

# CNNs?

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Homework for next week.



**Think about what  
you want to explore  
in your essay.**

A slide deck consisting of

- a research topic regarding AI
- ideas about how you might intro
- ideas of case studies
- ideas of how you might conclude
- any questions you have

Send to Alex on slack for the 4th of Dec. It is not a presentation!

We can also talk  
about the essay  
between 3 to 5pm  
today.

So last week, we  
explored neural  
networks.

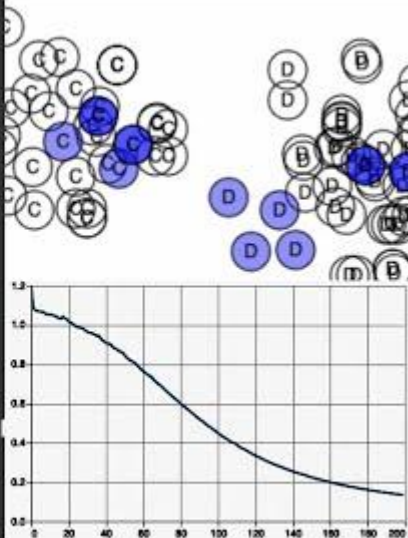


**This stuff  
is complex,  
complicated  
and  
difficult.**

# ML5 NEURAL NETWORK

```
let options = {  
  inputs: ['x', 'y'],  
  outputs: ['label'],  
  task: 'classification',  
  debug: 'true'
```

```
ml = ml5.neuralNetwork(  
  ground(255);
```



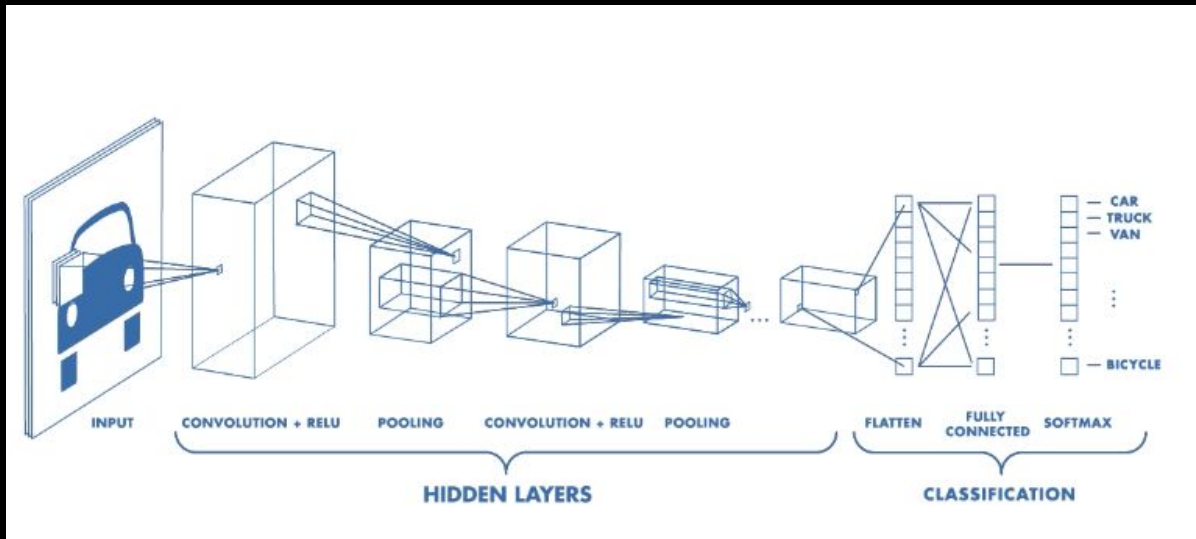
**ml5.js: Train Your Own  
Neural Network**

Daniel Shiffman  
(The Coding Train)

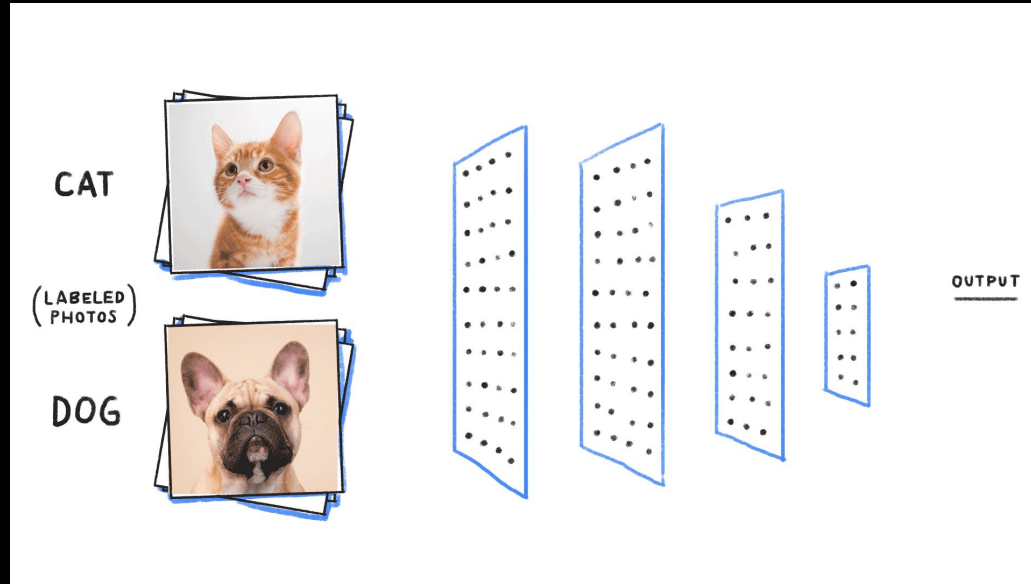


# So CNNs?





Convolutional neural networks are neural networks used primarily to classify images (i.e. name what they see), cluster images by similarity (photo search), and perform object recognition within scenes.



Cute kittens and dogs images xxxx



a soccer player is kicking a soccer ball

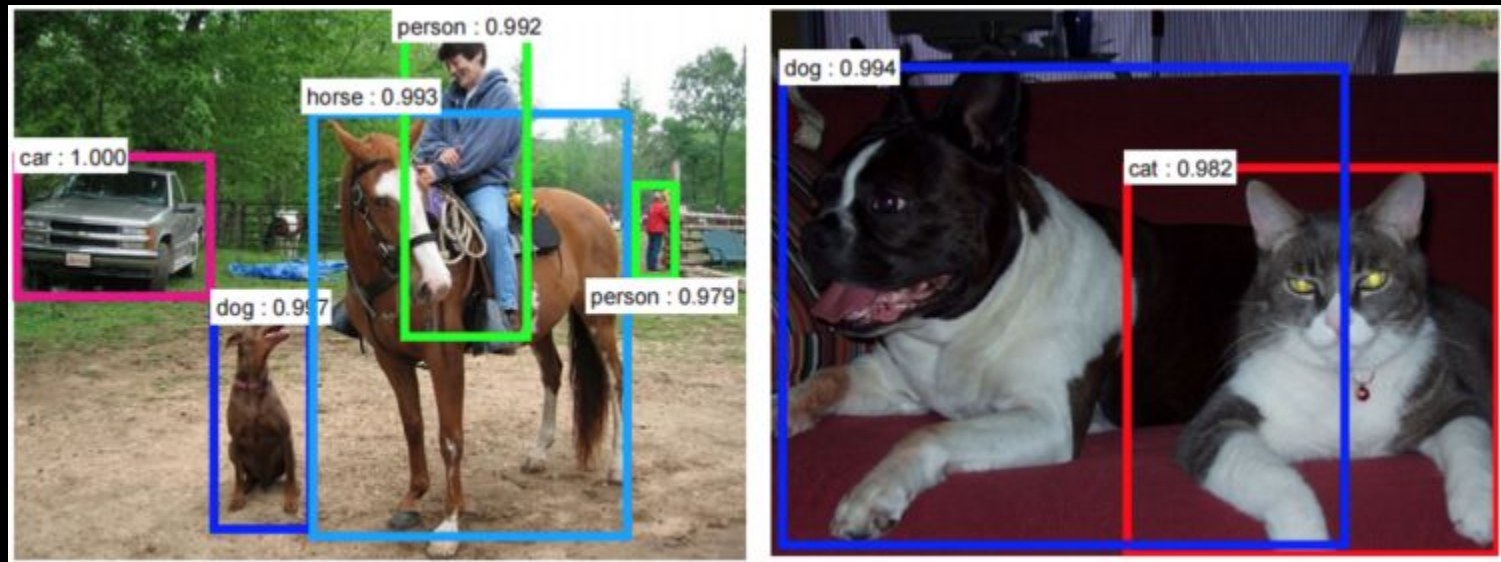


a street sign on a pole in front of a building



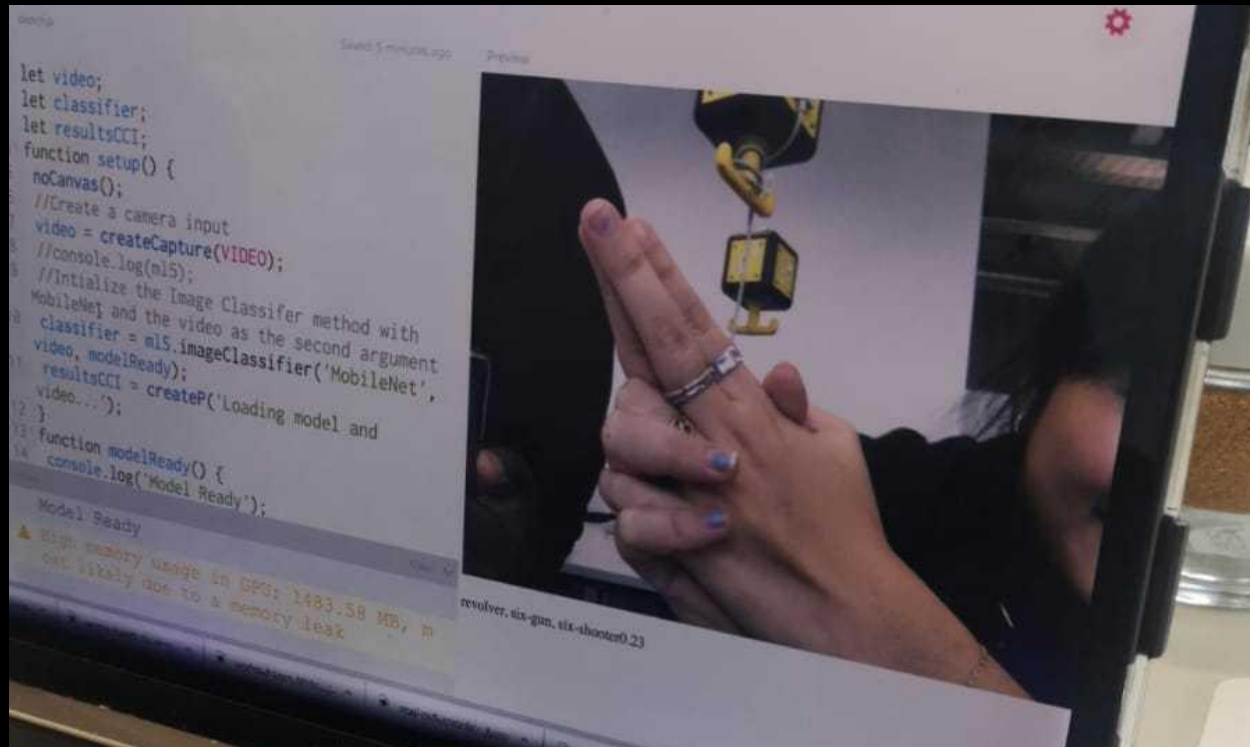
a couple of giraffe standing next to each other

<https://github.com/karpathy/neuraltalk2>



Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks





Khalisha doing gun fingers in my classroom





People been trying to mimic the brain for  
a long while.

**We constant analyse  
the world around  
us.**



**We see, label, make  
predictions, and  
recognize patterns.**



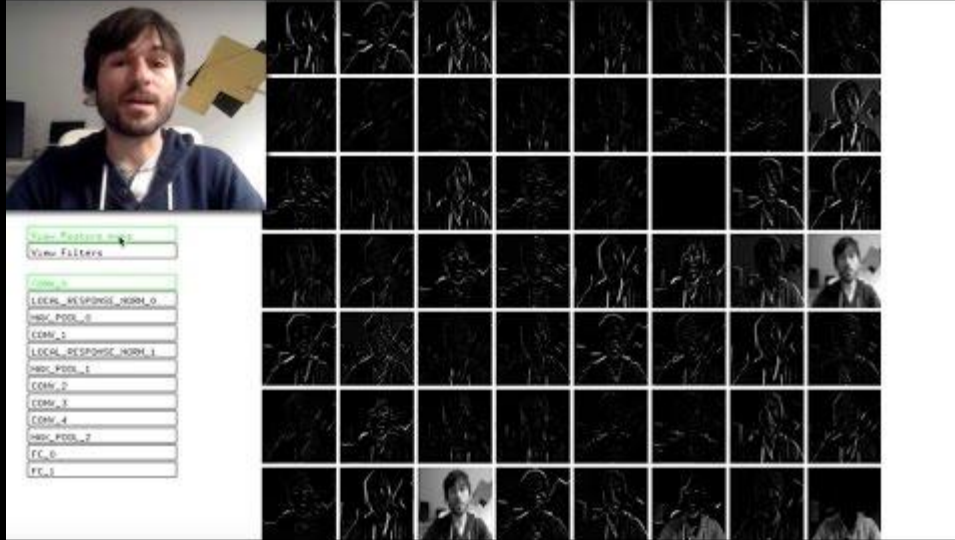
08	02	22	97	38	15	00	40	00	75	04	05	07	78	52	12	50	77	51	88
49	49	99	40	17	81	18	57	60	87	17	40	98	43	69	45	04	56	62	00
81	49	31	73	55	79	14	29	93	71	40	67	53	88	30	03	49	13	36	65
52	70	95	23	04	60	11	42	62	47	65	56	01	32	56	71	37	02	36	91
22	31	16	71	51	63	89	41	92	36	54	22	40	40	28	66	33	13	80	80
24	47	15	60	99	03	45	02	44	75	33	53	78	36	84	20	35	17	12	50
32	98	81	28	64	23	67	10	26	38	40	67	59	54	70	66	18	38	64	70
67	26	20	68	02	62	12	20	95	63	94	39	63	08	40	91	66	49	94	21
24	55	58	05	66	73	99	26	97	17	78	78	96	83	14	88	34	89	63	72
21	36	23	09	75	00	76	44	20	45	35	14	00	61	33	97	34	31	33	95
78	17	53	28	22	75	31	67	15	94	03	80	04	62	16	14	09	53	56	92
16	39	05	42	96	35	31	47	55	58	88	24	00	17	54	24	36	29	85	57
86	56	00	48	35	71	89	07	05	44	44	37	44	60	21	58	51	54	17	58
19	80	81	68	05	94	47	69	28	73	92	13	86	52	17	77	04	89	55	40
04	32	08	83	97	35	99	16	07	97	57	32	16	26	26	79	33	27	98	66
57	16	68	87	57	62	20	72	03	46	33	67	46	55	12	32	63	93	53	69
04	42	16	73	55	25	39	11	24	94	72	18	08	46	29	32	40	62	76	36
20	69	36	41	72	30	23	88	34	62	83	69	82	67	59	85	74	04	36	16
20	73	35	29	78	31	90	01	74	31	49	71	18	56	81	16	23	57	05	54
01	70	54	71	83	51	54	69	16	92	33	48	61	43	52	01	89	19	67	48

What the computer sees

image classification

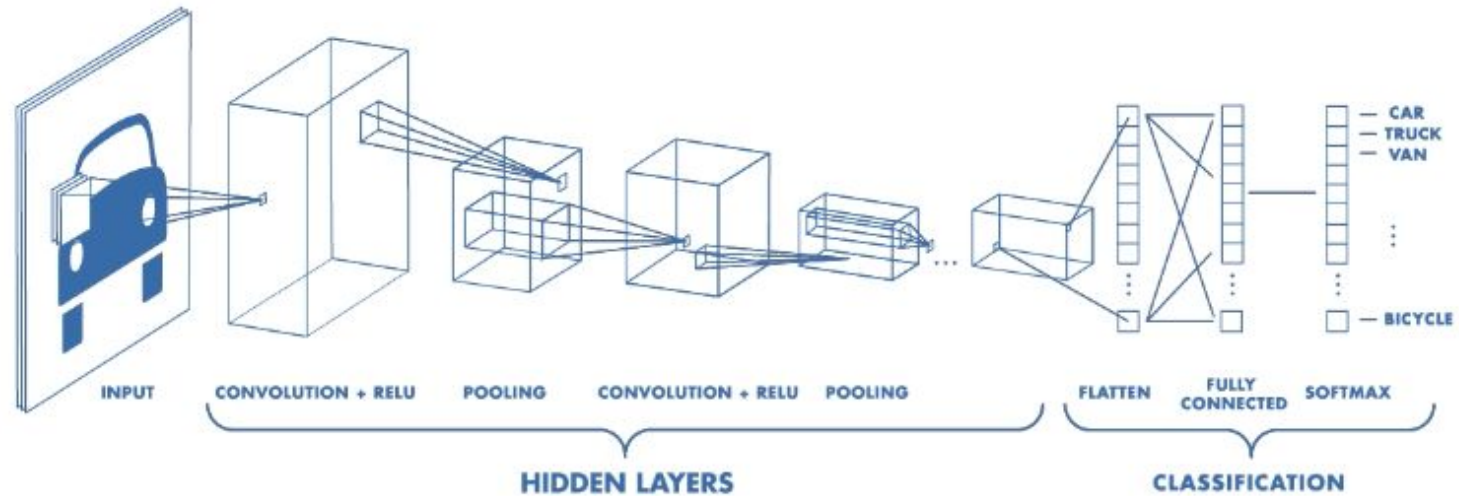
82% cat  
15% dog  
2% hat  
1% mug

<http://cs231n.github.io/classification/>



What convolutional  
neural networks see

Gene Kogan



## Hidden layers

If you had a picture of a zebra, this is the part where the neural network would recognise its stripes, two ears, and four legs.

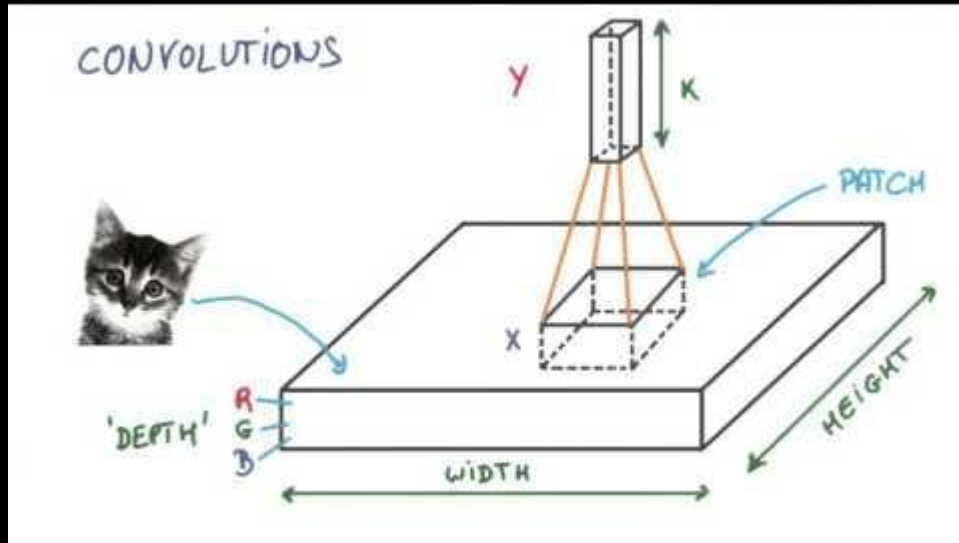
# Classification

The neural network will assign a probability for the object on the image based on what the algorithm predicts it is.

1x1	1x0	1x1	0	0
0x0	1x1	1x0	1	0
0x1	0x0	1x1	1	1
0	0	1	1	0
0	1	1	0	0

4		

<https://github.com/karpathy/neuraltalk2>



## Convolutional Neural Networks

Nice person online from Udemv



**This isn't relevant  
but**

**[https://codepen.io/teropa  
/full/QxLrMp/](https://codepen.io/teropa/full/QxLrMp/)**

**Slide here  
for a Break**

# Exercise

Over 15 million players have contributed millions of drawings playing [Quick, Draw!](#) These doodles are a unique data set that can help developers train new neural networks, help researchers see patterns in how people around the world draw, and help artists create things we haven't begun to think of. That's why [we're open-sourcing them](#), for anyone to play with.

↓



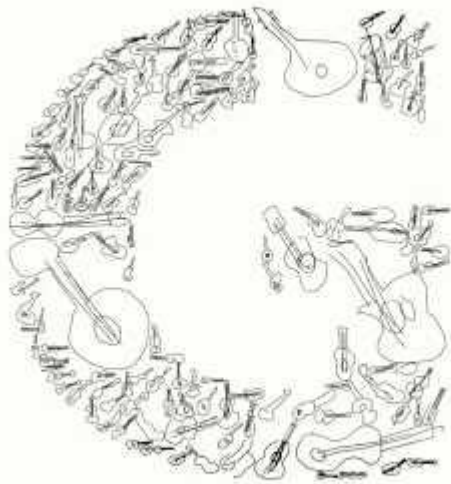
<https://quickdraw.withgoogle.com/data>

the world's largest  
doodle dataset.



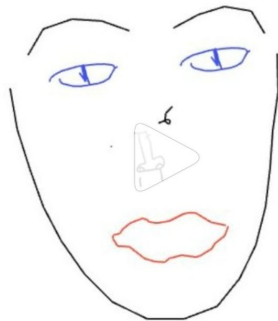
In <3 with Google's  
Quick, Draw! data

Deborah Schmidt



In <3 with Google's  
Quick, Draw! data

Deborah Schmidt



neilmendoza • Follow



neilmendoza Jumping on the  
#Google #Quickdraw data  
bandwagon! #openFrameworks  
#webcam #sketch #ofxFaceTracker2

131w



mattwade Love this. Check  
it out @halfdanj



131w Reply



mokafolio Awesome :)



131w Reply



2sman this is great neil



131w Reply



Liked by curatelabsmag and others

MAY 20, 2017

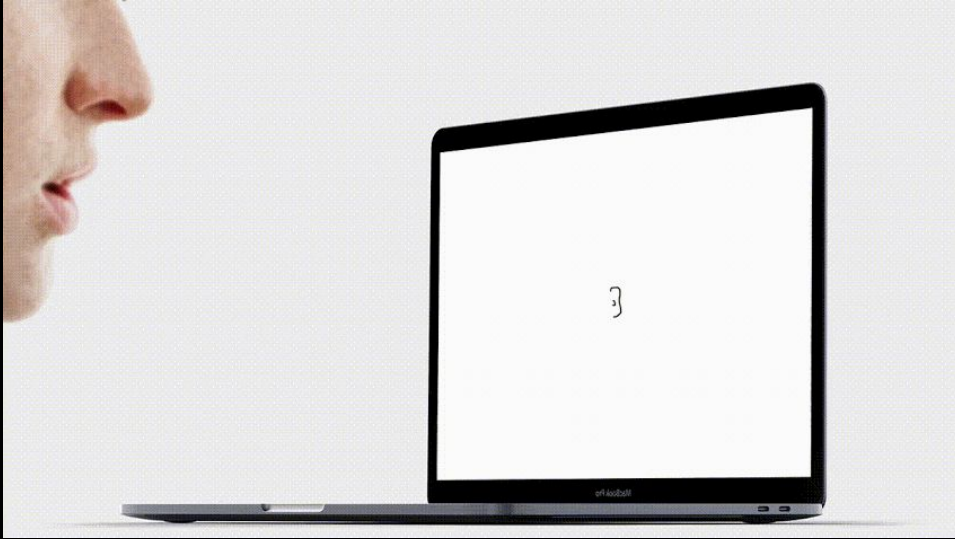
Add a comment...

Post

# Instagram post

## Neil Mendoza





# Scribbling Speech

Xinyue Yang

You drew that counterclockwise



How do you draw a circle? We analyzed 100,000 drawings to show how culture shapes our instincts

Quartz

## Our goal

To explore the Google “Quick, Draw!” dataset.

To understand how to work with image data for training your own model.

**Steps for the exercise is in  
Github.**

**Class done.  
You are free!**