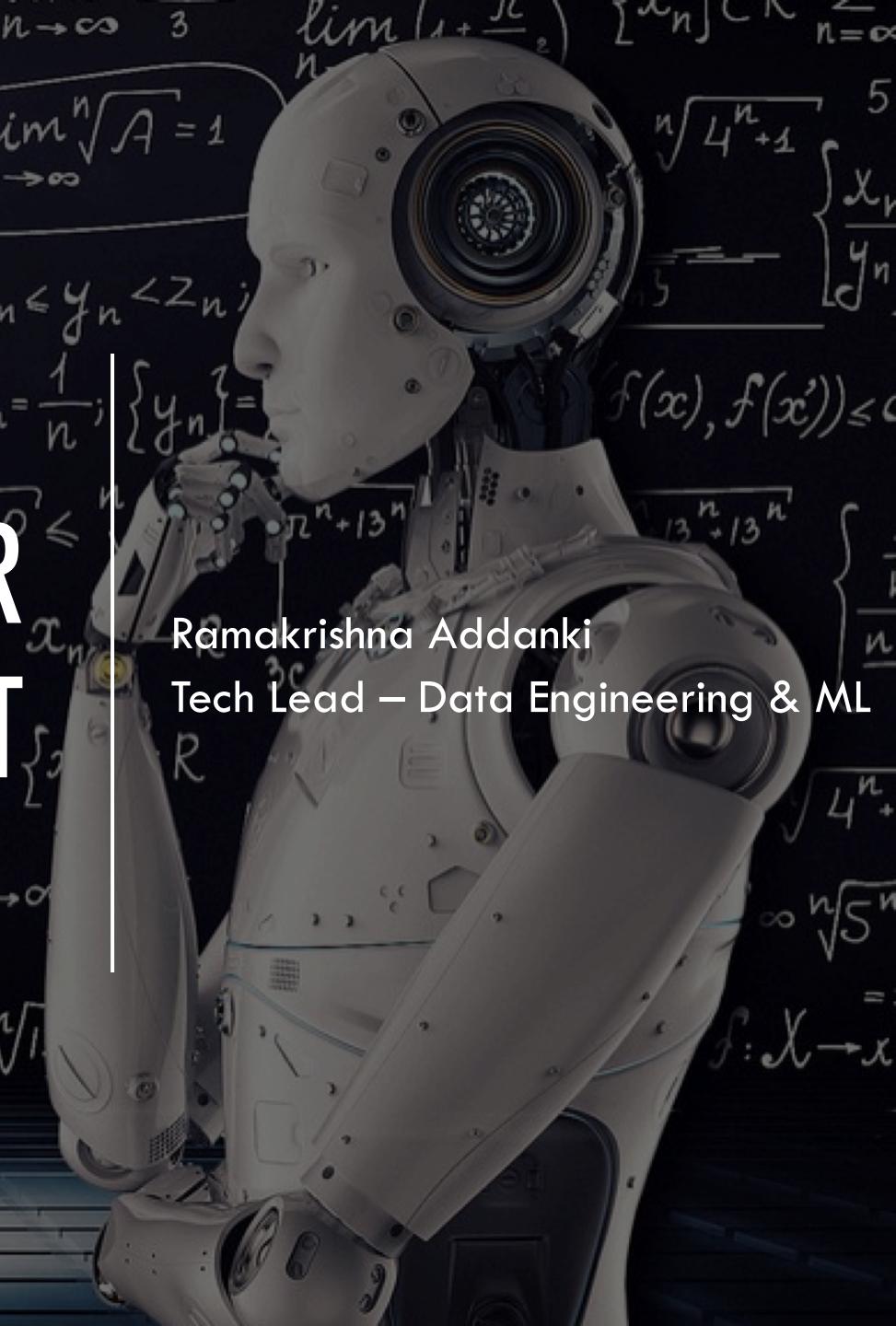
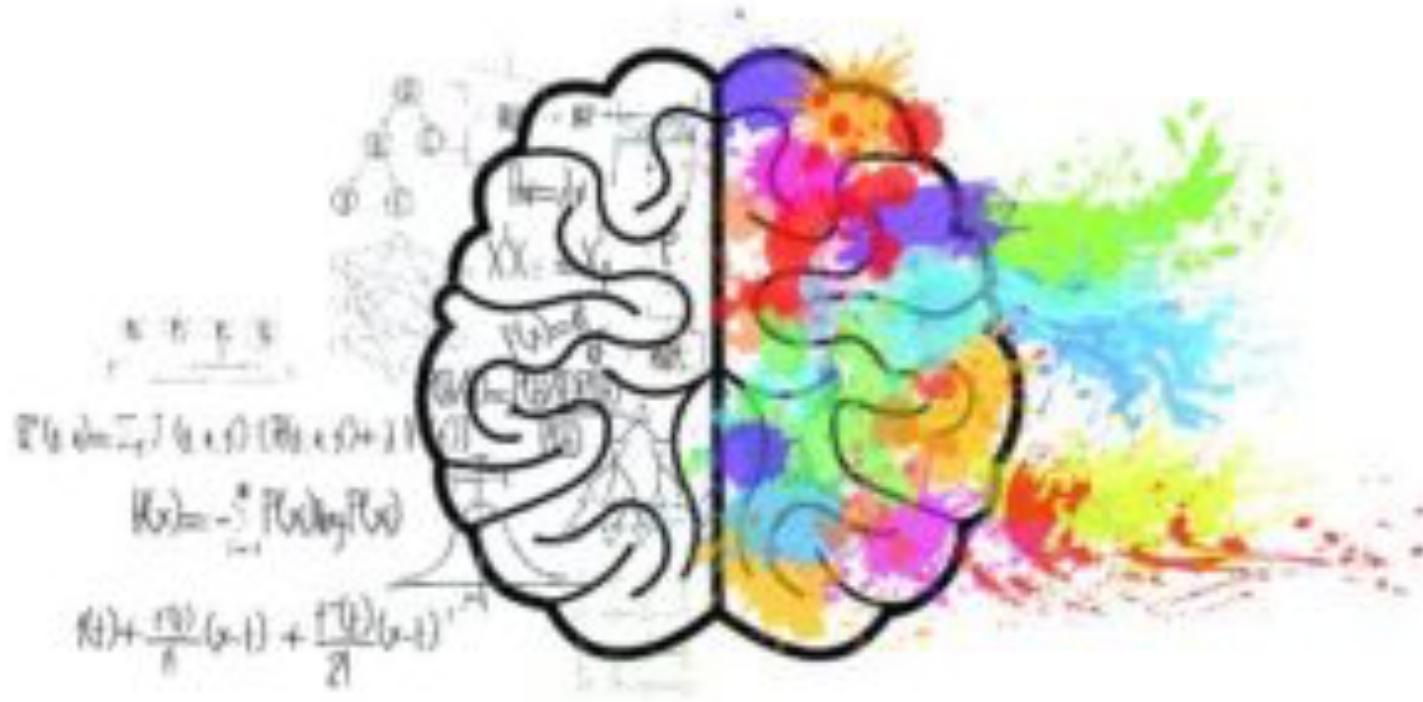


# MACHINE LEARNING FOR IMPATIENT

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Tech Lead – Data Engineering & ML





## TALK MOTIVE

- 1) What is Practical Machine Learning?
- 2) Why do we need it ?
- 3) Where do you see ML in functional Architecture ?
- 4) Live Demo !!!

# PRACTICAL MACHINE LEARNING

What is Machine Learning ?

Proprietary + Confidential

Machine Learning is a way to use standard algorithms to derive predictive insights from data and make repeated decisions



data



algorithm



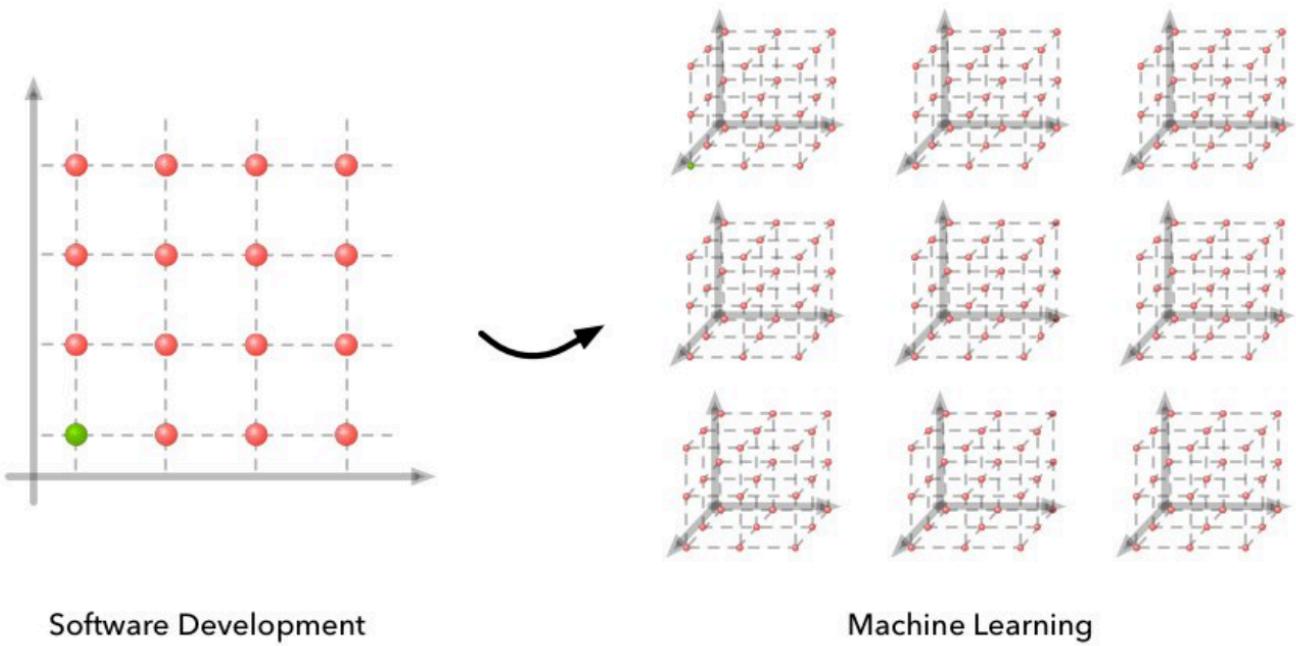
predictive insight



decision

# WHY DO WE NEED IT ?

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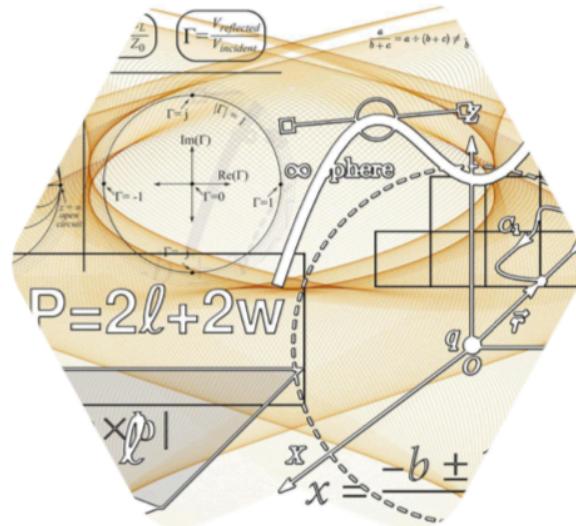
Let's revisit the question in layman's perspective



CAN YOU SEE ANYTHING ABNORMAL  
IN THIS IMAGE ?



SNOW LEOPARD  
LET'S CHECK OUT IN LIVE MODEL |



Lots of data

Complex mathematics in multidimensional spaces

Magical results

IMAGINATION OF ML?

# IN REALITY ML IS



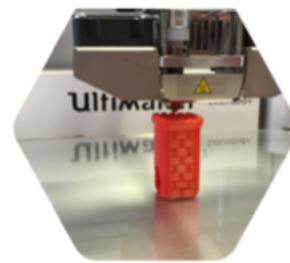
Collect  
data



Organize  
data



Create  
model



Use machines to  
flesh out the  
model from data



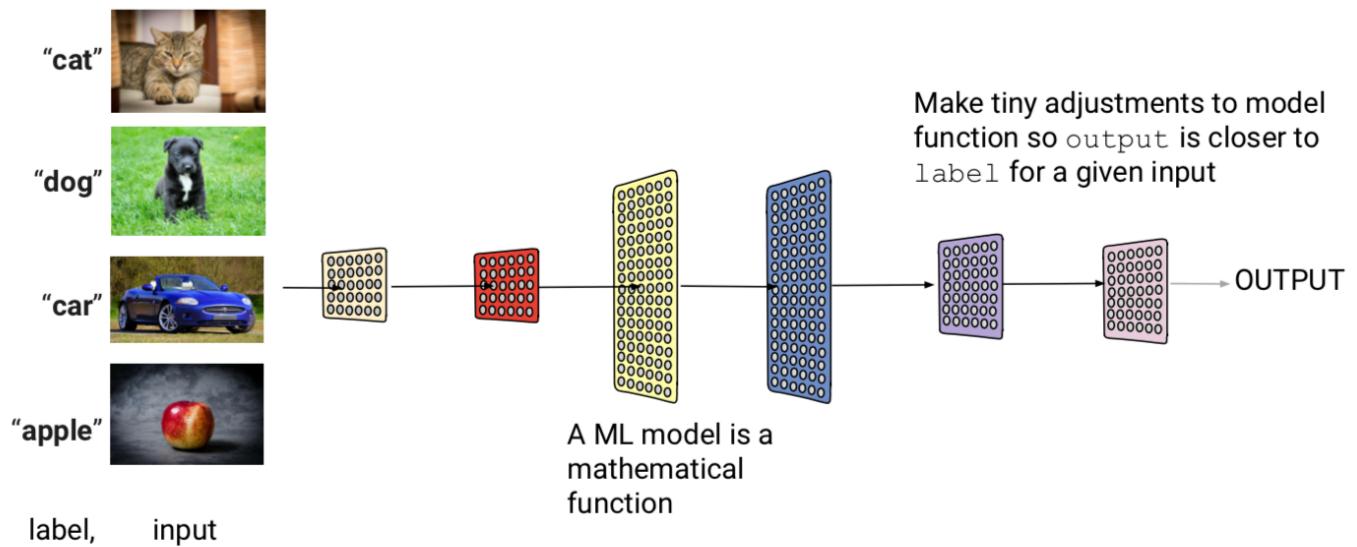
Deploy fleshed  
out model

# ML JARGON

TERM	MEANING
LABEL	True Answer
INPUT	predictor variable(s), what you can use to predict the label
EXAMPLE	input + corresponding label
MODEL	math function that takes input variables and creates approximation to label
TRAINING	adjusting model to minimize error
PREDICTION	using model on unlabeled data

# STAGES OF MACHINE LEARNING

## Stage 1: Train an ML model with examples

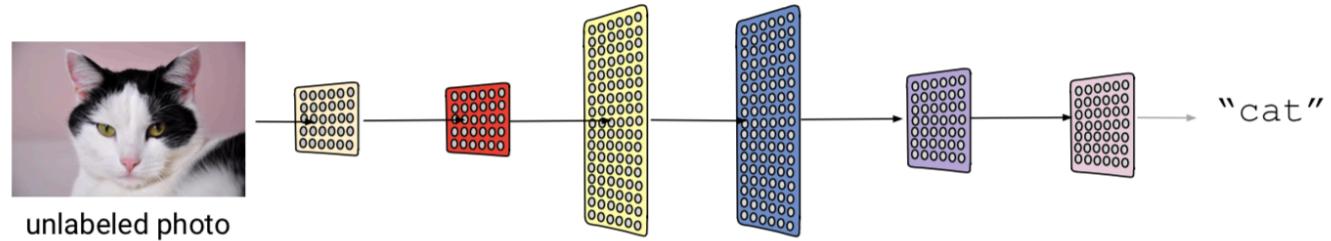


# STAGES OF MACHINE LEARNING

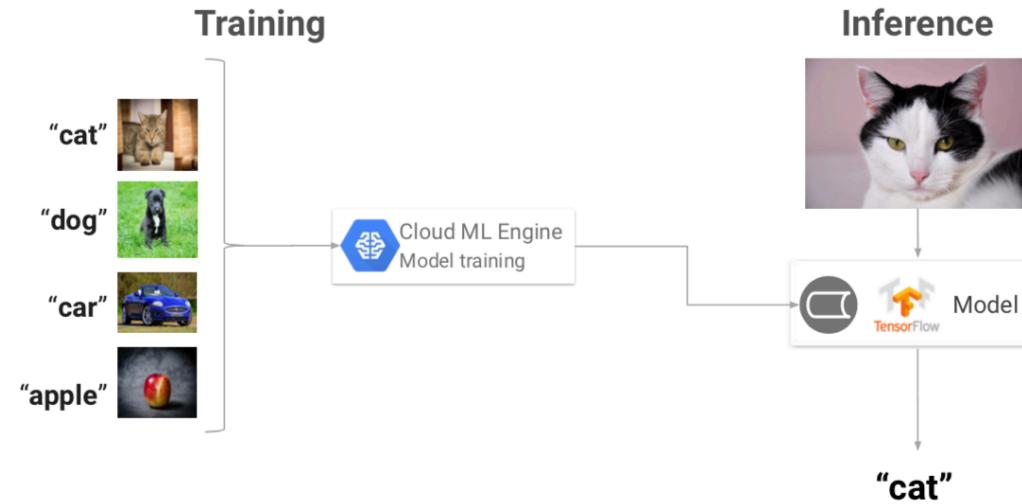
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Lets check out in real time !!

Stage 2: Predict with a trained model



Data Engineers must focus on both the training and inference stages of ML



# WHAT DATA ENGINEERS DO ? |

# LEARNING ?

## Supervised Learning



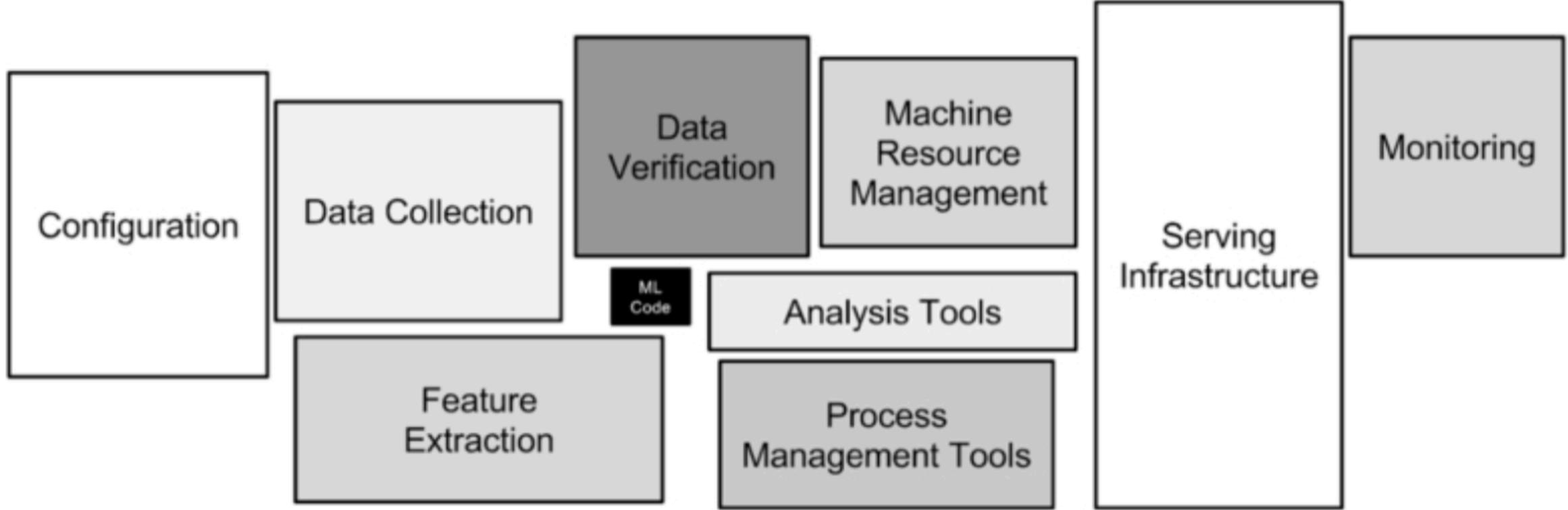
**IN SUPERVISED LEARNING, WE ARE LEARNING FROM PAST EXAMPLES TO PREDICT FUTURE VALUES**

## Unsupervised Learning



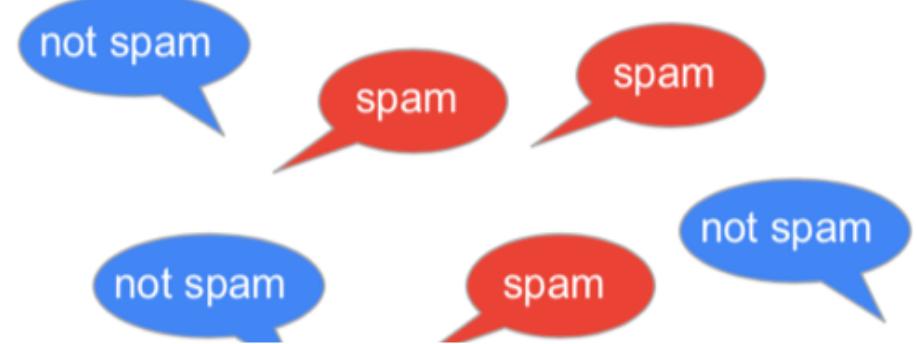
*Example mode:  
Clustering  
Is this car going to sell quickly or not?*

**IN UNSUPERVISED LEARNING THE DATA IS NOT LABELED**



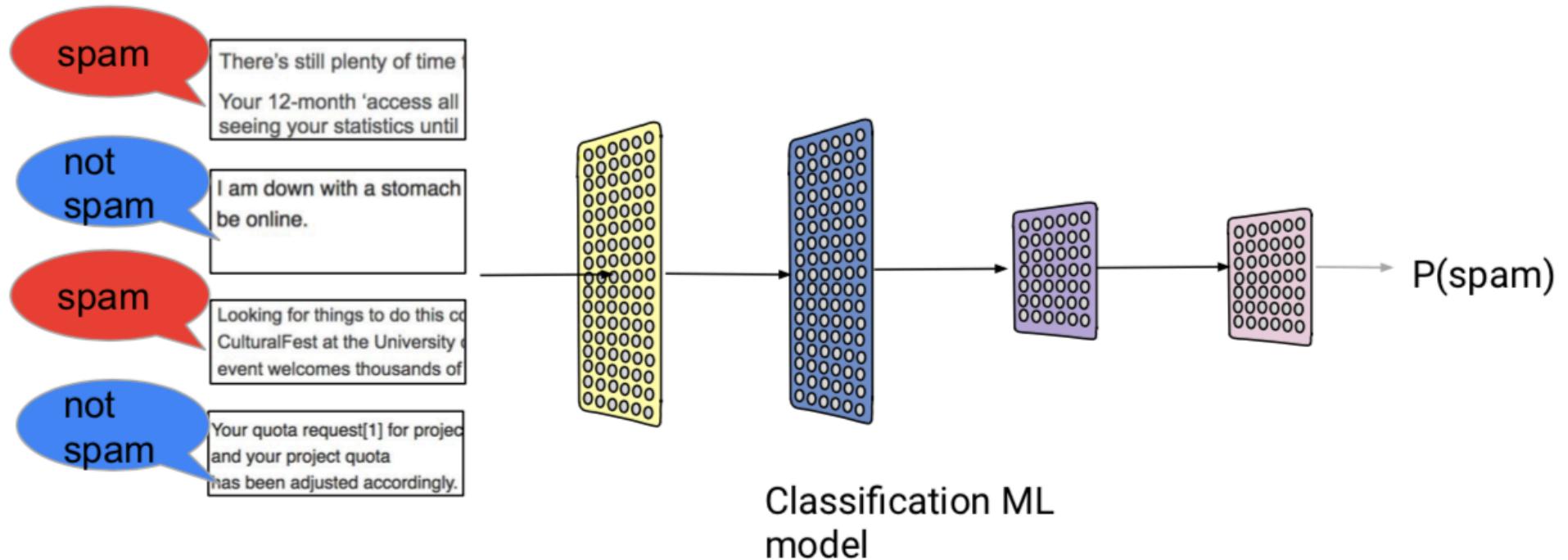
# WHERE ML LIES IN THE WHOLE PICTURE

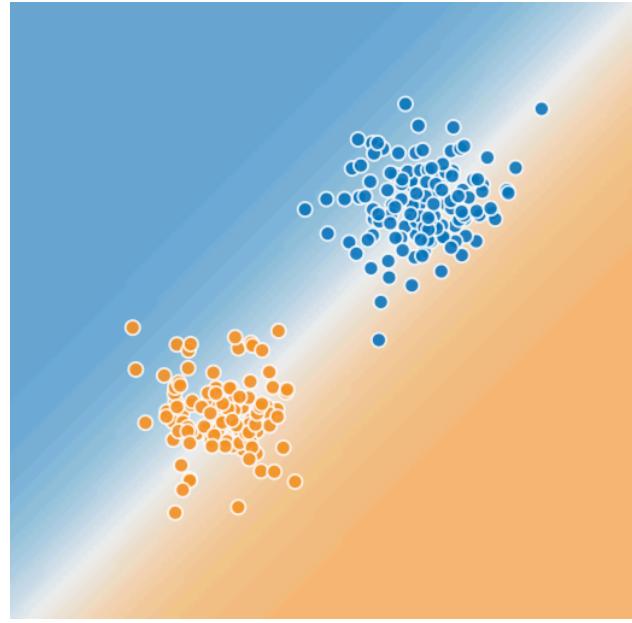
Machine Learning is an approach to making many similar decisions based on data



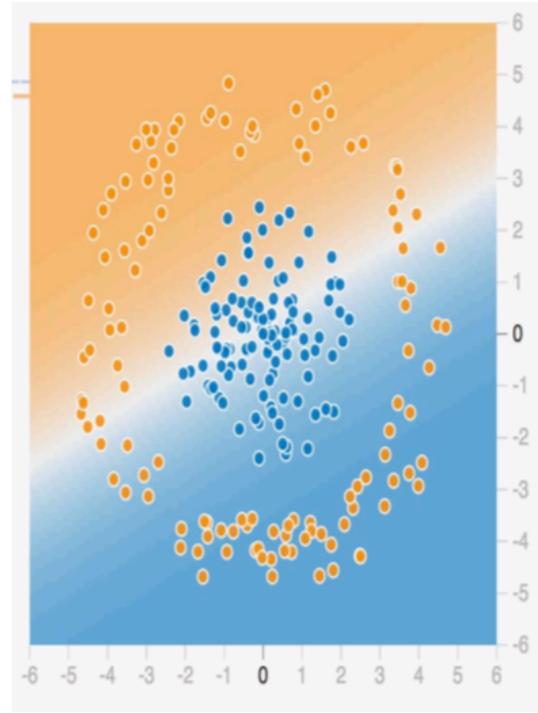
## GMAIL USE CASE |

The output of the model might be the probability that the email is spam

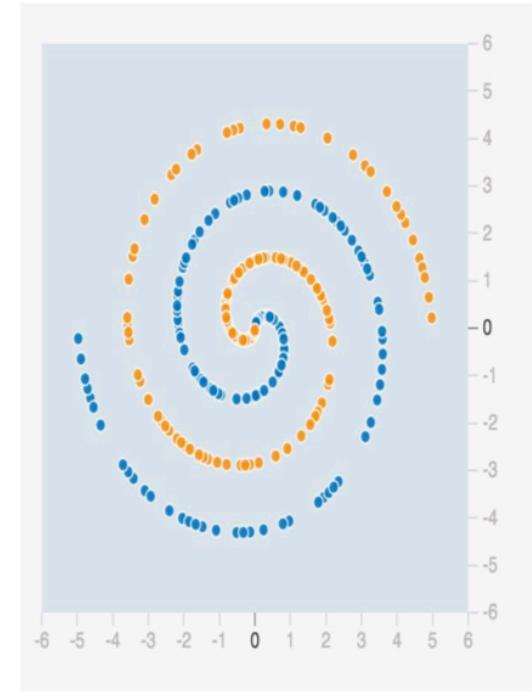




Use Case 1



Use Case 2

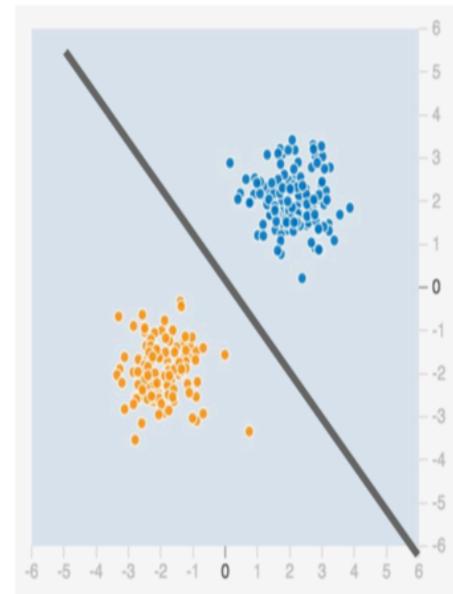


Use Case 3

LIVE DEMO OF MODEL TRAINING  
(3MINS)

# HOW ACTUALLY IT WORKS BEHIND

Graphically, that translates to: find a line that separates the two sets of points



$$w_1x_1 + w_2x_2 > b$$

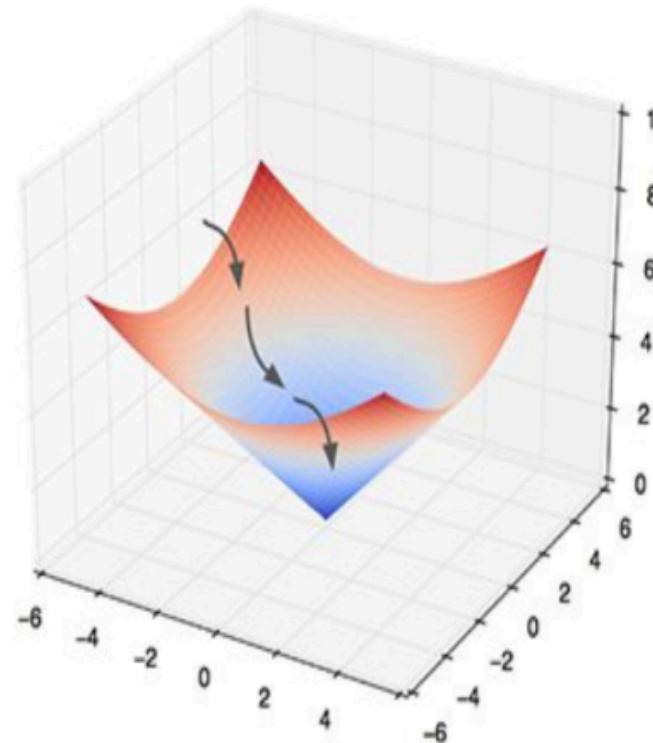
bias  
(threshold)

weights

# HOW TRANSFORMATION HAPPENS

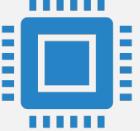
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Gradient descent is used to find the best parameters



-5	-4	-3	-2	-1	0	1	2
5	50	41	34	29	26	25	26
4	41	32	25	20	17	16	17
3	34	25	18	13	10	9	10
2	29	20	13	8	5	4	5
1	26	17	10	5	2	1	2
0	25	16	9	1	0	1	4
-1	26	17	10	5	2	1	2
-2	29	20	13	8	5	4	5
-3	34	25	18	13	10	9	10
-4	41	32	25	20	17	16	17
-5	50	41	34	29	26	25	26

# MORE ML API'S



Natural Language Processing  
API's [Translate].



Dialogue Flow API's [ for  
example: Hey Google, Siri,  
Alexa].



Vision API's [to detect image  
content]

QUESTIONS ??

