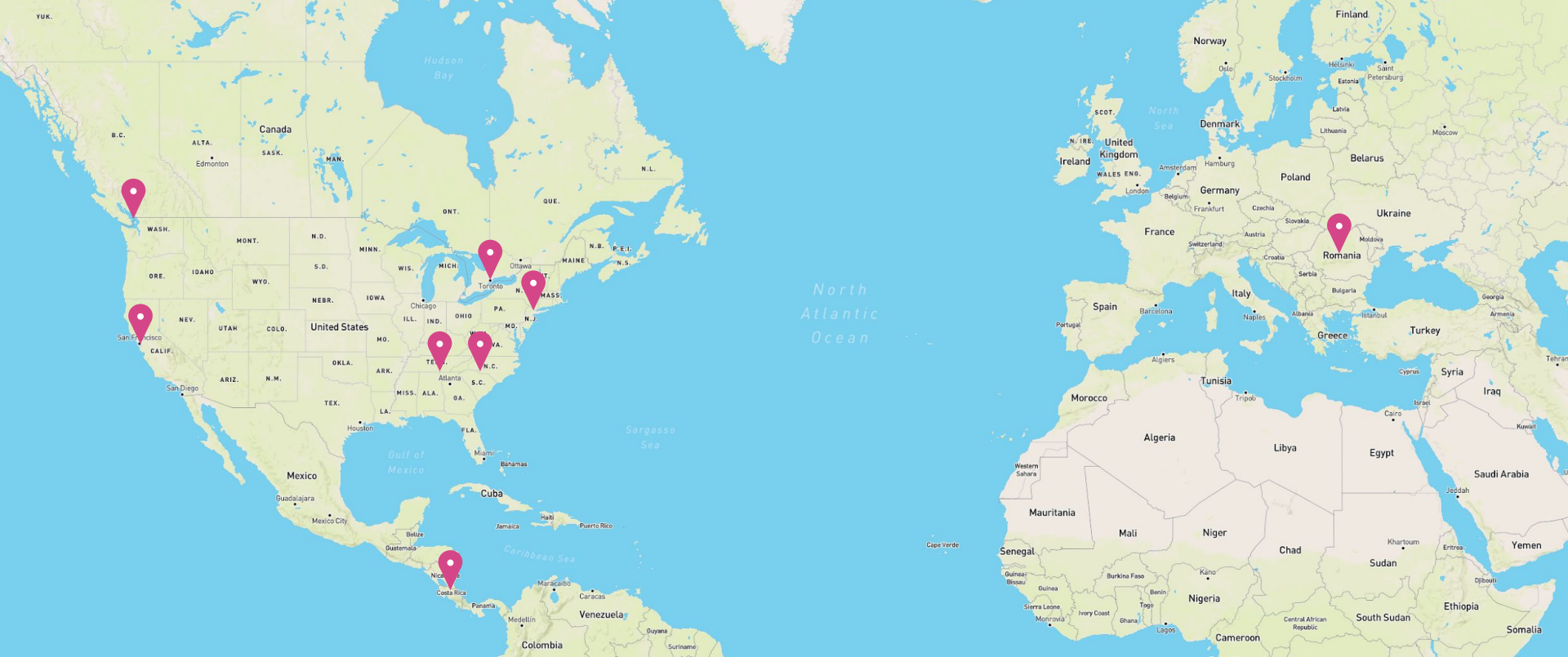
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# Born in Oakland, CA



# Distributed team





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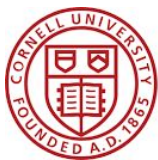
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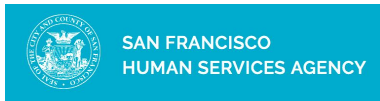
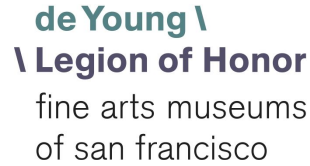
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# What is Machine Learning and Natural Language Processing?

# What is Machine Learning?

## **Defn'**

Machine learning is a field of computer science that uses statistical techniques to give computer systems the ability to "learn" with data, without being explicitly programmed. (Wikipedia)

Language evolves

- Sentiment of words change "Sick"
- New words are created "Microaggression"
- Definitions of words change "Tweet"

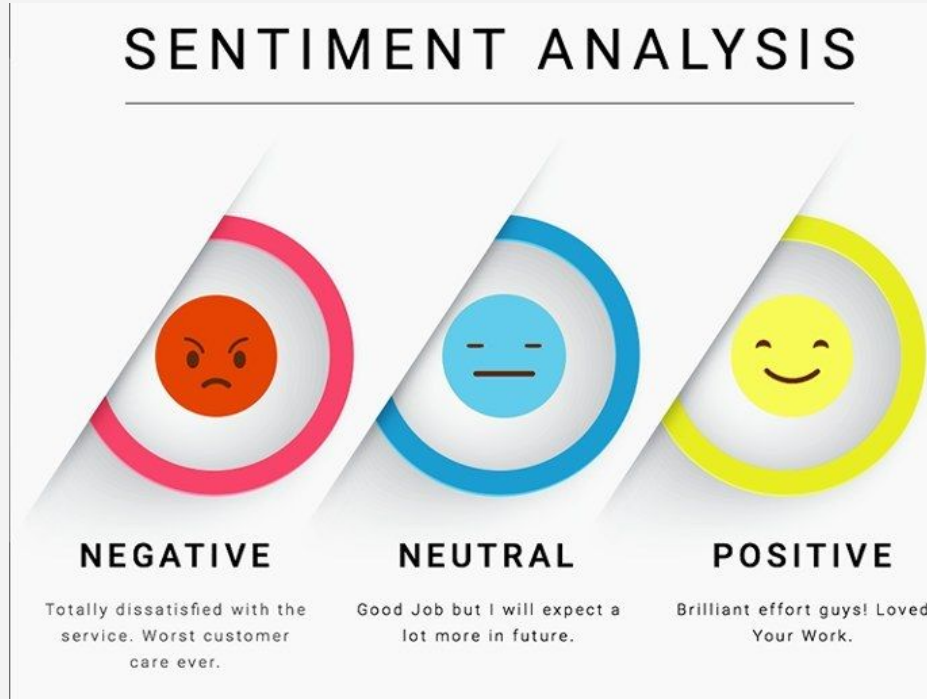
# What is Natural Language Processing?

## **Defn'**

Natural language processing (NLP) is an area of computer science and artificial intelligence concerned with the interactions between computers and human (natural) languages, in particular how to program computers to process and analyze large amounts of natural language data. (Wikipedia)

- Sentiment analysis
- Entity analysis
- Topic segmentation
- Language identification

# Sentiment Analysis



# Entity Analysis

Amazon.com, Inc. is located in Seattle, WA and was founded July 5th, 1994 by Jeff Bezos, allowing customers to buy everything from books to blenders.

Entity ▼	Category ▼	Confidence ▼
Amazon.com, Inc	● Organization	0.90
Seattle, WA	● Location	0.89
July 5th, 1994	● Date	0.99+
Jeff Bezos	● Person	0.99+

# Topic Segmentation

Google, headquartered in Mountain View, unveiled the new Android phone at the Consumer Electronic Show. Sundar Pichai said in his keynote that users love their new Android phones.

**/Computers & Electronics**

**Confidence:** 0.61

**/Internet & Telecom/Mobile & Wireless**

**Confidence:** 0.53

**/News**

**Confidence:** 0.53

# Language Identification

Self Explanatory...



French	ananas
Russian	ананас (ananas)
German	Ananas
Latin	ananas
Polish	ananas
Romanian	ananas
English	pineapple





What 3rd party tools exist that process natural language?

# How do we analyze text?

Thankfully we don't need to write our own programs in order to analyze text.

- [Datamuse](#)
- [Textrazor](#)
- [Amazon Comprehend](#)
- [Google's Natural Language Processing API](#)

# Datamuse

Fantastic tool when looking for relationships between words.

- Synonyms
- Antonyms
- Meronyms (Trunk > Tree)
- Rhyming ([orange](#))
- Etc...

# Datamuse

Small demonstration.

<http://www.datamuse.com/api/>

# Textrazor

Commercial but powerful:

- Fantastic topic segmentation
- Has entity analysis
- Sadly lacks sentiment analysis and language identification

# Textrazor

Barclays misled shareholders and the public about one of the biggest investments in the bank's history, a BBC Panorama investigation has found.

## CATEGORIES

- 0.94 **economy, business and  
finance>economy>macro  
economics>investments**
- 0.64 **economy, business and  
finance>economy**
- 0.50 **economy, business and finance>market  
and exchange>securities**

# Textrazor

**Barclays** misled shareholders and the public about one of the biggest investments in the bank's history, a BBC Panorama investigation has found.

## Barclays

**Normalized Entity Id:** Barclays

**Normalized English Entity Id:** Barclays

**Wikipedia Link:**

<http://en.wikipedia.org/wiki/Barclays>

**Freebase Id:**

</m/05t8c5>

**Wikidata Id:**

[Q245343](https://www.wikidata.org/wiki/Q245343)

**Confidence Score:** 4.876

**Relevance Score:** 0.6484

**DBPedia types:**

Agent

Organisation

Company



# Amazon Comprehend

Commercial but powerful:

- With all things AWS, it runs on a pay for what you use model
- Fantastic entity analysis
- Decent sentiment analysis
- Has language identification
- Lacks topic segmentation
  - For the purposes of recommending content, we will need this.

# Amazon Comprehend

Death and destruction ravaged the town when the volcano erupted. It was horrible and frightening. Jeff Bezos can wade through lava.

Entity	Category	Confidence
Jeff Bezos	● Person	0.99+

# Amazon Comprehend

Death and destruction ravaged the town when the volcano erupted. It was horrible and frightening. Jeff Bezos can wade through lava.

## Sentiment

Neutral

0.05 confidence

Positive

0.00 confidence

Negative

0.93 confidence

Mixed

0.01 confidence

# Google Natural Language API

Commercial but powerful:

- Also a pay for what you use model
- Has all the things:
  - Entity analysis
  - Sentiment analysis
  - Language identification
  - Topic segmentation

# Google Natural Language API

A conversation can be so powerful in helping someone take that first step to getting the help they may need.

1. conversation

**Sentiment:** Score 0.7 Magnitude 0.7

**Saliency:** 0.53

OTHER

2. someone

**Sentiment:** Score 0 Magnitude 0

**Saliency:** 0.21

PERSON

3. step

**Sentiment:** Score 0.1 Magnitude 0.1

**Saliency:** 0.15

OTHER

4. help

**Sentiment:** Score 0 Magnitude 0

**Saliency:** 0.10

OTHER

# Google Natural Language API

A conversation can be so powerful in helping someone take that first step to getting the help they may need.

## Entire Document

A conversation can be so powerful in helping someone take that first step to getting the help they may need.

Score Range

-1.0 — -0.25

-0.25 — 0.25

0.25 — 1.0

Score

Magnitude

0.7

0.7

0.7

0.7

# Google Natural Language API

The new Android phone was unveiled at the Consumer Electronic Show. Sundar Pichai said in his keynote that users love their new Android phones.

**/Computers & Electronics/Consumer Electronics**

**Confidence:** 0.92

**/Internet & Telecom/Mobile & Wireless/Mobile Phones**

**Confidence:** 0.92



# Practical Uses

# So What (Text/Entity Analysis)?

These tools may not seem practical but you'd be surprised. How could datamuse be used? New products, word suggestions from email and text apps, [music](#), etc...



**Hemingway**  
*Editor*

# So What (Sentiment Analysis)?

Sentiment analysis could be used in a number of different ways:

- Customer reviews (in the absence of five stars).
- Social media analytics
- Brand management

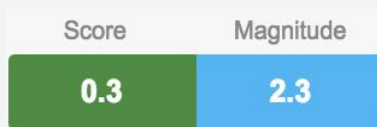
# So What (Sentiment Analysis)?

## Social Media Analytics:

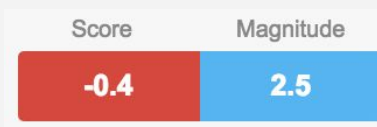
- Figure out how positively or negatively people are talking about your campaigns.
- Figure out how positively or negatively people are talking about your business.



Thank you Coca-Cola for the Blue Jays tickets! It was my first time going to a baseball game. My father and I had so much fun! It was my first time entering a contest, so I never expected to win so much. Thank you so much; beach balls, sunglasses, ball caps and the Jays tickets. Hope everyone at Coca-Cola enjoyed their summer too!



Take him he's yours! All his tweets are propaganda. He's done nothing good for this country. He supports criminals and murderers with allowing terrorist into the country it's only a matter of time something awful will happen. He's not what he seems.



# So What (Sentiment Analysis)?

Accurate? Do you agree that this is a negative thing to say?

Got food provisioning from here. The half roast chicken I ordered was so old and almost GRAY looking. It looked like it had been scraped off the floor. It tasted so old and like putrid chicken. I sent it back. It was the worst meal I have ever orders from the restaurant. Spent the next days with terrible stomach aches and vomiting. I only ate one bite! The wings were ordered for appetizers were cold, soggy and tasted off. The burger my friend ordered was like rubber. The manager on duty was a complete idiot who just walked around like he was in a daze. Just awful!!! This

[See supported languages](#)

Entire Document

ANALYZE

Score

-0.5

Magnitude

9.6

# So What (Sentiment Analysis)?

Accurate? Do you agree that this is a positive thing to say?

Manager walking around with his head so far up his a\*\* it`s practically enjoyable to watch.

0.8

0.8



# So What (Topic Segmentation)?

Something a little more relevant to Drupal... taxonomizing.

Let's apply machine learning in a Drupal setting.

# Additional Resources

More examples of the practical uses of NLP.

- [Introduction to Deep Learning – Sentiment Analysis](#) (IMDB)
- [Building an intelligent media monitoring chatbot for Slack](#)
- [Monitoring the media reaction to Facebook’s disastrous earnings call – News API Monthly Media Review](#)

Remember, “Machine Learning” has practical uses and the possibilities are endless.



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# Thank You!

[angelo@kalamuna.com](mailto:angelo@kalamuna.com)  
[www.kalamuna.com](http://www.kalamuna.com)