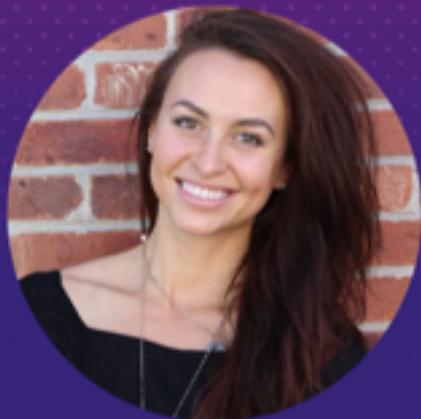


Machine Learning for SEOs



Britney Muller | Moz

 @BritneyMuller







WE IN THIS TOGETHER
GIRLFRIEND!!!!

LINDA GET YOUR ASS BACK ON
THESE EGGS!!!!

LINDA FINALLY DRANK WATER!!!
OUR DUCKLINGS ARE GOING TO BE
THE BEST!!!!



```
File "/anaconda2/lib/python2.7/site-packages/tensorflow/python/framework/ops.py", 11
ne 3392, in create_op
  op_def=op_def)
File "/anaconda2/lib/python2.7/site-packages/tensorflow/python/framework/ops.py", 11
ne 1718, in __init__
  self._traceback = self._graph._extract_stack() # pylint: disable=protected-access

NotFoundError (see above for traceback): tf_files/flower_photos/pumpkin-today.jpeg; No
such file or directory
[[Node: file_reader = ReadFile[_device="/job:localhost/replica:0/task:0/devic
e:CPU:0"](file_reader/filename)]]

C1HRW3DQW3QK:tensorflow-for-poets-2 britneymuller$ python -m scripts.label_image -
-graph=tf_files/retrained_graph.pb --image=tf_files/flower_photos/pumpkin-today.j
pg
/anaconda2/lib/python2.7/site-packages/h5py/_init_.py:36: FutureWarning: Conversion
of the second argument of issubdtype from 'float' to 'np.floating' is deprecated. In f
uture, it will be treated as 'np.float64 == np.dtype(float).type'.
  from ._conv import register_converters as _register_converters
2018-06-19 00:01:01.582647: I tensorflow/core/platform/cpu_feature_guard.cc:140] Your
CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FM
A

Evaluation time (1-Image): 0.204s

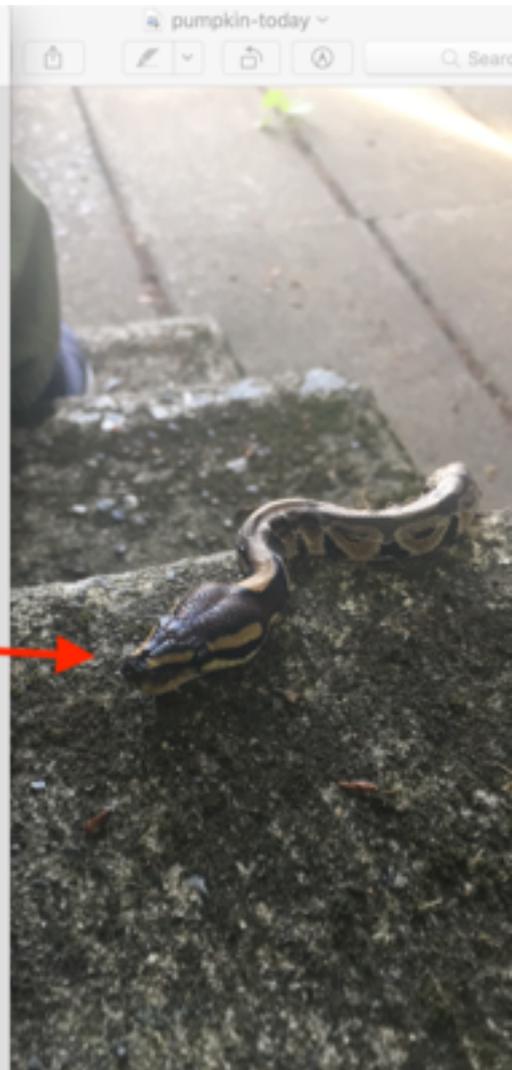
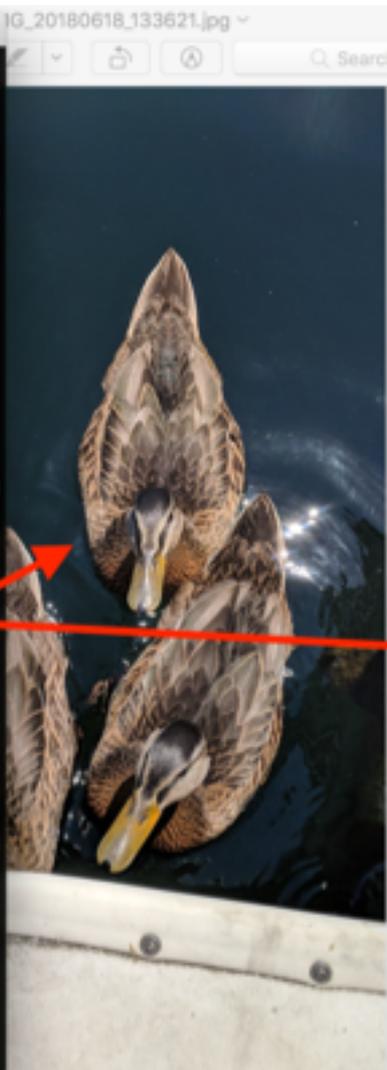
pumpkin (score=0.95822)
roses (score=0.02422)
daisy (score=0.00971)
dandelion (score=0.00339)
linda (score=0.00310)

C1HRW3DQW3QK:tensorflow-for-poets-2 britneymuller$ python -m scripts.label_image -
-graph=tf_files/retrained_graph.pb --image=tf_files/flower_photos/Linda-today.jpg
/anaconda2/lib/python2.7/site-packages/h5py/_init_.py:36: FutureWarning: Conversion
of the second argument of issubdtype from 'float' to 'np.floating' is deprecated. In f
uture, it will be treated as 'np.float64 == np.dtype(float).type'.
  from ._conv import register_converters as _register_converters
2018-06-19 00:01:26.152530: I tensorflow/core/platform/cpu_feature_guard.cc:140] Your
CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2 FM
A

Evaluation time (1-Image): 0.200s

linda (score=0.49169)
pumpkin (score=0.47849)
roses (score=0.02144)
sunflowers (score=0.00478)
dandelion (score=0.00338)

C1HRW3DQW3QK:tensorflow-for-poets-2 britneymuller$
```





I have no idea what I'm doing

A-Z RECENT DURATION

Category



🕒 22 min

Android & TensorFlow: Artistic Style Transfer

START

madd
Updated May 15, 2018

🕒 213 min

End-to-end Machine Learning with Tensorflow on GCP

START

Updated Jun 9, 2018



🕒 26 min

Nest Cam & TensorFlow Codelab

START

Updated Apr 26, 2018



🕒 77 min

TensorFlow For Poets

START

Updated May 30, 2018



🕒 149 min

TensorFlow and deep learning, without a PhD

START

Updated Jun 12, 2018



🕒 40 min

TensorFlow for Poets 2: TFLite Android

START

Mark Doust
Updated May 9, 2018

bit.ly/tf-for-poets

← TensorFlow For Poets 🕒 21 min remaining

- 1 Introduction**
- 2 Setup
- 3 Download the training images
- 4 (Re)training the network
- 5 Training And TensorBoard (Optional)
- 6 Using the Retrained Model
- 7 Trying Other Hyperparameters (Optional)
- 8 Training on Your Own Categories (Optional)
- 9 Next steps

1. Introduction

[TensorFlow](#) is an open source library for numerical computation, specializing in machine learning applications.

What you will build

In this codelab, you will learn how to run TensorFlow on a single machine, and will train a simple classifier to classify images of flowers.



Image CC-BY by Retinafunk

```
daisy (score = 0.99871)
sunflowers (score = 0.00595)
dandelion (score = 0.00252)
roses (score = 0.00240)
```

[Next](#)

Did you find a mistake? [Please file a bug](#)

flower_photos

Search



daisy



dandelion



LICENSE.txt



Linda



Pumpkin



roses



sunflowers

ImageNet is an image database organized according to the **WordNet** hierarchy (currently only the nouns), in which each node of the hierarchy is depicted by hundreds and thousands of images. Currently we have an average of over five hundred images per node. We hope ImageNet will become a useful resource for researchers, educators, students and all of you who share our passion for pictures.

[Click here](#) to learn more about ImageNet, [Click here](#) to join the ImageNet mailing list.



What do these images have in common? *Find out!*

[Check out the ImageNet Challenge on Kaggle!](#)

Duck

Small wild or domesticated web-footed broad-billed swimming bird usually having a depressed body and short legs

1642 pictures

84.21% Popularity Percentile

Wordnet IDs

Numbers in brackets: (the number of synsets in the subtree).

ImageNet 2011 Fall Release (32326)

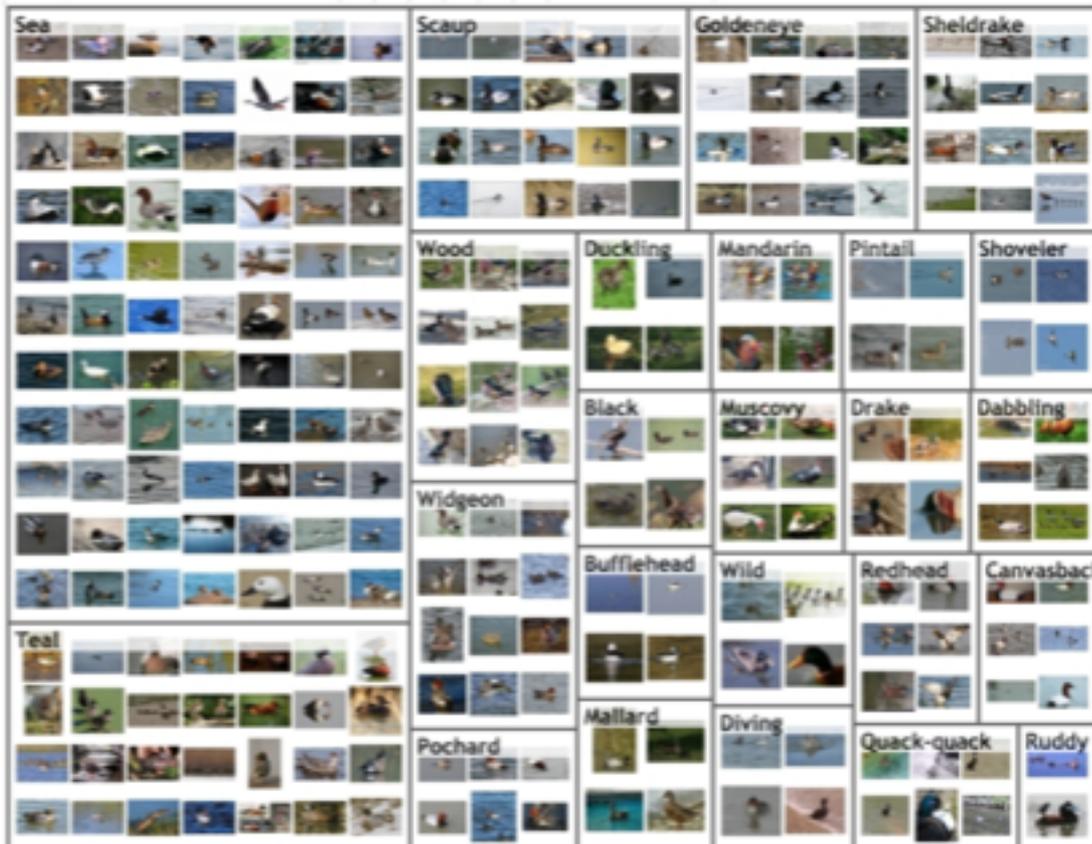
- plant, flora, plant life (4486)
- geological formation, formation (1)
- natural object (1112)
- sport, athletics (176)
- artifact, artefact (10504)
- fungus (308)
- person, individual, someone, somet
- animal, animate being, beast, brute
 - invertebrate (766)
 - homeotherm, homoiotherm, hor
 - work animal (4)
 - darter (0)
 - survivor (0)
 - range animal (0)
 - creepy-crawly (0)
 - domestic animal, domesticated
 - molter, moult (0)
 - varmint, varment (0)
 - mutant (0)
 - critter (0)
 - game (47)
 - young, offspring (45)
 - poikilotherm, ectotherm (0)
 - herbivore (0)
 - peeper (0)
 - pest (1)
 - female (4)
 - insectivore (0)
 - net (0)

Treemap Visualization

Images of the Synset

Downloads

ImageNet 2011 Fall Release > Anseriform bird > Duck



Rock python, rock snake, Python sebae

Very large python of tropical and southern Africa

1004
pictures

65.29%
Popularity
Percentile

Wordnet
IDs

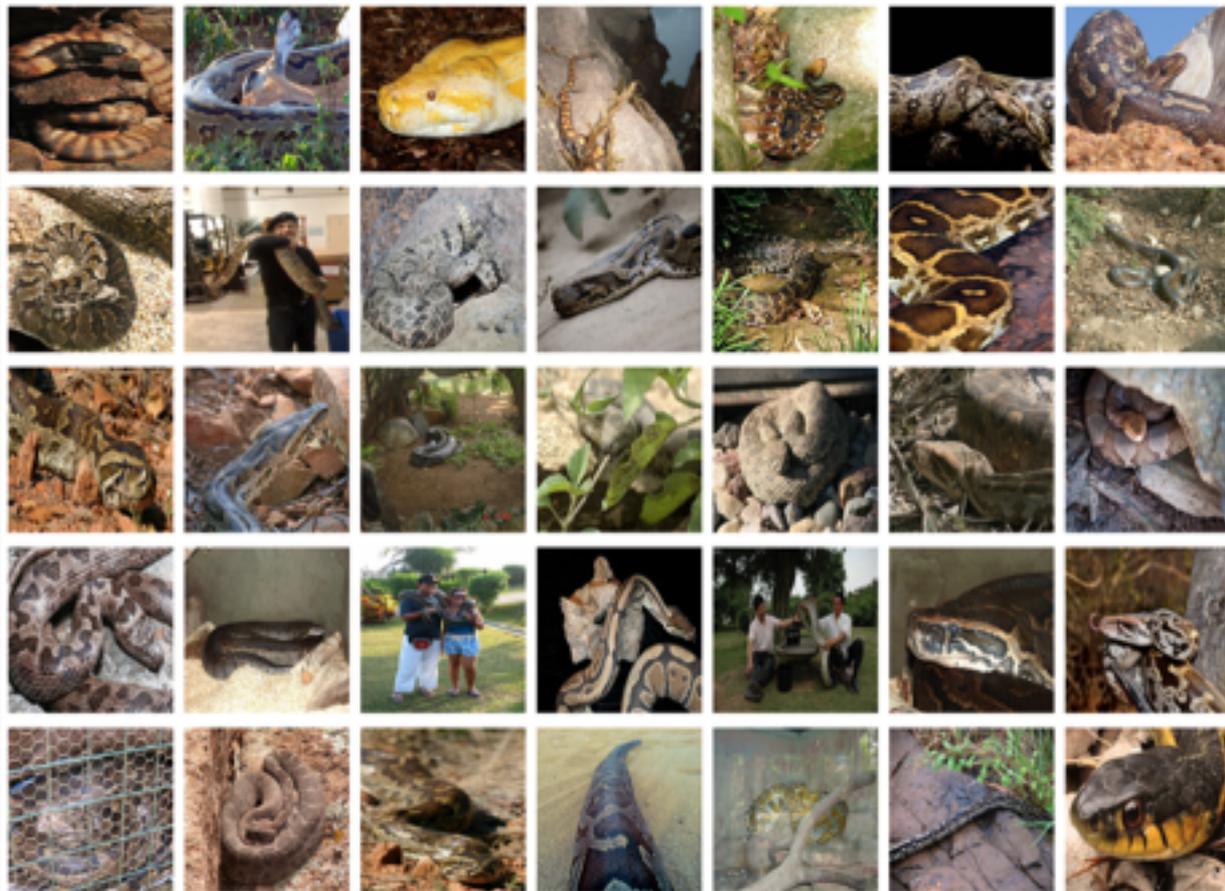
Numbers in brackets: (the number of synsets in the subtree).

- ImageNet 2011 Fall Release (32326)
 - plant, flora, plant life (4486)
 - geological formation, formation (1)
 - natural object (1112)
 - sport, athletics (176)
 - artifact, artefact (10504)
 - fungus (308)
 - person, individual, someone, somebody (1)
 - animal, animate being, beast, brute, creature, fauna (27000)
 - invertebrate (766)
 - homeotherm, homoiotherm, homeothermic (0)
 - work animal (4)
 - darter (0)
 - survivor (0)
 - range animal (0)
 - creepy-crawly (0)
 - domestic animal, domesticated (0)
 - molter, moult (0)
 - varmint, varment (0)
 - mutant (0)
 - critter (0)
 - game (47)
 - young, offspring (45)
 - poikilotherm, ectotherm (0)
 - herbivore (0)
 - peeper (0)
 - nest (1)

Treemap Visualization

Images of the Synset

Downloads



G'NIGHT



```
Last login: Thu Jul 5 14:35:48 on ttys002
[C1MRW3DQH3QK:~ britneymuller$ cd tensorflow-for-poets-2
[C1MRW3DQH3QK:tensorflow-for-poets-2 britneymuller$ python -m scripts.label_image
--graph=tf_files/retrained_graph.pb --image=tf_files/flower_photos/
ie.jpg
/anaconda2/lib/python2.7/site-packages/h5py/__init__.py:36: FutureWarning: Co
ersion of the second argument of issubdtype from `float` to `np.floating` is d
ecated. In future, it will be treated as `np.float64 == np.dtype(float).type`
  from ._conv import register_converters as _register_converters
2018-07-05 17:45:46.053777: I tensorflow/core/platform/cpu_feature_guard.cc:1
Your CPU supports instructions that this TensorFlow binary was not compiled
use: AVX2 FMA

Evaluation time (1-image): 0.202s
pumpkin (score=0.99691)
daisy (score=0.00172)
dandelion (score=0.00084)
roses (score=0.00027)
sunflowers (score=0.00010)
[C1MRW3DQH3QK:tensorflow-for-poets-2 britneymuller$
```

▼ Name & Extension:

dapper-rand.png

Hide extension

▼ Comments:

► Open with:

▼ Preview:



photos"

tensorflow-for-poets-2 -- -bash + python -- 80x24

```
NotFoundError (see above for traceback): tf_files/flower_photos/dapper-rand.jpg:  
No such file or directory  
[[Node: file_reader = ReadFile[_device="/job:localhost/replica:0/task:0  
/device:CPU:0"](file_reader/filename)]]
```

```
[C1MRW3DQH3QK:tensorflow-for-poets-2 britneymuller$ python -m scripts.label_image  
--graph=tf_files/retrained_graph.pb --image=tf_files/flower_photos/dap  
per-rand.png
```

```
/anaconda2/lib/python2.7/site-packages/h5py/_init__.py:36: FutureWarning: Conve  
rsion of the second argument of issubdtype from 'float' to 'np.floating' is depr  
ecated. In future, it will be treated as 'np.float64 == np.dtype(float).type'.  
from ..conv import register_converters as _register_converters  
2018-06-25 13:26:12.802672: I tensorflow/core/platform/cpu_feature_guard.cc:140]  
Your CPU supports instructions that this TensorFlow binary was not compiled to  
use: AVX2 FMA
```

```
Evaluation time (1-image): 0.215s
```

```
pumpkin (score=0.39317)  
roses (score=0.30072)  
sunflowers (score=0.21804)  
daisy (score=0.05944)  
tulips (score=0.02277)
```

```
[C1MRW3DQH3QK:tensorflow-for-poets-2 britneymuller$
```



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haircut

shoe

net worth

mustache

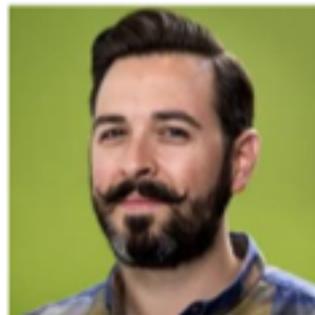
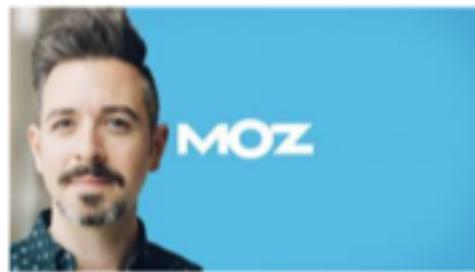
beard

whiteboard

geraldine

cal

caleb

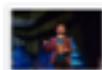


THE
PARADOX OF
EXCEPTIONAL
MARKETING

RAND FISHKIN

BOOK YOUR SEAT





images (5).jpeg



images (6).jpeg



images (7).jpeg



images (8).jpeg



images (9).jpeg



download (1).jpeg



download (2).jpeg



download (3).jpeg



images (10).jpeg



images (11).jpeg



images (12).jpeg



images (13).jpeg



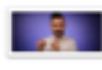
images (14).jpeg



download (7).jpeg



download (8).jpeg



download (9).jpeg



images (15).jpeg



images (16).jpeg



images (17).jpeg



images (18).jpeg



images (19).jpeg



download (13).jpeg



download (14).jpeg



download.jpeg



images (20).jpeg



images (21).jpeg



images (22).jpeg



images (23).jpeg



images (24).jpeg



images (4).jpeg



images (25).jpeg



images (26).jpeg



images (27).jpeg



images (28).jpeg



images (29).jpeg



images (30).jpeg



images (

Name & Extension:

dapper.png

Hide extension

Comments:

Open with:

Preview:



65% Probability this is Rand!

```
roses (score=0.00129)  
dandelion (score=0.00004)
```

```
britemuller$ python -m s  
les/retrained_graph.pb --image=tf_files/flower_photos/dap  
/anaconda2/lib/python2.7/site-packages/h5py/__init__.py:36: Fu  
d argument of isinstance from 'float' to 'np.floating' is depr  
d as 'np.float64 == np.dtype(float).type'.  
    from ._conv import register_converters as _register_convert  
2018-07-05 14:31:26.431095: I tensorflow/core/platform/cpu_fea  
instructions that this TensorFlow binary was not compiled to
```

```
Evaluation time (1-image): 0.226s
```

```
rand (score=0.64928)
```

```
sunflowers (score=0.20530)
```

```
roses (score=0.08532)
```

```
pumpkin (score=0.05453)
```

```
daisy (score=0.00464)
```

```
C1MRW3DQH3QK:tensorflow-for-poets-2 britneymuller$
```



last-name-is-
rose-ge...-right-ml

is-wil-famous.jpg

Automated Image Optimization



Discover architecture through Monet's brushstrokes

SHOP BY DEPARTMENT ▼

Search or enter web ID



BUY ONLINE, PICK UP IN STORE & GET EXTRA 20% OFF YOUR NEXT STORE PURCHASE!

[Exclusions & Details](#)

Macy's / Women / New Arrivals

4737 items in New Arrivals

Filter By

Apparel Type +

Brand +

Size Range +

Size +

Color +

Customer Ratings +

Price +

All Items (4737)

Free Pick Up

Sort by Featured Items ▼

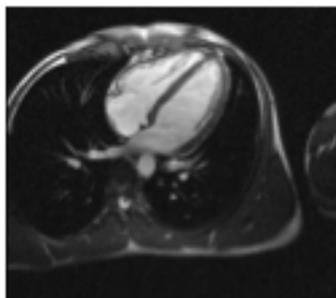


ML is everywhere!

Google



NETFLIX



lyft

3,32 Pages/Vis

28.37% to new users

Traffic Sources Overview



- Direct Traffic
3,097.00 (40.4%)
- Search Engines
2,910.00 (38.0%)
- Referring Sites
1,642.00 (21.4%)

Map Overlay



Visitors Overview



Content Overview

Page	Visitors	Pages
Home	1,200	1,200
Products	1,000	1,000
Services	500	500
Contact Us	200	200
Privacy Policy	100	100

Isn't ML SO Exciting!?



1. Let's break down Machine Learning

2. Discuss other ML applications for SEO

3. Tools & Resources



What is Machine Learning?

Machine Learning is a subset of AI that combines statistics & programming to give computers the ability to “learn” without explicitly being programmed.

An AI Timeline

Birth of AI



- Information Theory – digital signals
- Cybernetics – thinking machines
- The Turing Test
- Symbolic reasoning

Focus on Specific 'Intelligence'



- Expert Systems (knowledge)
- Neural networks make a comeback
- Optical character recognition
- Speech recognition

Focus on Specific Problems



- Machine learning
- Deep learning – pattern analysis / classification
 - Big data: large databases
 - Fast processors to crunch data
 - High-speed networks

1950 1960 1970 1980 1990 2000 2010 2020



- Limited computer processing power
- Limited database capacity
- Limited networking capabilities
- Real-world problems are complicated
 - Image processing / face recognition
 - Combinatorial explosion

AI Winter



- Disappointing results
- Collapse of dedicated hardware vendors

AI Winter II

Lady Ada Lovelace

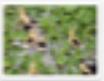
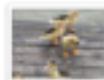
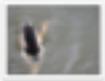
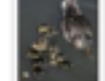
Inspired Machine Learning
1843.

Alan Turing later referred to
it as “Lady Lovelace’s
objection.”

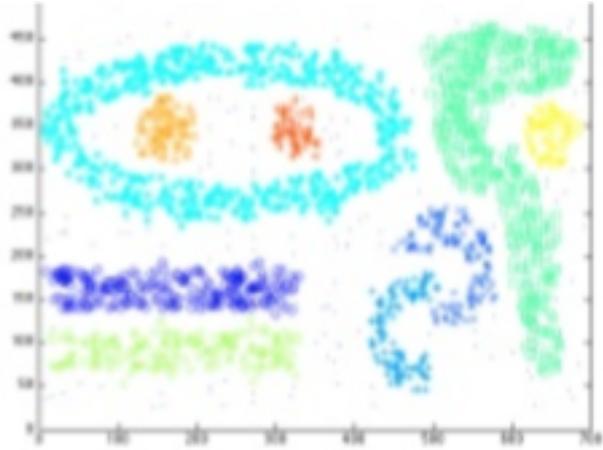




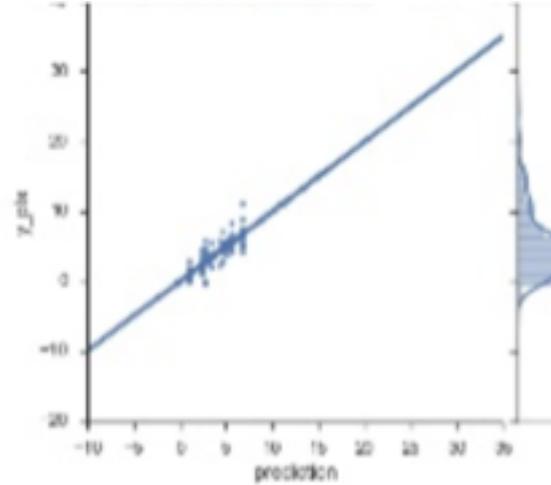
Supervised vs. Unsupervised

56255287-
duckling.jpeg482827021_2b45
a1e12b.jpeg528271654_3290
7bb668.jpeg528448757_4f811
eec8b.jpeg529638498_856d
9bd5fb.jpeg531892539_b088
772999.jpeg533129298_e04e
41f8a0.jpeg539193436_49ae
79d820.jpeg541972305_7e4ef
b469b.jpeg543170513_b88c
185eb4.jpeg547611014_10819
b5fc7.jpeg547613186_8826
a3fdd6.jpeg547632811_da8b
92a46b.jpeg547635892_55d3
4cce46.jpeg547648448_bf10
7dd10c.jpeg547650105_cceb
73f982.jpeg547679233_92fe
679276.jpeg547698239_ce92
dec1cf.jpeg557938358_7721
dc58e8.jpeg559197201_cbeab
7930b.jpeg559850828_b028
5cc752.jpeg559851072_6663
155628.jpeg560692003_7c8c
cf0fee.jpeg568168683_901c
b199ec.jpeg584597688_8d9a
abfab.jpeg607697735_05a2
d0fc52.jpeg630186557_4799
2325e2.jpeg631038394_aed7
c6dabe.jpeg639412025_2073
5b51ff.jpeg644947574_aaf5
9167f2.jpeg685585155_5c2f
42044b.jpeg688932913_ff9f6
230db.jpeg711745639_ac85e
ce849.jpeg742998800_552b
438b52.jpeg752981149_ab9a
4b5f9f.jpeg763103476_c14f6
e16a1.jpeg827711688_e2b6
a5ec45.jpeg873700607_f598
407619.jpeg873840969_fe58
c3ada6.jpeg907955818_edb0
1f9703.jpeg

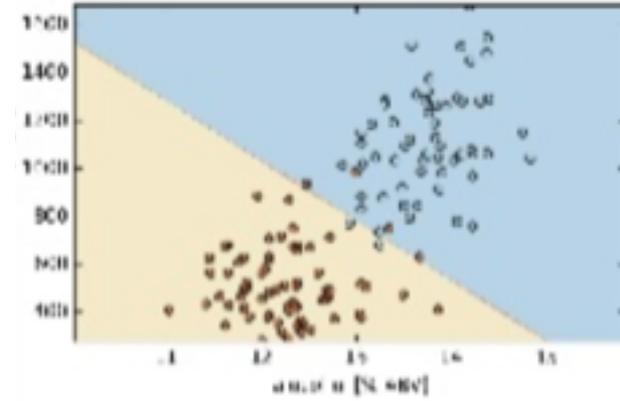
Three Common Models:



Clustering:



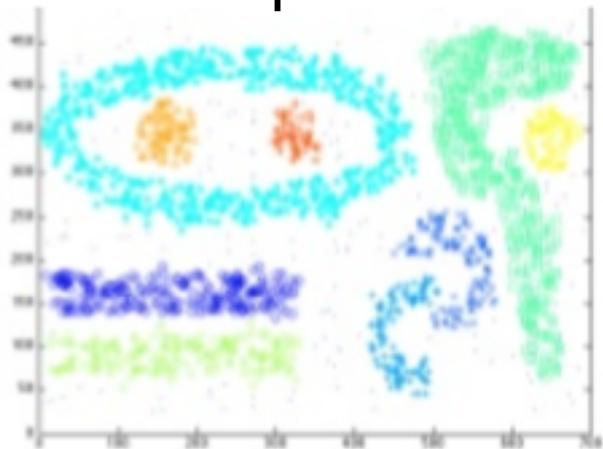
Regression:



Classification:

Three Common Models:

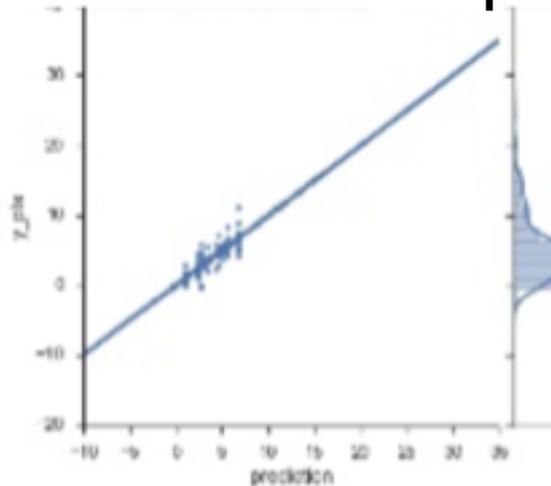
Unsupervised



Clustering:

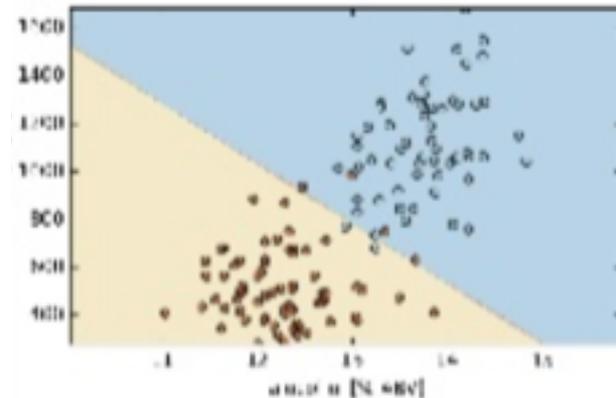
Animal Types

Supervised



Regression:

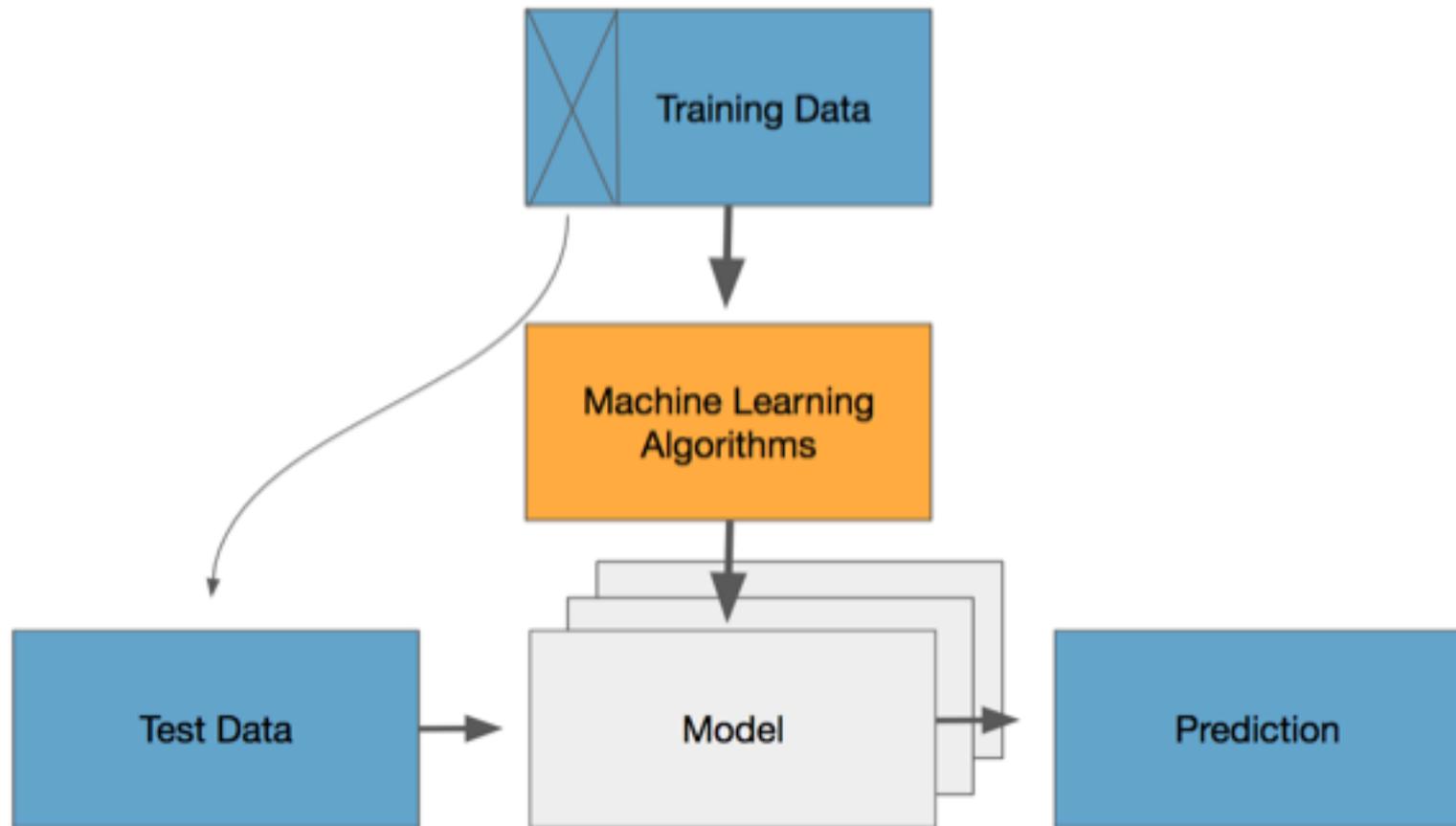
Home size vs
selling price



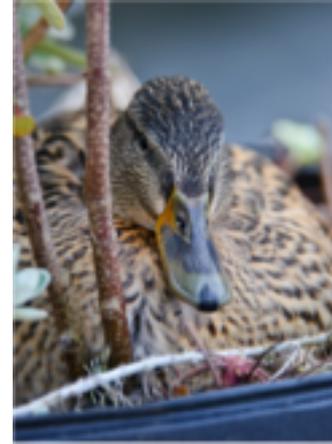
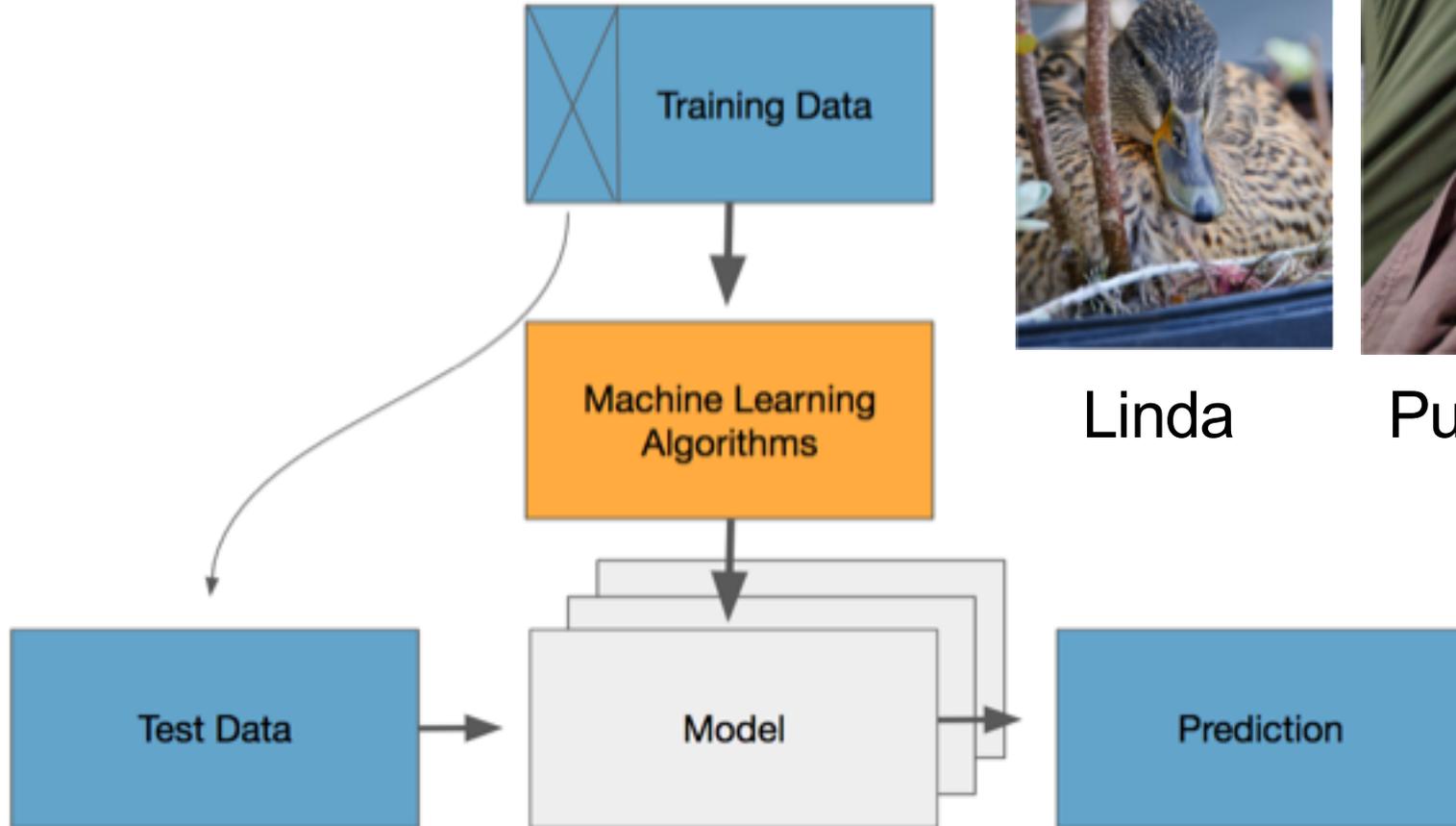
Classification:

Duck or Snake?

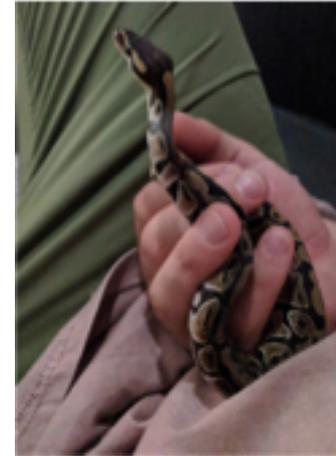
Typical Machine Learning Process



Typical Machine Learning Process



Linda

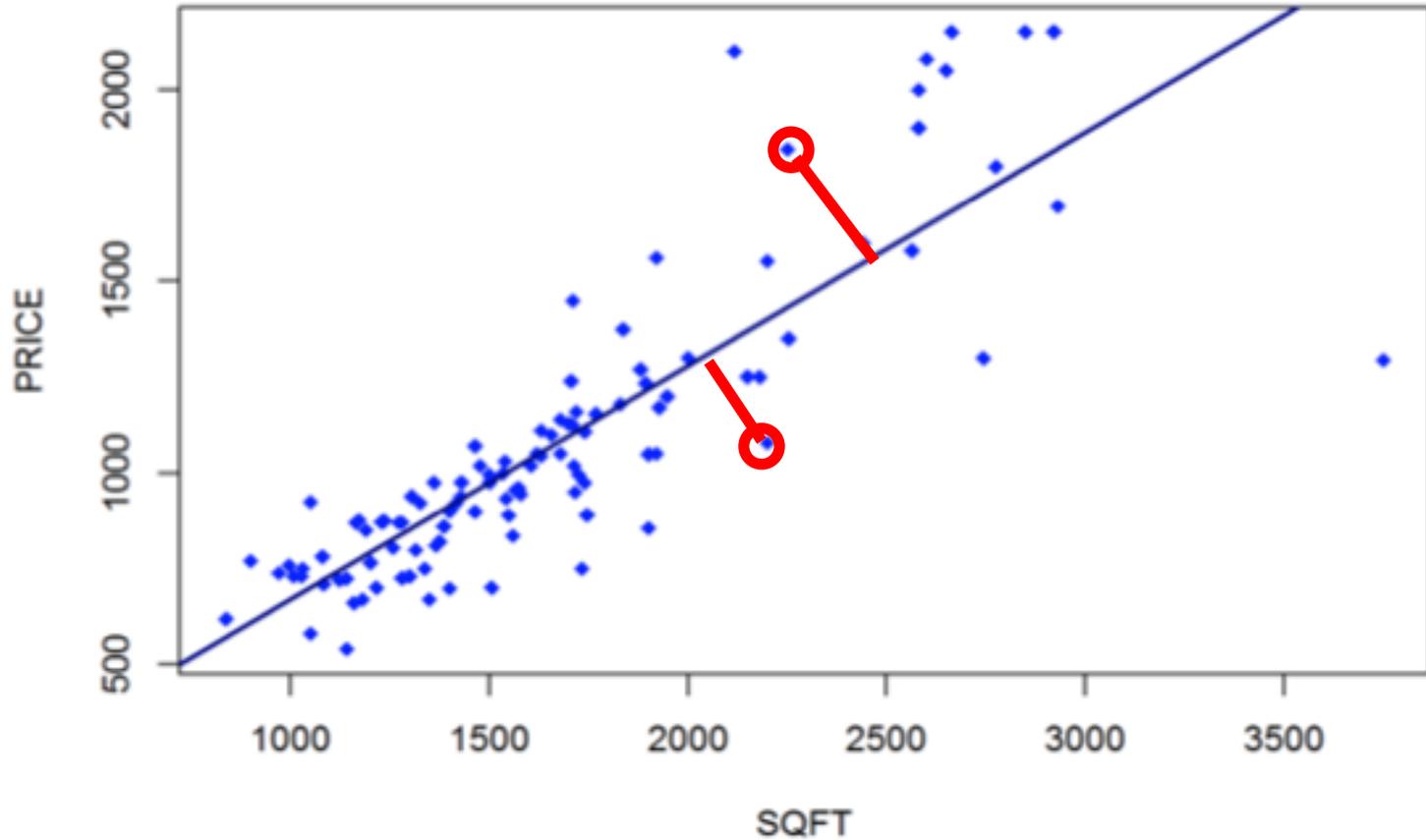


Pumpkin

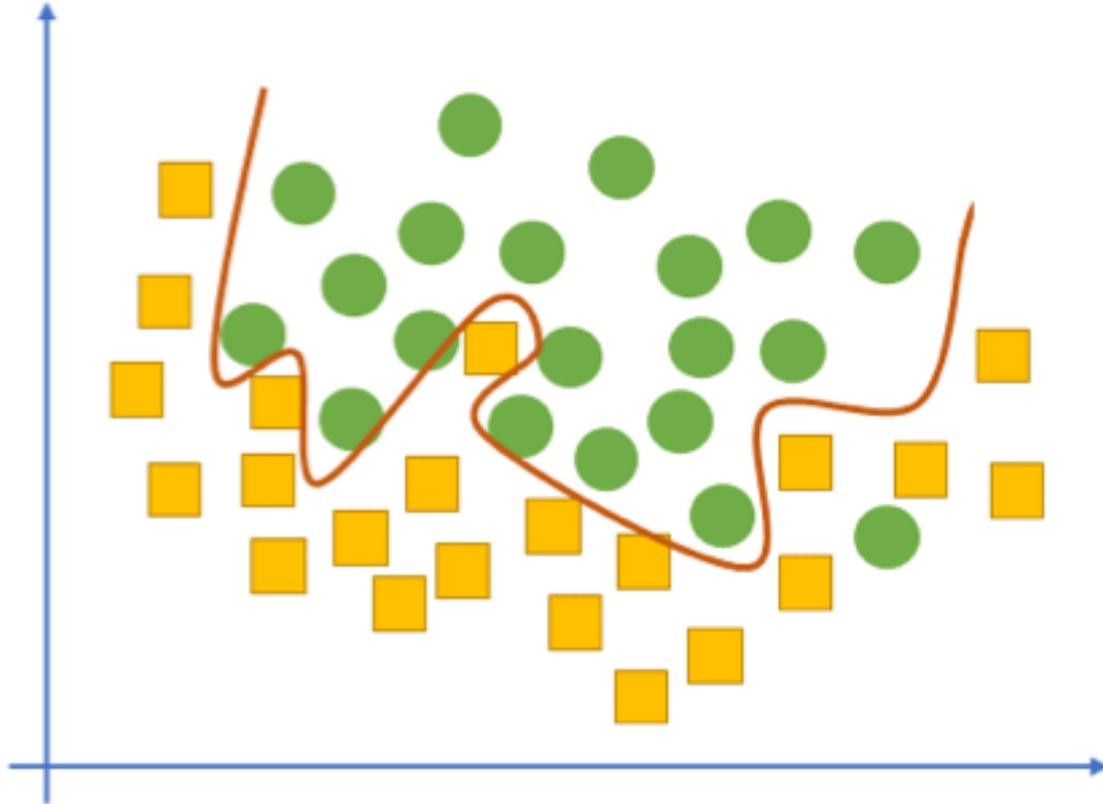
But, how do ML models get smarter?



The Loss Function:



Overfitting is a common problem in ML



A photograph of a wooden bed frame on a light-colored wooden floor. The mattress is white and quilted, but it is shaped like the number '4' instead of a standard rectangular shape. The headboard and footboard of the bed are visible, with the headboard at the top and the footboard at the bottom. The text 'THE BEST WAY TO EXPLAIN OVERFITTING' is overlaid in large, white, bold, sans-serif font at the bottom of the image.

**THE BEST WAY TO
EXPLAIN OVERFITTING**

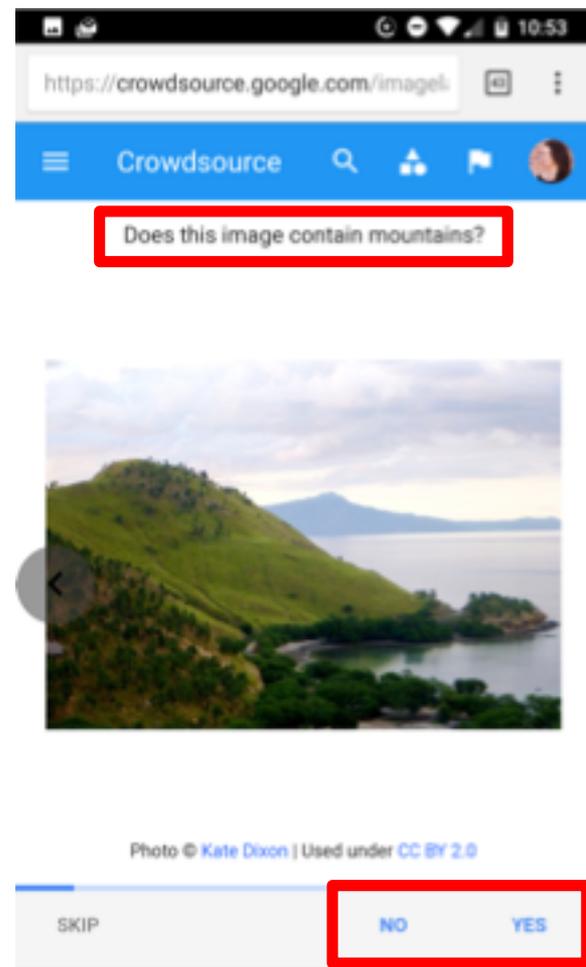
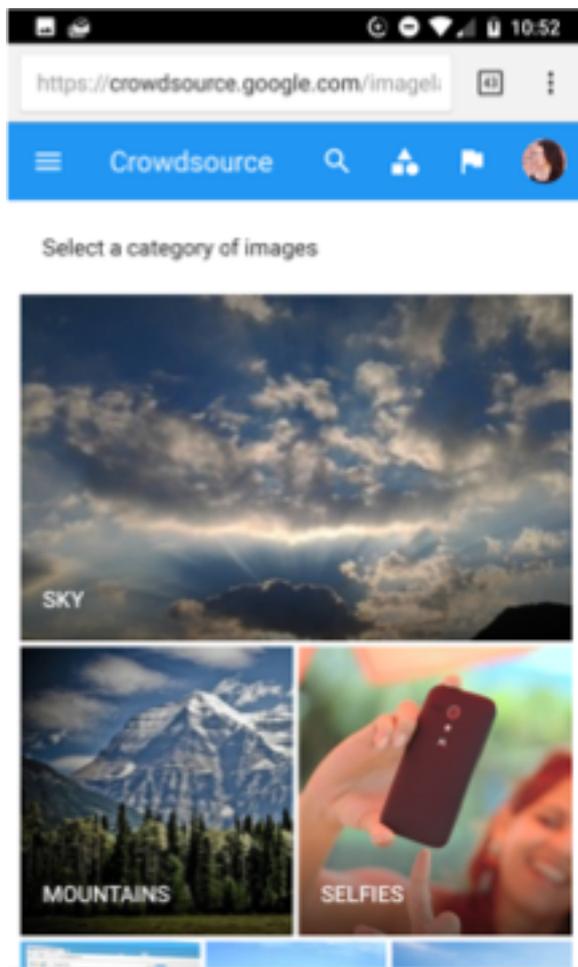
If Machine Learning was a car,
data would be the fuel



Select all squares with
street signs



VERIFY



1. What is Machine Learning & why you should care?

2. How can you apply ML to SEO?

3. Tools & Resources

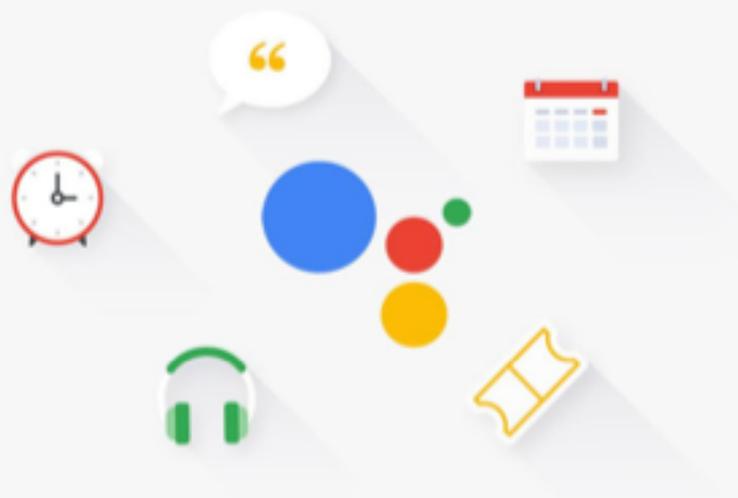


Voice Search Opportunities





Build Actions for the Google Assistant with Actions on Google.

[GO TO ACTIONS CONSOLE](#)

Help users get things done across Google

Engage billions of users across the Google Assistant and soon Google Search, Android, and other surfaces by developing Actions and linking them with our ever-growing intents catalog.

[START BUILDING](#)[LEARN MORE](#)

Templates:



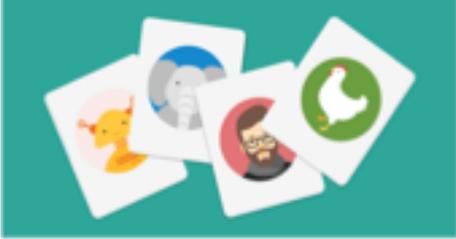
The header for the Trivia template features an orange background with eight white icons arranged in two rows. The top row includes a globe, a hand holding a pencil, a calculator, and a globe on a stand. The bottom row includes a notepad with a pencil, a musical note, a leaf, and a laboratory flask.

Trivia

Create your own game show with different questions, topics, and levels of difficulty.

[Learn more](#) 

BUILD



The header for the Flash Cards template features a teal background with four overlapping white cards. Each card has a different colorful illustration: a yellow creature, a blue elephant, a red character, and a green chicken.

Flash Cards

Study any subject by creating flashcards to quiz yourself and others.

[Learn more](#) 

BUILD



The header for the Personality Quiz template features a teal background with a stylized illustration of a person's head and shoulders. The person has dark hair and is wearing a blue top. A white name tag with a red border is pinned to their chest, with the word 'NAME' printed on it.

Personality Quiz

Craft a personality quiz with different traits and outcomes.

[Learn more](#) 

BUILD

 Fulfillment Integrations Training History Analytics Prebuilt Agents Small Talk Docs Forum Support Account Logout

QUESTION Do you have a hobby?

ANSWER

QUESTION Are you hungry?

ANSWER

QUESTION Will you marry me?

ANSWER

QUESTION Are we friends?

ANSWER

QUESTION Where do you work?

ANSWER

English ▾ ⓘ

**Details**

You can use this app to The Moz SEO Quiz is a fun game to test y... ▾

Images

Large banner and small logo uploaded ▾

Contact details

Moz, britneym@moz.com ▾

Privacy and consent<https://moz.com/privacy-policy>, <https://moz.com/terms-of-use> ▾**Additional Information**

Category, Transactions, Testing Instructions ▾

Preview of your Actions in the Actions directory: [Learn more](#)

SEO Quiz
MOZ

 Moz SEO Quiz
Moz

Level up your SEO skills today!
The Moz SEO Quiz is the world's
premier SEO triv ...

"I want to talk to Moz SEO Quiz"
"let me speak to Moz SEO Quiz"
"can I talk to Moz SEO Quiz"
"ask Moz SEO quiz what's good"
"ask Moz SEO quiz to test me"

Category: Education & reference
britneym@moz.com

Moz SEO Quiz was not approved

Unfortunately, version 1 of Moz SEO Quiz with project ID [REDACTED] was not approved at this time. But don't worry, you can fix your app and resubmit!

The invocation name you provided, "moz es ee oh quiz", is not being audibly recognized, picked up as "ma's seo quiz". You could try changing the phonetic spelling, or perhaps c

1. Your app name can not be recognized properly when converted to audio. Please try another name instead.

Thank you for submitting your assistant app for review!

The invocation name you provided, "moz es ee oh quiz", is not being audibly recognized, and is instead being picked up as "ma's seo quiz". You could try changing the phonetic spelling, or perhaps come up with a different invocation name. (This must be relevant to the naming of your app.) If this is your brand name and/or if you want to keep this name, please contact our support team with a recording of you pronouncing the name.

Feel free to submit a new version once you address this feedback, and we'll be happy to review your Assistant app again. If you would like additional help, check out our [G+ community](#). If you would like to appeal the review decision, [reach out to our support team](#).

SEO Quiz was approved

Inbox x



Actions on Google <actions-noreply@google.com>
to me

Jun 20

Actions on Google

OPEN CONSOLE

SEO Quiz was a

Congratulations, version
being deployed to Prod

the process of



Recommendation Models Are Evolving

The Netflix logo is centered on the page. It consists of the word "NETFLIX" in a bold, white, sans-serif font, set against a solid red rectangular background.

NETFLIX

Google Keyword Planner's Dirty Secrets

View Post

By [rjonesx](#).

Published to Main Blog Dec 1st 2015, 00:19

Published Post	Discussion	Idea	History	Guidelines
Select a Category (required)	Category 2 (optional)	Category 3 (optional)		
Keyword Research	Advanced SEO	Link Building		
Title your Post				
Google Keyword Planner's Dirty Secrets				
Post URL				
https://moz.com/blog/google-keyword-planner-dirty-secrets				
Write Blog Post:				
<p>Sometimes our best data sources aren't exactly what they seem. While nearly every search marketer will rely on Google Keyword Planner data at one point or another, especially while doing keyword research, the reality is that the data is often untrustworthy and should be viewed with great skepticism. Whether you plan to use it to help build a paid search campaign or determine which content to write, there are huge caveats to the numbers</p>				

!?

Google Keyword Planner's Dirty Secrets

View Post

By [rjonesx](#).

Published to Main Blog Dec 1st 2015, 00:19

Published Post	Discussion	Idea	History	Guidelines
Select a Category (required)	Category 2 (optional)	Category 3 (optional)		
Keyword Research	Advanced SEO	Link Building		
Title your Post				
Google Keyword Planner's Dirty Secrets				
Post URL				
https://moz.com/blog/google-keyword-planner-dirty-secrets				
Write Blog Post:				
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Pages per session went up 11.07% YoY

Overview

Users ▼ vs. [Select a metric](#)

Jan 10, 2017 - Apr 10, 2017: ● Use
Jan 10, 2016 - Apr 10, 2016: ● Use

50,000



Pageviews

Moz Blog Traffic

14.77%

6,282,310 vs 5,473,780



Avg. Session Duration

Moz Blog Traffic

1.33%

00:03:20 vs 00:03:18



Pages / Session

Moz Blog Traffic

11.07%

2.45 vs 2.21



Bounce Rate

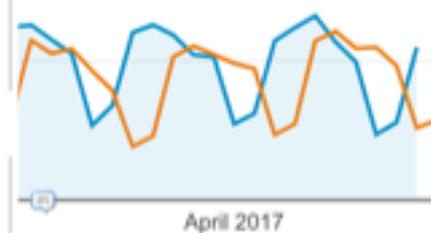
Moz Blog Traffic

4.36%

70.10% vs 67.17%



Hourly Day Week Month



Help visitors stick around & get more value

Testing Page Recommender

Not bad for out of the box!

```
[4] import Algorithmia
```

```
input = [  
    "https://www.geekwire.com/2018/israels-spaceil-team-says-spacex-will-launch-lunar-lander-year/",  
    "731509d0bcf645c6b16b5927645d641e",  
    12  
]  
client = Algorithmia.client('simzJtrJH1+D6Sk1H3TI9cABU+w1')  
algo = client.algo('web/WebPageRecommender/0.1.40')  
print(algo.pipe(input))
```

```
↳ AlgoResponse(result={u'recs': [{u'url': u'http://www.geekwire.com/2015/the-unicorn-list-there-are-now-131-startu
```

Help visitors stick around & get more value

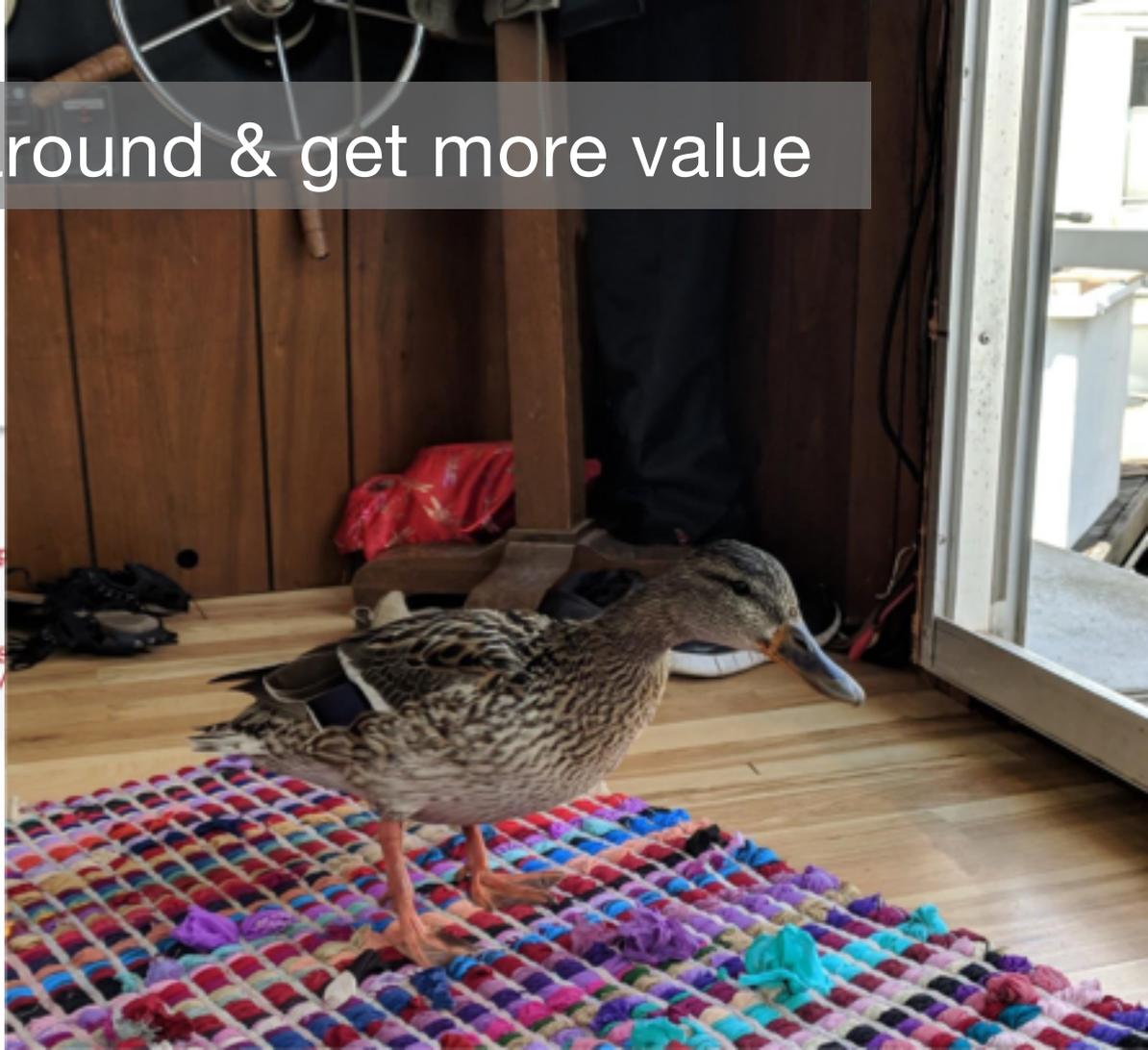
Testing Page Recommender

Not bad for out of the box!

```
[4] import Algorithmia

input = [
    "https://www.geekwire.com/2018/israels-sp",
    "731509d0bcf645c6b16b5927645d641e",
    12
]
client = Algorithmia.client('simzJtrJHl+D68')
algo = client.algo('web/WebPageRecommender')
print(algo.pipe(input))
```

```
↳ AlgoResponse(result={u'recs': [{u'url':
```



Cycling vs. Serpentine

Testing Page Recommender

Not bad for out of the box!

```
[4] import Algorithmia

input = [
    "https://www.geekwire.com/2018/israels-sp",
    "731509d0bcf645c6b16b5927645d641e",
    12
]
client = Algorithmia.client('simzJtrJHl+D68')
algo = client.algo('web/WebPageRecommender')
print(algo.pipe(input))
```

```
↳ AlgoResponse(result={u'recs': [{u'url':
```



Writing Meta Descriptions Sucks





site:moz.com/community/q



All

Images

News

Shopping

Maps

More

Settings

Tools

Page 12 of about 42,000 results (0.23 seconds)

Hyphens vs Underscores | Moz Q&A | Moz

<https://moz.com/community/q/hyphens-vs-underscores> ▼

Mar 5, 2012 - I am optimizing a site which uses underscores rather than hyphens as word separators (such_as_this.php vs. such-as-this.php). Most of these ...



site:moz.com/community/q



All

Images

News

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Page 12 of about 42,000 results (0.23 seconds)

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Mar 5, 2012 - I am optimizing a site which uses underscores rather than hyphens as word separators (such_as_this.php vs. such-as-this.php). Most of these ...

```
<title>Hyphens vs Underscores | Moz Q&A | Moz</title>
```

```
<meta content="Have an SEO question? Search our Q&A forum for your question; if not found, please ask our incredible community of SEOs for some help! You can also earn MozPoints by answering other community members' questions." name="description">
```



Summarizer

Advanced Content Summarizer

20 Credit Royalty API calls **79,423**

Tags

keywords

nlp

summarization

text analysis

Permissions

Algorithmia Platform License



Hyphens vs Underscores



Mar 05, 2012 - Posted by [BluespaceCreative](#) in [Intermediate & Advanced SEO](#), [On-Page / Site Optimization](#), [Search Engine Trends](#), and [1 other topics](#)



15 Responses | 15478 Views

I am optimizing a site which uses underscores rather than hyphens as word separators (such_as_this.php vs. such-as-this.php). Most of these pages have been around since 2007, and I am hesitant to just redirect to a new page because I am worried it will cause the rankings to slip.

Would you recommend changing the file names to be in hyphenated format and place 301 redirects on the pages with underscores, or stick with the existing pages? Is there anything else that would work better?

Thanks!

[Edit Question](#)



[Email Updates](#)

[+ Respond to Question](#)

15 Responses

[Oldest to Newest](#)

[Newest to Oldest](#)

[Most Helpful](#)

15 NEW



[donford](#)

Mar 05, 2012 | [Edit](#) | [0](#)

New

Hi Logan,



I was faced with the similar question a couple years ago when I started with my current company.

The short answer is no, do not change a url that is currently using underscores to hyphens if it is well indexed.

If you're making a new page, then you should probably use hyphens instead of underscores.



ALGORITHMIA

Run an Example

INPUT

```
Are there any existing pages? Is there anything else that would work better?"
```

OUTPUT

```
{  
  "worried": true,  
  "such-as-this": true,  
},  
"summarized_data": "I am optimizing a site which uses  
underscores rather than hyphens as word separators  
such_as_this...The short answer is no, do not change a url  
that is currently using underscores to hyphens if it is well  
indexed..."  
}
```

RUN EXAMPLE ▶

A photograph of a brown and grey duck standing on a boat deck. The duck is looking to the right. In the background, there are boat seats and a window. A grey semi-transparent box is overlaid on the top left of the image, containing the text 'Can you believe?!'.

Can you believe?!

Hyphens vs Underscores | Moz Q&A | Moz

moz.com/community/q/hyphens-vs-underscores ▼

I am optimizing a site which uses underscores rather than hyphens as word separators such_as_this...The short answer is no, do not change a url that is currently

Hyphens vs Underscores | Moz Q&A | Moz

<https://moz.com/community/q/hyphens-vs-underscores> ▼

Mar 5, 2012 - I am optimizing a site which uses underscores rather than hyphens as word separators (such_as_this.php vs. such-as-this.php). Most of these ...

@jroaks



JR Oaks

Hacker, Technical SEO, NC State fan, co-organizer Of Raleigh & RTP Meetups, as well as Search Engine Land author

codeseo.io

@GraysonParks



Grayson Parks

Writer, programmer, constant learner. Digital marketer, husband, golden retriever owner. Words and data are my Passions. #SEO @AdaptPartners

GraysonParks.com

fx *pageDescription(42, 300)

	A	B
1	URLs	Generated Description
2	https://moz.com/	
3	https://moz.com/about	
4	https://moz.com/gdr	
5	https://moz.com/ugc	
6	https://moz.com/top500	
7	https://moz.com/blog	
8	https://moz.com/local	
9	https://moz.com/mozcast/	
10	https://moz.com/community	
11	https://moz.com/mozcon	
12	https://moz.com/and	
13	https://health.moz.com/	
14	https://moz.com/training	
15	https://moz.com/devblog/	
16	https://moz.com/walkthrough	
17	https://moz.com/moztop10	
18	https://moz.com/academy	
19	https://moz.com/help	
20	https://moz.com/explorer	
21	https://moz.com/subscriptions	
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

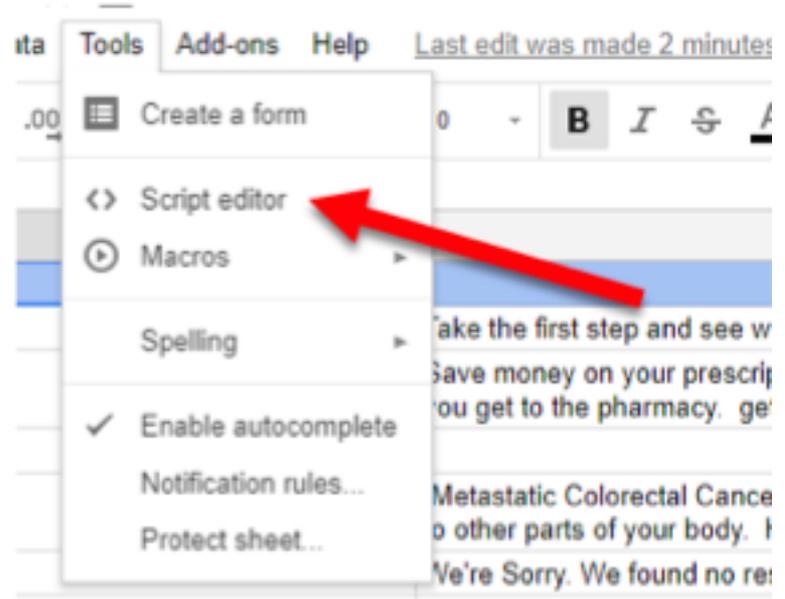
Find a developer familiar with AWS to:

1. Assist with deploying [AWS Lambda](#). --Several steps will affect the cost & security.
2. Extract the content of the webpage using the library [Goose3](#) (a Python library w/BeautifulSoup).
3. Summarize the content using summa (or another summarizing library/model)
4. Create a Lambda Function.
 - a. Package the files for AWS Lambda & install the dependencies (in this case Goose3 and summa, etc) into a folder along with what is called a handler file. The handler file is what Lambda calls to run your script.
 - b. Here is the packaged Lambda function (including the dependencies):
https://s3.amazonaws.com/ap-lambda-functions/meta_summa.zip
5. Once the zip file is deployed to AWS as a Lambda function, you should get a URL to access the API that looks like:
https://XXXXXXXXX.execute-api.us-east-1.amazonaws.com/v1/ap_meta_descriptions

Copy & Paste like a badass in GSheets!

=pageDescription(A2, 150)

```
function pageDescription(url, length) {  
  if (typeof length == 'undefined' || !length || length < 1){  
    var endpoint = 'https://XXXXXXXXX.execute-api.us-east-1.amazonaws.com/v1/ap_meta_descriptions?url=' + url;  
  }else{  
    var endpoint = 'https://XXXXXXXXX.execute-api.us-east-1.amazonaws.com/v1/ap_meta_descriptions?url=' + url + "&len=" + length;  
  }  
  
  var response = UrlFetchApp.fetch(endpoint);  
  var text = response.getContentText();  
  
  var data = JSON.parse(text);  
  
  if (data){  
    return data.meta_description  
  }  
}
```





Auto-generated Descriptions

File Edit View Insert Format Data Tools Add-ons Help

Last edit was made 10 minutes ago by anonymous



fx =pageDescription(A2, 300)

	A	B
1	URLs	Generated Description
2	https://moz.com/	
3	https://moz.com/about	
4	https://moz.com/gdpr	
5	https://moz.com/ugc	
6	https://moz.com/top500	
7	https://moz.com/blog	
8	https://moz.com/local	
9	https://moz.com/mozcast/	
10	https://moz.com/community	
11	https://moz.com/mozcon	
12	https://moz.com/rand	
13	https://health.moz.com/	
14	https://moz.com/training	
15	https://moz.com/devblog/	
16	https://moz.com/walkthrough	
17	https://moz.com/moztop10	
18	https://moz.com/academy	
19	https://moz.com/help	
20	https://moz.com/explorer	
21	https://moz.com/subscriptions	
22		
23		



Auto-generated Descriptions

File Edit View Insert Format Data Tools Add-ons Help Last edit was made 10 minutes ago by anonymous

100% 5 % .0 .00 123 Arial 10 B I G A

fx =pageDescription(A2, 300)

A	B
URLs	Generated Description
https://moz.com/	
https://moz.com/about	
https://moz.com/gdpr	
https://moz.com/ugc	
https://moz.com/top500	
https://moz.com/blog	
https://moz.com/local	
https://moz.com/mozcast/	
https://moz.com/community	
https://moz.com/mozcon	
https://moz.com/rand	
https://health.moz.com/	
https://moz.com/training	
https://moz.com/devblog/	
https://moz.com/walkthrough	
https://moz.com/moztop10	
https://moz.com/academy	
https://moz.com/help	
https://moz.com/explorer	
https://moz.com/subscriptions	

Reducing the time it takes to write meta descriptions for large websites

The process of writing meta descriptions will likely be improved using machine learning techniques, but in the meantime, contributor Paul Shapiro shares ways to semi-automate writing meta descriptions.

Paul Shapiro on June 13, 2018 at 11:43 am

[Use Text Summarization Algorithms to Help Aid the Writing of Meta Descriptions](#) (GitHub Repo)

Other SEO Opportunities with Machine Learning:

Finding ranking opportunities

Title tag optimization

Keyword opportunity gaps

Client reports

Finding common question opportunities

Content creation

Log file analysis

Ranking predictions

Site crawl opportunities

GSC data analysis

Rich customer understanding

Traffic predictions

Ranking factor probabilities

User engagement

1. What is Machine Learning & why you should care?

2. How can you apply ML to SEO?

3. Tools & Resources



How to build your first ML model:

1. Collect & clean dataset ← *Most of the work*
2. Build your model ← *A few lines of code*
3. Train ← *One line*
4. Evaluate ← *One line*
5. Predict ← *One line*



Welcome to Codelabs!

Google Developers Codelabs provide a guided, tutorial, hands-on coding experience. Most codelabs will step you through the process of building a small application, or adding a new feature to an existing application. They cover a wide range of topics such as Android Wear, Google Compute Engine, Project Tango, and Google APIs on iOS.

[VIEW EVENTS](#)

A-Z RECENT DURATION

Category ▾



🕒 213 min

End-to-end Machine Learning with
Tensorflow on GCP

[START](#)

Updated Jun 9, 2018



🕒 20 min

Identify objects in images using
custom machine learning models with
ML Kit for Firebase

[START](#)

gkal
Updated May 9, 2018



🕒 25 min

Integrating Machine Learning APIs

[START](#)

torryyang
Updated Jun 21, 2018



Introduction

- Prerequisites and Prework

ML Concepts

- Introduction to ML (3 min)**
- Framing (15 min)
- Descending into ML (20 min)
- Reducing Loss (60 min)
- First Steps with TF (60 min)
- Generalization (15 min)
- Training and Test Sets (25 min)
- Validation (40 min)
- Representation (65 min)
- Feature Crosses (70 min)
- Regularization: Simplicity (40 min)
- Logistic Regression (20 min)
- Classification (90 min)
- Regularization: Sparsity (45 min)
- Introduction to Neural Nets (55 min)
- Training Neural Nets (40 min)

Introduction to Machine Learning



This module introduces Machine Learning (ML).



Estimated Time: 3 minutes



Learning Objectives

- Recognize the practical benefits of mastering machine learning
- Understand the philosophy behind machine learning



Get Started

Beginners[Get Started with Eager Execution](#)[Get Started with Graph Execution](#)[Premade Estimators](#)**Estimators**[For Beginners](#)[Premade Estimators](#)[Checkpoints](#)[Feature Columns](#)[Datasets Quick Start](#)[Creating Custom Estimators](#)[TensorFlow Versions](#)

Get Started with Eager Execution

[Run in Google Colab](#)[View source on GitHub](#)

This tutorial describes how to use machine learning to **categorize** Iris flowers by species. It uses [TensorFlow's](#) eager execution to (1) build a **model**, (2) **train** the model on example data, and (3) use the model to make **predictions** on unknown data. Machine learning experience isn't required to follow this guide, but you'll need to read some Python code.

TensorFlow programming

There are many [TensorFlow APIs](#) available, but we recommend starting with these high-level TensorFlow concepts:

- Enable an [eager execution](#) development environment,
- Import data with the [Datasets API](#),
- Build models and layers with TensorFlow's [Keras API](#).



Welcome to Colaboratory!

Local runtime support

Python 3

TensorFlow execution

Visualization

Forms

Examples

For more information:

SECTION

Welcome to Colaboratory!

Colaboratory is a Google research project created to help disseminate machine learning education and research. It's a Jupyter notebook environment that requires no setup to use and runs entirely in the cloud.

Colaboratory notebooks are stored in [Google Drive](#) and can be shared just as you would with Google Docs or Sheets. Colaboratory is free to use.

For more information, see our [FAQ](#).

Local runtime support

Colab also supports connecting to a Jupyter runtime on your local machine. For more information, see our [documentation](#).

Python 3

Colaboratory supports both Python2 and Python3 for code execution.

- When creating a new notebook, you'll have the choice between Python 2 and Python 3.
- You can also change the language associated with a notebook; this information will be written into the `.ipynb` file itself, and thus will be preserved for future sessions.

```
[ ] import sys
print('Hello, Colaboratory from Python {}'.format(sys.version_info[0]))
```

```
Ⓜ Hello, Colaboratory from Python 3!
```

TensorFlow execution



CODE TEXT

CELL CELL

COPY TO DRIVE

CONNECT

EDITING



Table of contents

Code snippets



Wireframe Plots

Charting in Colaboratory

Matplotlib

Line Plots

Bar Plots

Histograms

Scatter Plots

Stack Plots

Pie Charts

fill_between and alpha

Subplotting using Subplot2grid

Plot styles

3D Graphs

3D Scatter Plots

3D Bar Plots

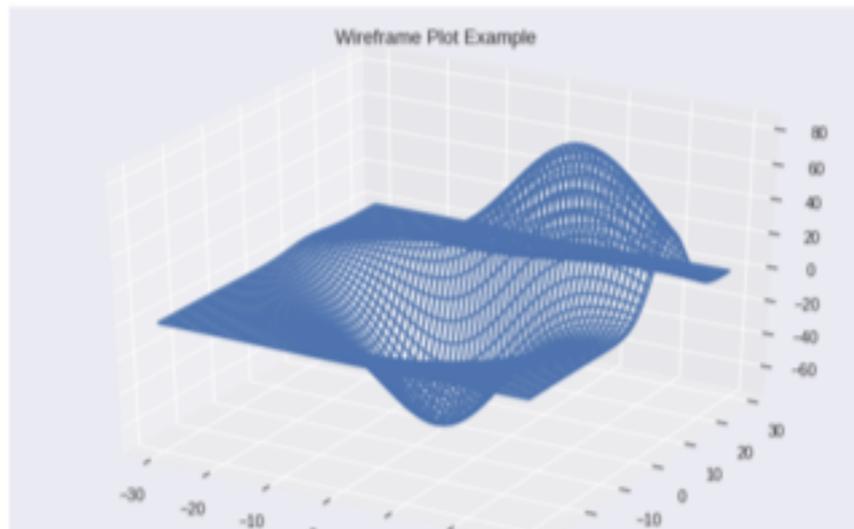
```
[ ] import matplotlib.pyplot as plt

fig = plt.figure()
ax = fig.add_subplot(111, projection = '3d')

x, y, z = axes3d.get_test_data()

ax.plot_wireframe(x, y, z, rstride = 2, cstride = 2)

plt.title("Wireframe Plot Example")
plt.tight_layout()
plt.show()
```





Competitions

[Documentation](#)[InClass](#)[General](#)[InClass](#)

Sort by

Grouped



All Categories



Search competitions



18 Active Competitions



Spooky Author Identification

Share code and discuss insights to identify horror authors from their writings

[Playground](#) · 7 months ago · 🏷 literature, linguistics, multiclass classification

\$25,000

1,244 teams



Passenger Screening Algorithm Challenge

Improve the accuracy of the Department of Homeland Security's threat recognition algorithms

[Featured](#) · 7 months ago · 🏷 terrorism, image data, object detection

\$1,500,000

518 teams



Competitions

[Documentation](#)[InClass](#)[General](#)[InClass](#)

Sort by

Grouped



All Categories



Search competitions



18 Active Competitions



Quora Question Pairs

Can you identify question pairs that have the same intent?

Featured · a year ago · 🏷️ linguistics, internet, tabular data, text data, duplicate detection

\$25,000

3,307 teams



Google Cloud & YouTube-8M Video Understanding Challenge

Can you produce the best video tag predictions?

Featured · a year ago · 🏷️ internet, image data, object labeling

\$100,000

655 teams

CPU > GPU > TPU

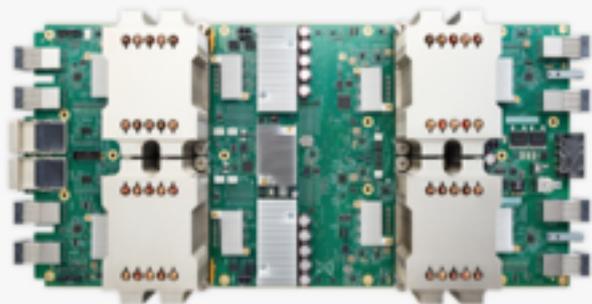
CLOUD TPU

Train and run machine learning models faster than ever before

[VIEW DOCUMENTATION](#)[GET STARTED](#)

Accelerated Machine Learning

Machine learning (ML) has the power to greatly simplify our lives. Improvements in computer vision and natural language processing help all of us interact more naturally with technology. Businesses rely on ML to strengthen network security and reduce fraud. Advances in medical imaging enabled by ML can increase the accuracy of medical diagnoses and expand access to care, ultimately saving lives.



Getting Started Resources

[Google's Machine Learning Crash Course](#)

[Google Code Labs](#)

[Colab Notebooks](#)

[Learn With Google AI](#)

[Image-net.org](#)

[Kaggle](#)

Advanced Resources

[Yearning Learning](#) (free book preview by Andre Ng)

[Neural Networks & Deep Learning](#)

[Correlation vs Causation](#) (by Dr. Pete!)

[Exploring Word2Vec](#)

[The Zipf Mystery](#)

[BidML](#)

[Targeting Broad Queries in Search](#)

[Project Mosaic Books](#)

[How to eliminate bias in data driven marketing](#)

[TensorFlow Dev Summit 2018 \[videos\]](#)

[NLP Sentiment Analysis](#)

[Talk 2 Books](#)

[Image-Net](#)

[The Shallowness of Google Translate](#)

[TF-IDF](#)

[LSI](#)

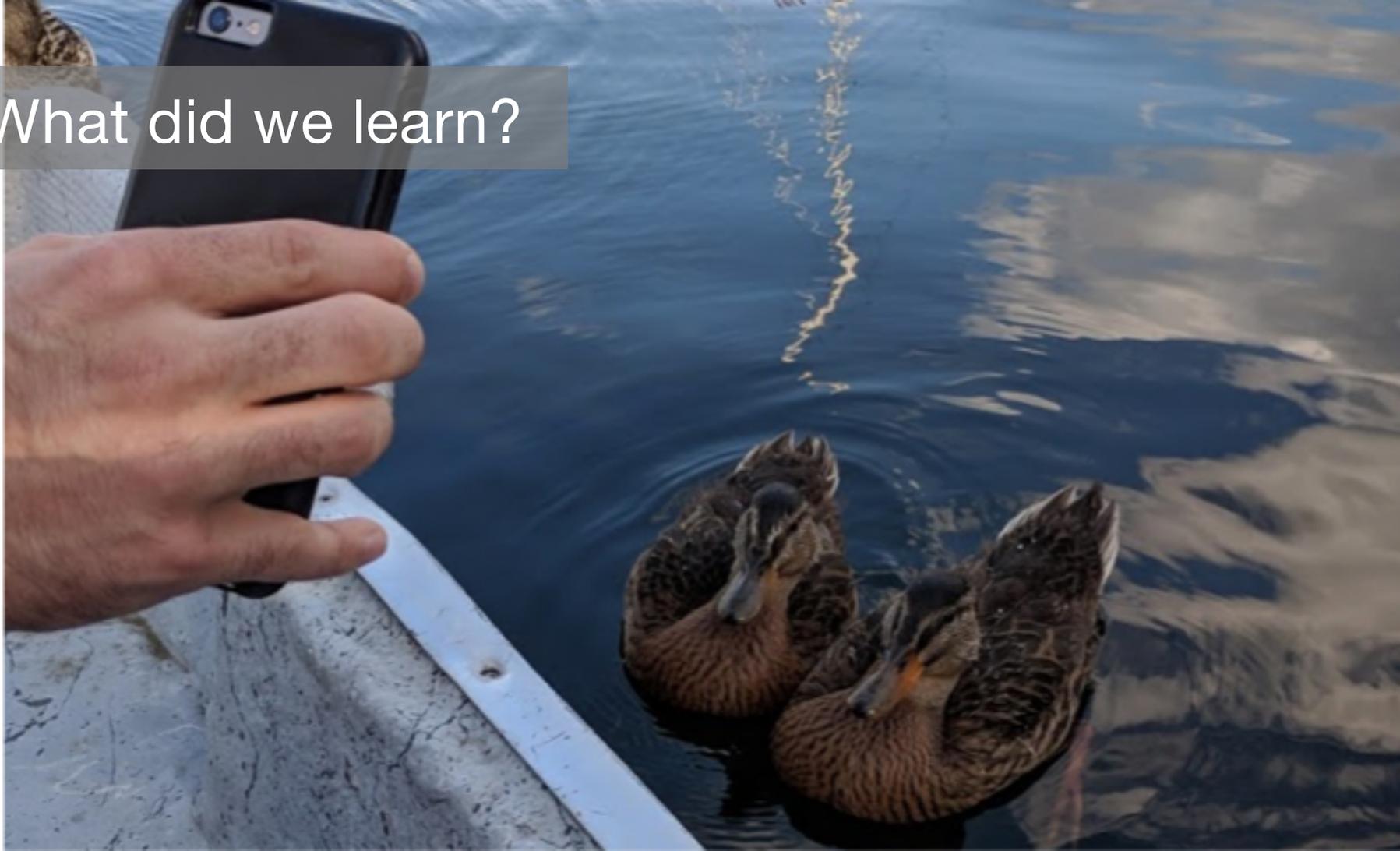
[LDA](#)

[Learn Python](#)

[Massive Open Online Courses](#)

[Coursera Machine Learning](#)

What did we learn?



A hand holding a smartphone over a body of water with a duck. The background is a blurred image of a blue body of water with a duck in the foreground. A semi-transparent grey box is overlaid on the image, containing the title and a list of points.

What did we learn?

- Machine Learning combines statistics & programming
- A model is only as good as its training data
- The loss function helps us improve models, but overfitting should be avoided.
- YOU can create a ML model today!!!
- ML will help scale SEO tasks & allow us to evolve as SEOs





I lost it...





Thank you!



@BritneyMuller



britney@moz.com



Competitions

[Documentation](#)[InClass](#)[General](#)[InClass](#)

Sort by

Grouped

All Categories

Search competitions

18 Active Competitions



Quora Question Pairs

Can you identify question pairs that

Featured · a year ago · linguistics

NETFLIX

question

\$25,000

3,307 teams



Google Cloud & YouTube

Can you produce the best video

Featured · a year ago · internet, image data, object labeling

e

\$100,000

655 teams

Analyze Twitter Accounts

Sentiment analysis is kind of hit or miss



&



ALGORITHMIA

```
[4] import Algorithmia

input = {
  "query": "randfish",
  "auth": {
    "app_key": "YAu48ViD52zqOy45xlgWfx2iV",
    "app_secret": "1lwQEj9G5XvHEmlPmjXnTJbpgXgI8TPB8pHHRZB0Ht8lINkkwo",
    "oauth_token": "21446729-TKwjs1SWgamQPzjB59H8oF7J5F4GSAOn3FFt0haGA",
    "oauth_token_secret": "1AAwExTx1bWOP9LyNQhOQaTrANvIii3RbQPF8qq585ix0"
  }
}

client = Algorithmia.client('simzJtrJHl+D6Sk1H3TI9cABU+w1')
algo = client.algo('diego/AnalyzeTwitterUser/0.1.6')
print(algo.pipe(input))
```

is negative about: [{u'tmwhiskeywoman': 1, u'stressful': 1, u'believer': 1, u'hear': 1, u'struggle': 1, u'awful': 1, u'disconnect': 1, u'retweetis

Analyze Twitter Accounts

Sentiment analysis is kind of hit or miss

```
[4] import Algorithmia

input = {
  "query": "randfish",
  "auth": {
    "app_key": "YAu48ViD52zqOy45xlgWfx2iV",
    "app_secret": "1lwQEj9G5XvHEmlPmjXnTJbpgXgI8TPB8pHHRZB0Ht8lINkkwo",
    "oauth_token": "21446729-TKwjs1SWgamQPzjB59H8oF7J5F4GSAOn3FFt0haGA",
    "oauth_token_secret": "1AAwExTx1bWOP9LyNQhOQaTrANvIii3RbQPF8qq585ix0"
  }
}

client = Algorithmia.client('simzJtrJHl+D6Sk1H3TI9cABU+w1')
algo = client.algo('diego/AnalyzeTwitterUser/0.1.6')
print(algo.pipe(input))
```

is positive about: [{u'account': 2, u'caseyhen': 3, u'links': 2, u'agreed': 2, u'quiz': 2, u'wilreynolds': 2, u'super': 2}, {u'company': 2, u'googl

Testing Algorithmia's image recognition model

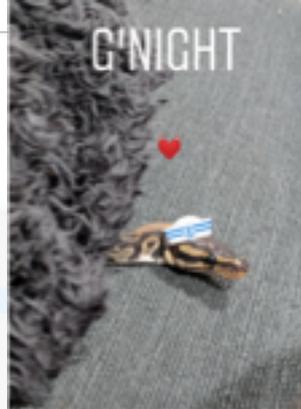
Not bad for out of the box!

```
▶ import Algorithmia

input = "http://i.imgur.com/edw6fHB.jpg"
client = Algorithmia.client('simzJtrJHl+D6Sk1H3TI9cABU+w1')
algo = client.algo('PetiteProgrammer/ImageClassifier/0.2.1')
print(algo.pipe(input))
```

```
↳ {'class': u'bolo_tie'}, {u'confidence': 0.024870457127690315, u'class': u'curly-coated_retriever'},
```

```
{u'confidence': 0.07712080329656601, u'class': u'Kerry_blue_terrier'}
{u'confidence': 0.0453086718916893, u'class': u'wool'}
{u'confidence': 0.0443725511431694, u'class': u'Irish_water_spaniel'}
{u'confidence': 0.039072223007678986, u'class': u'Bouvier_des_Flandres'}
{u'confidence': 0.035601016134023666, u'class': u'knot'}
{u'confidence': 0.02956104278564453, u'class': u'bolo_tie'}
{u'confidence': 0.024870457127690315, u'class': u'curly-coated_retriever'}
{u'confidence': 0.024357935413718224, u'class': u'standard_poodle'}
{u'confidence': 0.019826509058475494, u'class': u'chain'}
{u'confidence': 0.01976911723613739, u'class': u'safety_pin'}
```



“One of the major promises of AI is freeing people from mindless tasks, so they can do more meaningful work.”

-SAM DEBRULE

SCI-TECH

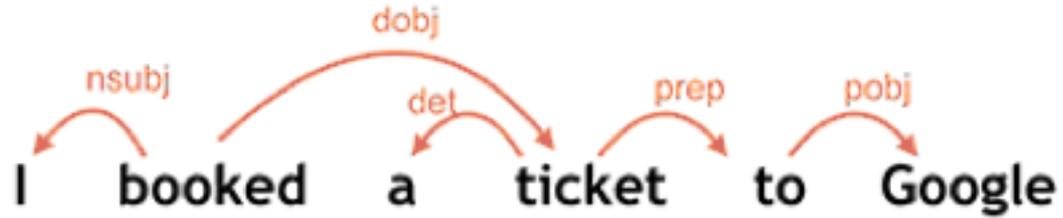
Don't laugh: Google's Parsey McParseface is a serious IQ boost for computers

Google offers free use of SyntaxNet technology, a boon to anyone trying to get computers to understand natural human language.

BY **STEPHEN SHANKLAND** / MAY 13, 2016 3:25 AM PDT

Parcey McParseface

Dependency Parsing





```

▶ input = {
  "src": "My hope today is to plant a seed of Machine Learning within each and every one of you. You hold the power to create t
  "format": "tree",
  "language": "english"
}
client = Algorithmia.client('simzJtrJH1+D6Sk1H3TI9cABU+w1')
algo = client.algo('deeplearning/Parsey/1.1.0')
print(algo.pipe(input))

```

```

☐ AlgoResponse(result=Input: My hope today is to plant a seed of Machine Learning within each and every one of you.

```

```

Parse:

```

```

is VERB++VBZ ROOT

```

```

+-- hope NOUN++NN nsubj

```

```

|   +-- My PRON++PRP$ nmod:poss

```

```

+-- today NOUN++NN nmod:tmod

```

```

+-- plant VERB++VB ccomp

```

```

+-- to PART++TO mark

```

```

+-- seed NOUN++NN dobj

```

```

|   +-- a DET++DT det

```

```

|   +-- Learning VERB++VBG nmod

```

```

|       +-- of ADP++IN case

```

```

|       +-- Machine NOUN++NN compound

```

```

+-- each DET++DT nmod

```

```

+-- within ADP++IN case

```

```

+-- and CONJ++CC cc

```

```

+-- one NOUN++NN conj

```

```

+-- every DET++DT det

```

```

+-- you. PUNCT++ . nmod

```

```

+-- of ADP++IN case

```

```

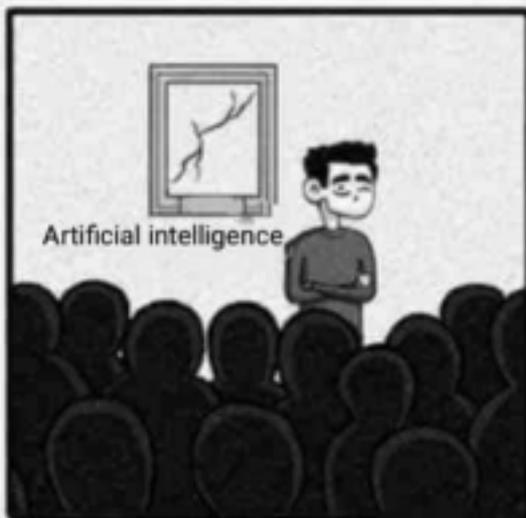
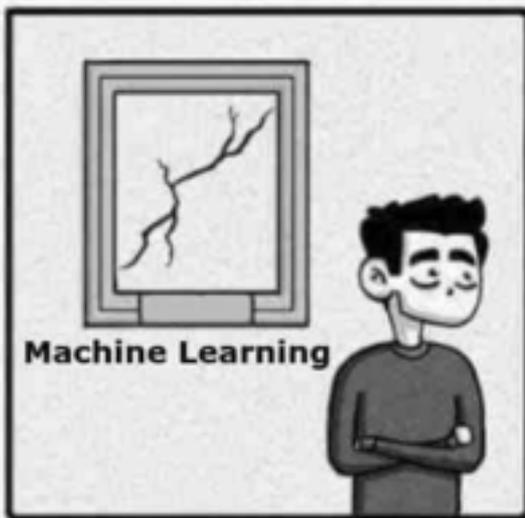
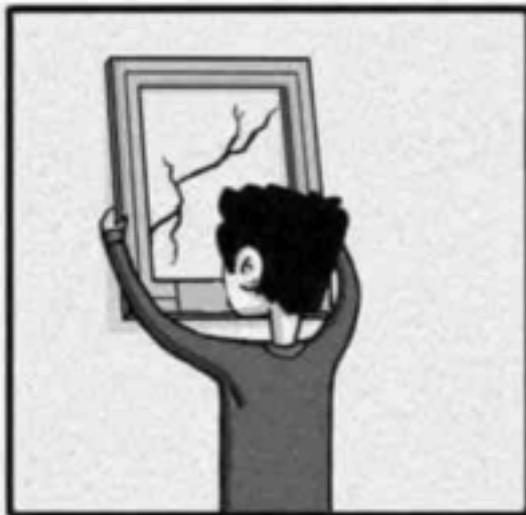
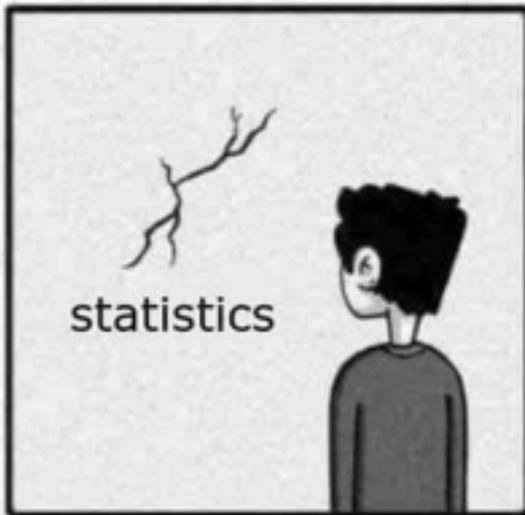
Input: You hold the power to create the next cutting edge machine learning applications.

```

```

Parse:

```



We've just launched a new contribution experience

TAKE A LOOK

Help report bugs >

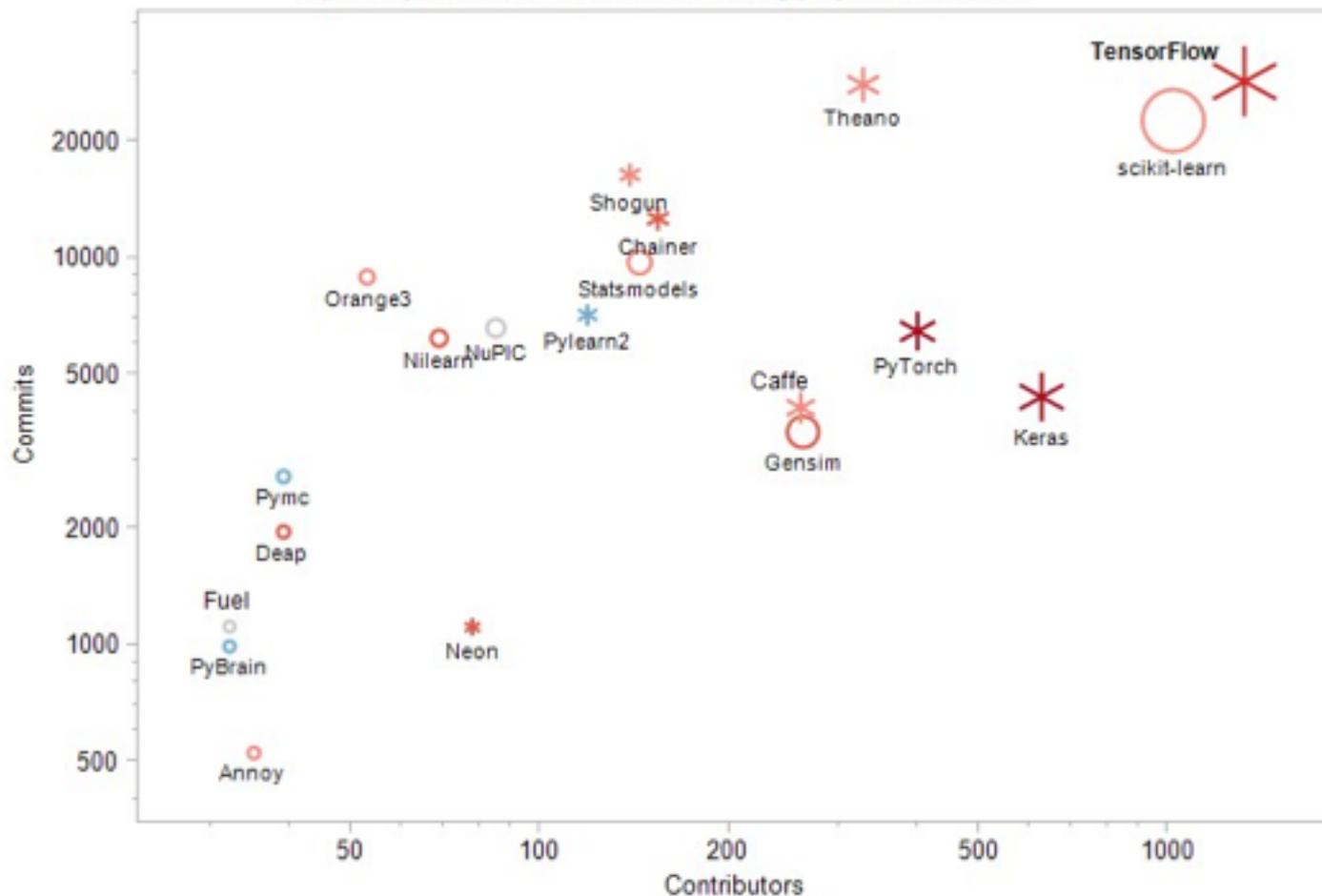
The Common Voice project is Mozilla's initiative to help teach machines how real people speak.



Speak up, contribute here!

voice.mozilla.org

Top 20 Python AI and Machine Learning projects on Github



ENTERPRISE INTELLIGENCE

VISUAL Orbus Insight, CogniNet, Clarifai, Atrivision, Cortica, Spinnaker, SPACI KNOW, Cognition, Netra, Deepomatic	AUDIO Grindspace, TalkIQ, Rescilia, Twilio, CAPIO, Expert Labs, Clever, Myriad, QuriousAI, paycom analytics	SENSOR PREDIX, Cybot, MANTA, Sentient, PLANET OS, Lemnatek, IBM, Razer, Thingiverse, Xerox AltiVium	INTERNAL DATA InVivo, IBM Watson, Qeios, Palantir ADAM, Amazon, Sapho, Qylix, Digital Processing	MARKET Mattermark, Quid, Statista, Premise, Bottomline, Motika, Enigma, CB Insights, OTracks, Predata
--	---	---	--	---

ENTERPRISE FUNCTIONS

CUSTOMER SUPPORT DigitalGenius, Kasisto, Eloquent, Wise, ACTONIQ, Zendesk, Proact, CLARIBRIDGE	SALES Collective, Sense, FuseMachines, Aviso, Salesforce, Inside Sales, Clari, Bright, Strength	MARKETING Hivero, Lattice, Radius, Litmus, Persado, Brightly, Refinery, Goodcon, Aupha, Mya	SECURITY Cyclance, Darktrace, Zimperium, DeepSight, Sentinel, Gemisto, Graphistry, Drawbridge, SignalGen, AppView	RECRUITING Textio, Cresto, Wide & Wendy, Hire, Univo, SpringRole, Gigster, HireVue
--	---	---	---	--

AUTONOMOUS SYSTEMS

GROUND NAVIGATION Drive.ai, AutoWorks, Zoox, AltiVium, Uber, Google, Tesla, Waymo, Auto Robotics	AERIAL Skydio, Shield AI, Airware, DJI, Lily, DroneDeploy, Ploaer, SkyCatcher	INDUSTRIAL Jaybridge, Osaro, Clearpath, Fetch, Kinovea, Narda Robotics, Harvest	PERSONAL Amazon Alexa, Cortana, Allo, Facebook, Siri, Replika	AGENTS Professional: Butter.ai, Pogo, Skipflag, Clara, X.ai, Slack, Talla, Zoom, Sudo
--	---	---	---	---

INDUSTRIES

AGRICULTURE BlueDriver, Mavix, Tule, Trace, Trimble, Agri Data, Precision Farming, Sphero	EDUCATION Knewton, Volley, CTI, Coursera, Uxaparty, Edmentum	INVESTMENT Bloomberg, Sentient, Sentium, Kenshco, AlphaSense, DataSift, Cambridge Capital, Quandl	LEGAL BlueJ, Beagle, Everlaw, Ravel, Seal, Ross, Legal Robot	LOGISTICS Mauto, Acenta, Phrebeck, Routific, Clearmetal, Marble, Pitstop
---	--	---	--	--

INDUSTRIES CONT'D

MATERIALS Zymergen, Orbi, Eigen Innovations, Bright Machine, Sphero, Nanorobotics, Calculario	RETAIL FINANCE Tala, Finance, Lend, Earned, Affirm, Mirador, Wealthfront, Betamont	PATIENT Pulse, CareGrove, Zebra Health, HealthStream, Oncosis, BioFire, Atomix, Numerate	IMAGE Buttery, Scan, Arterys, Enlitic, Baylabs, Image, Google DeepMind	BIOLOGICAL CarbonX, Color, Grail, Deep Genomics, Recursion, Luminist, Numerate, Atomix, Verily, T.551
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TECHNOLOGY STACK

AGENT ENABLERS
 OCTANE.AI, Howdy, Maluubi, KITT.AI, OpenAI Gym, Kasisto, AUTOMAT, semanticmachines

DATA SCIENCE
 DDM.NO, SPARKYOND, rapidminer, Kaggle, DataRobot, yhat, AYASDI, dataiku, seldon, yseop, big

MACHINE LEARNING
 CognitiveScale, GoogleML, accubid, folioval, Qeios, HyperScience, NOCOps, mindful, H2O.ai, SCALED INTELLIGENCE, sparkcognition, loop, CRYSTAL BALLS, deepnlp.io, reactive, skymind, bonsai

NATURAL LANGUAGE
 ogolo, RWLIEN, LEXALYTICS, Narrative Science, spaCy, LUMINOZO, cortical.io, MonkeyLearn

DEVELOPMENT
 SIGOPT, HyperOpt, fuzzy, pkite, rainforest, lobe, Anodot, Signifai, LAYER, bonsai

DATA CAPTURE
 Crowdflower, diffbot, CrowdAI, Import, Pexels, DATSET, amazon, mechanika, enigma, Workfusion, [REDACTED], TRIFACTA, parsehub

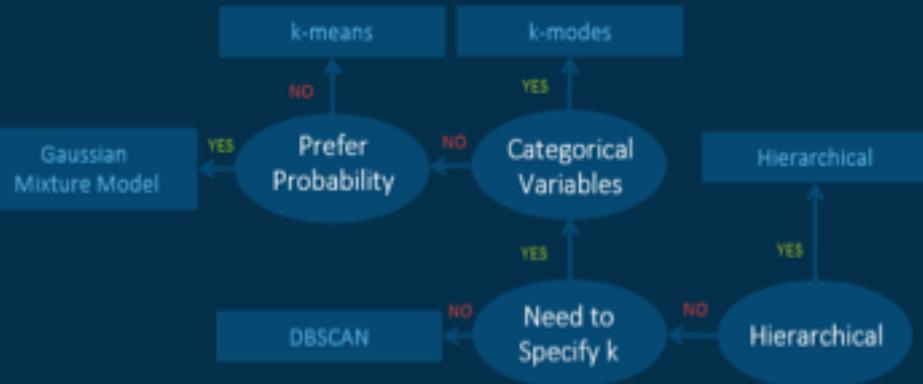
OPEN SOURCE LIBRARIES
 Keras, Chainer, CNTK, TensorFlow, Caffe, H2O, DEEPLARNING4J, theano, torch, DSSTNE, Scikit-learn, AzureML, neon, MXNet, DMTK, Spark, PaddlePaddle, WEKA

HARDWARE
 KNUPATH, TENSORRENT, Cirascale, NVIDIA, Intel, Myriada, Mevius, ferretica, GoogleTPU, 101 Labs, salcomm, Cerebras, Isoremi

RESEARCH
 OpenFl, [REDACTED], ELEMENT, vicarious, KNOGIN, Numanta, Genes Systems, Cogita

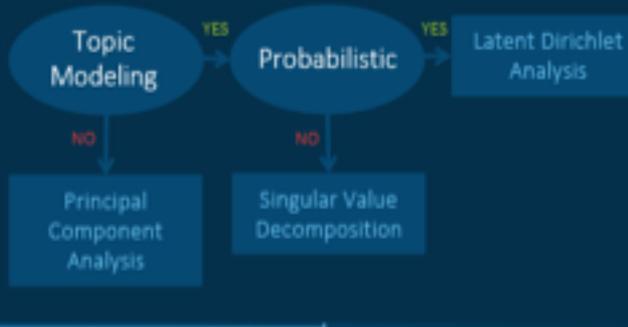
Machine Learning Algorithms Cheat Sheet

Unsupervised Learning: Clustering

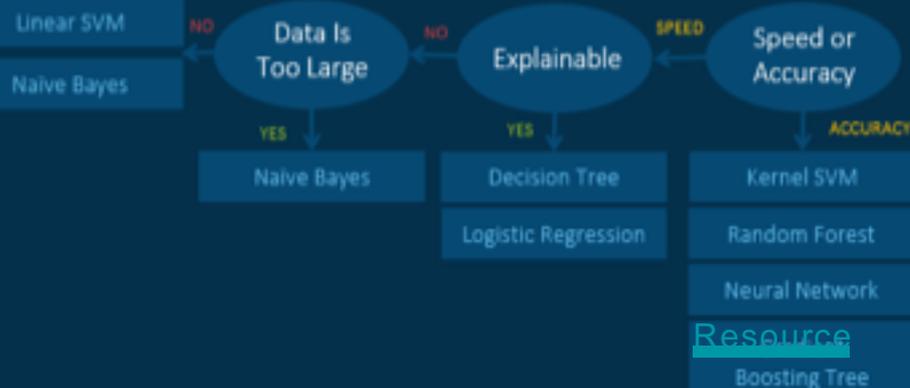


Unsupervised Learning: Dimension Reduction

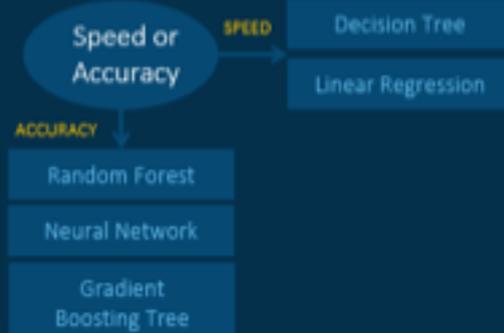
START



Supervised Learning: Classification

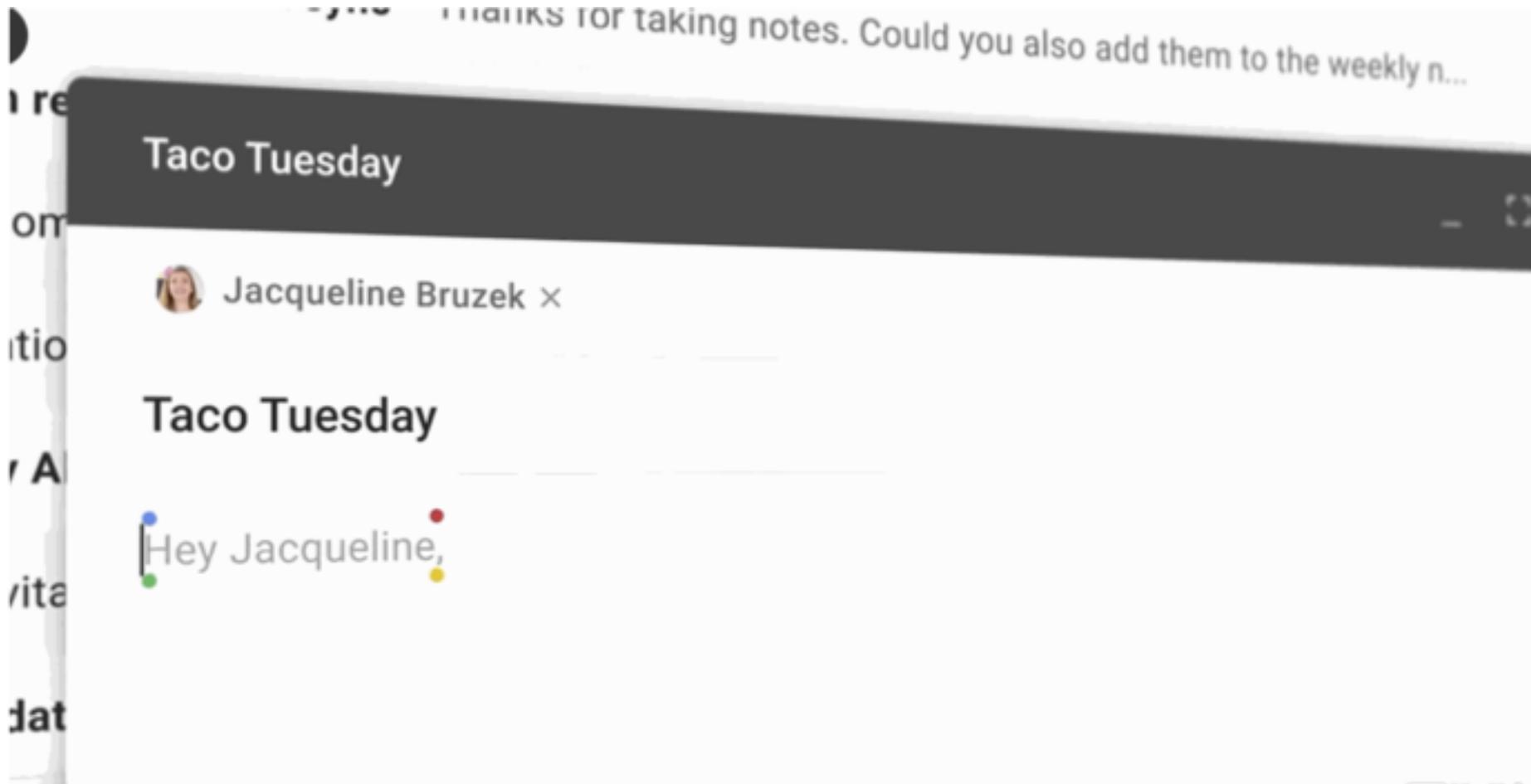


Supervised Learning: Regression



[Resource](#)

Smart Compose:





&



ALGORITHMIA

Automatic Meta Descriptions

Use the Advanced Summarizer model to summarize long form content



```
import Algorithmia
```

```
input = "A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party  
client = Algorithmia.client('simzJtrJH1+D6Sk1H3TI9cABU+w1')  
algo = client.algo('nlp/Summarizer/0.1.8')  
print(algo.pipe(input))
```



```
We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps tran
```

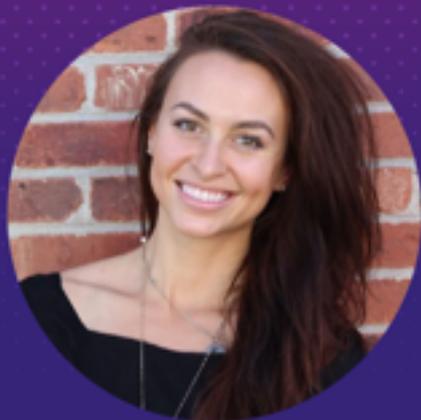
Why SEOs Need To Know About ML:

ML already effects the work that you're doing.

You should be able to speak intelligently about ML (especially with clients).

Level up your skills by adding ML to your toolbox!

Thank you!



Britney Muller | Moz

 @BritneyMuller