




# Machine Learning & Deep Learning (Barcha uchun)

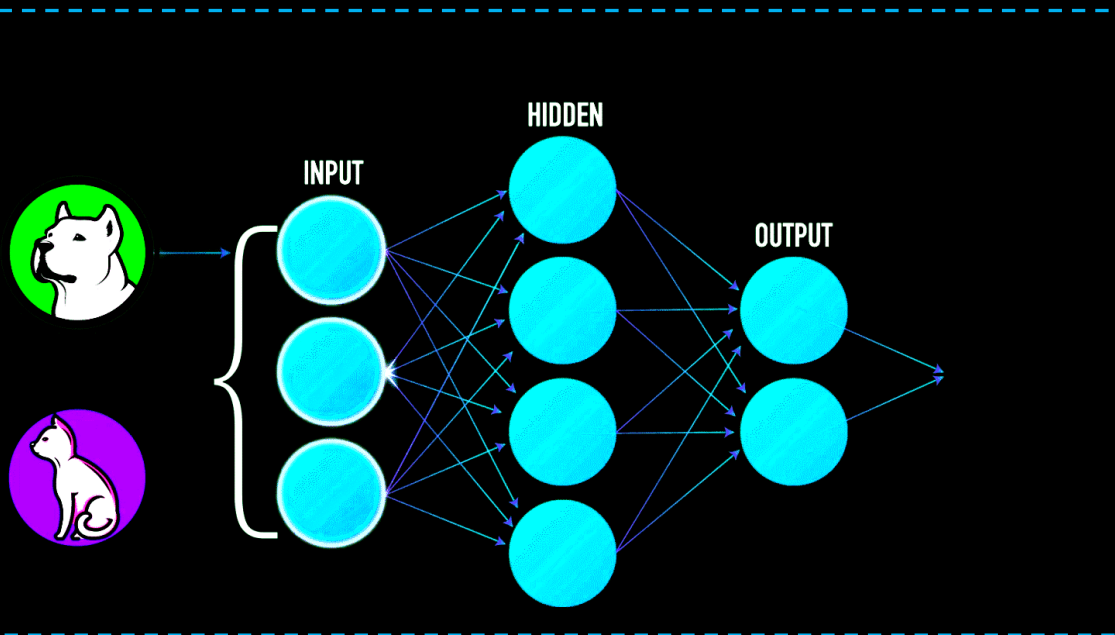
## 1-dars: Kirish

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# Maqsad (Goals)

- ❖ Machine Learning/Deep learning haqida boshlang'ich tushuncha;
- ❖ PyTorch kutubxonasini qo'llash qobilyatini shakllantirish.
- ❖ Kimlar uchun:
  - ❖ I stalgan inson o'rgana oladi.
    - ❖ Elementar Algebra + Ehtimollar nazariyasi
    - ❖ Boshlang'ich python



# Machine Learning nima (What is ML)?



# Inson Intellekti nima (What is HI)?

Tushlikka nima yesam ekana?



Ma'lumot  
(Information)



Qaror  
(Decision)

# Inson Intellekti nima (What is HI)?

Nima kiysam ekana?



Ma'lumot  
(Information)



Qaror  
(Decision)

# Inson Intellekti nima (What is HI)?

Bu rasmdagi nima?



Rasmi  
ma'lumot  
(Information)



*Mushuk (Cat)*

Bashorat  
(Prediction)

# Inson Intellekti nima (What is HI)?

Bu raqam nechchi?



Rasmi  
ma'lumot  
(Information)



4

Bashorat  
(Prediction)

# Inson Intellekti nima (What is HI)?

Agar 1 kunda 4 soat o'qisam nechchi baho olaman?





# Machine Learning nima (What is ML)?

Nima kiyish kerak?



# Machine Learning nima (What is ML)?

Bu rasmdagi nima?



Rasmi  
ma'lumot  
(Information)



*Mushuk (Cat)*

Bashorat  
(Prediction)

# Machine Learning nima (What is ML)?

Bu raqam nechchi?



Rasmi  
ma'lumot  
(Information)

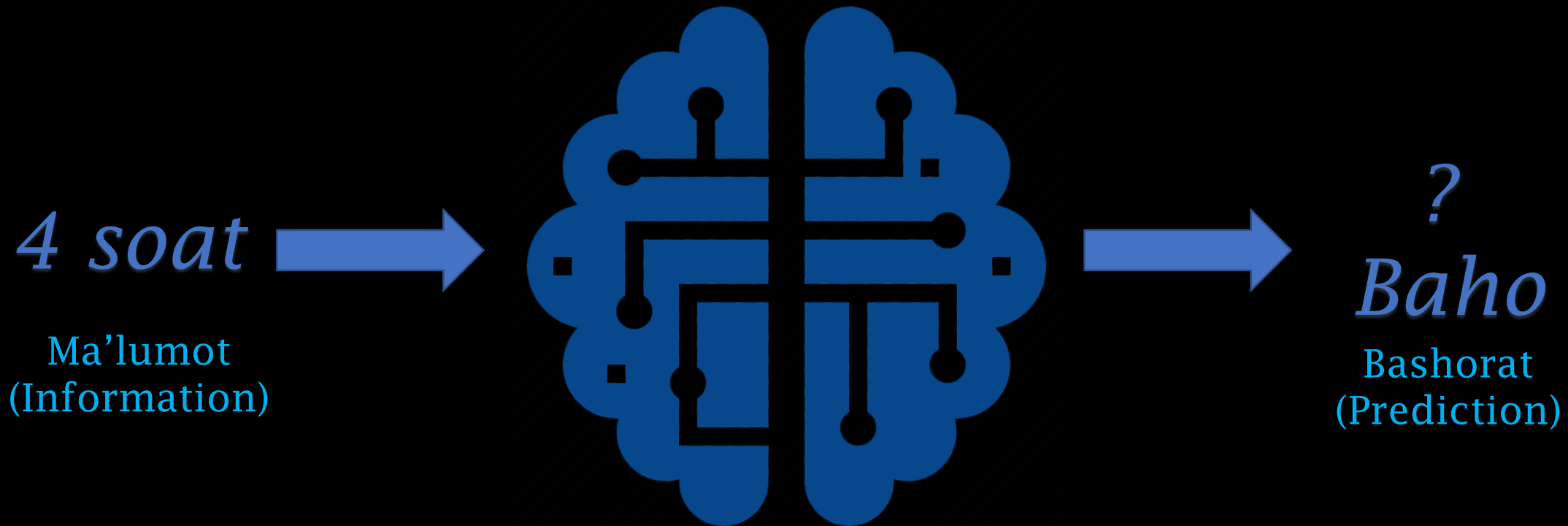


4

Bashorat  
(Prediction)

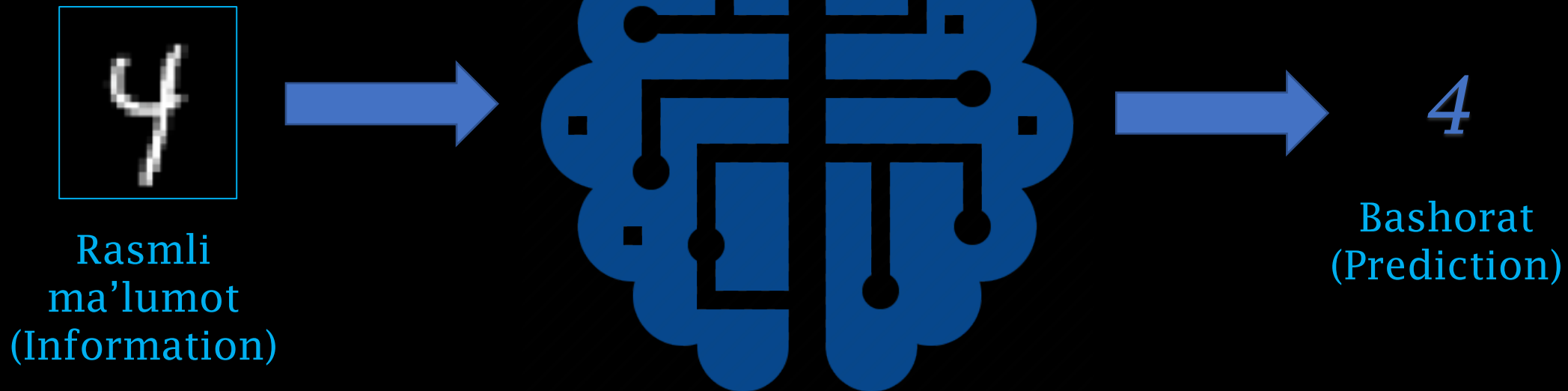
# Machine Learning nima (What is ML)?

Agar 1 kunda 4 soat o'qisam nechchi baho olaman?



# Machine Learning nima (What is ML)?

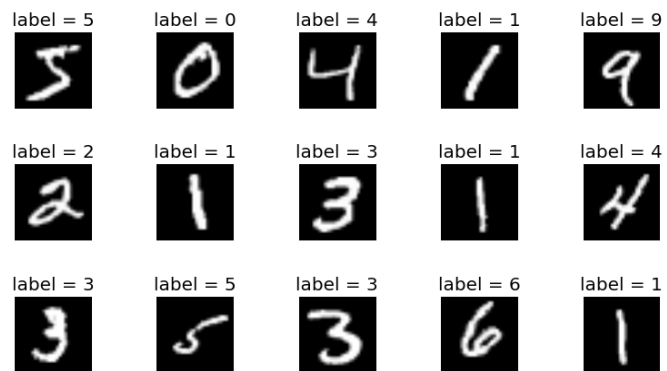
Mashina ko'p ma'lumot talab etadi.



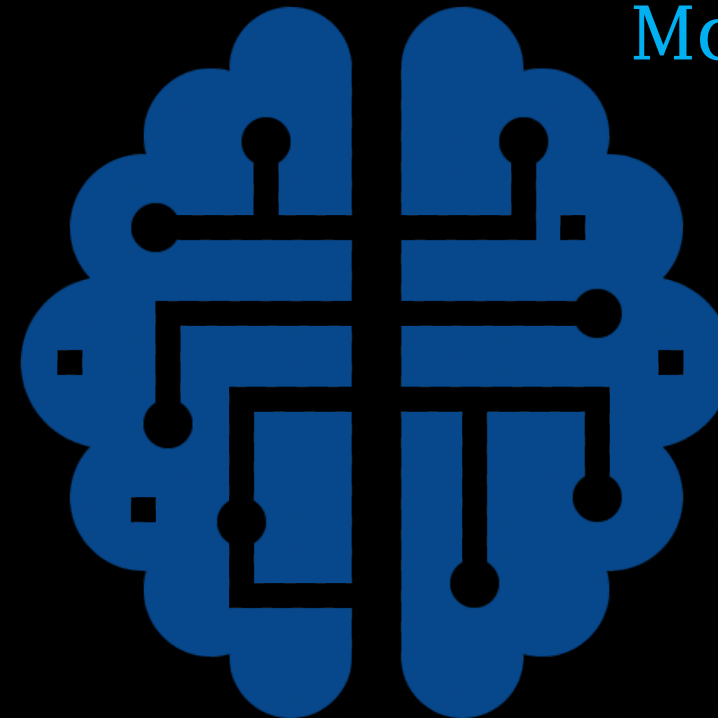
# Machine Learning nima (What is ML)?

Mashina ko'p ma'lumot talab etadi.

Model



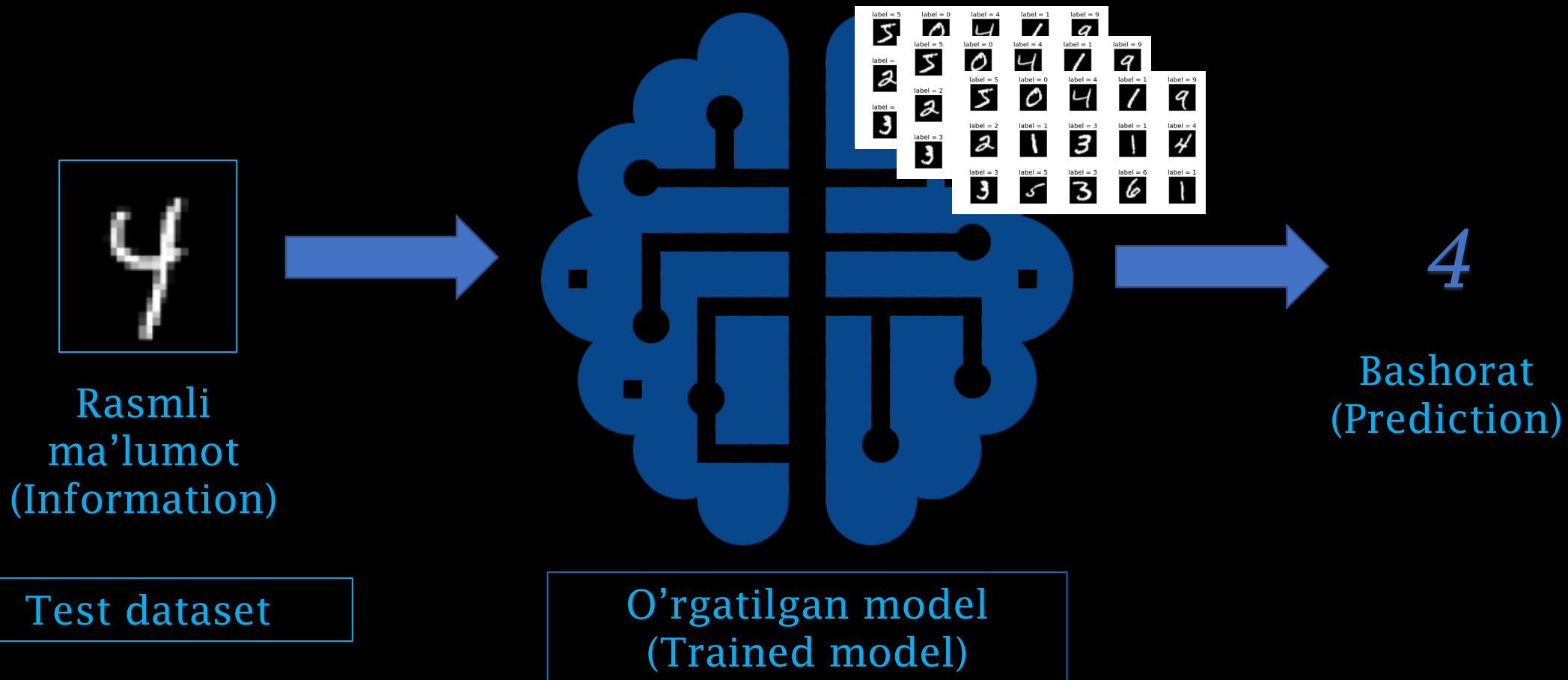
O'rgatish  
(Training)



Belgilangan  
ma'lumotlar  
to'plami(Labeled  
dataset)

# Machine Learning nima (What is ML)?

Mashina ko'p ma'lumot talab etadi.



# Machine Learning nima (What is ML)?

Agar 1 kunda 4 soat o'qisam nechchi baho olaman?

*4 soat*



?  
*Baho*  
Bashorat  
(Prediction)

Ma'lumot  
(Information)

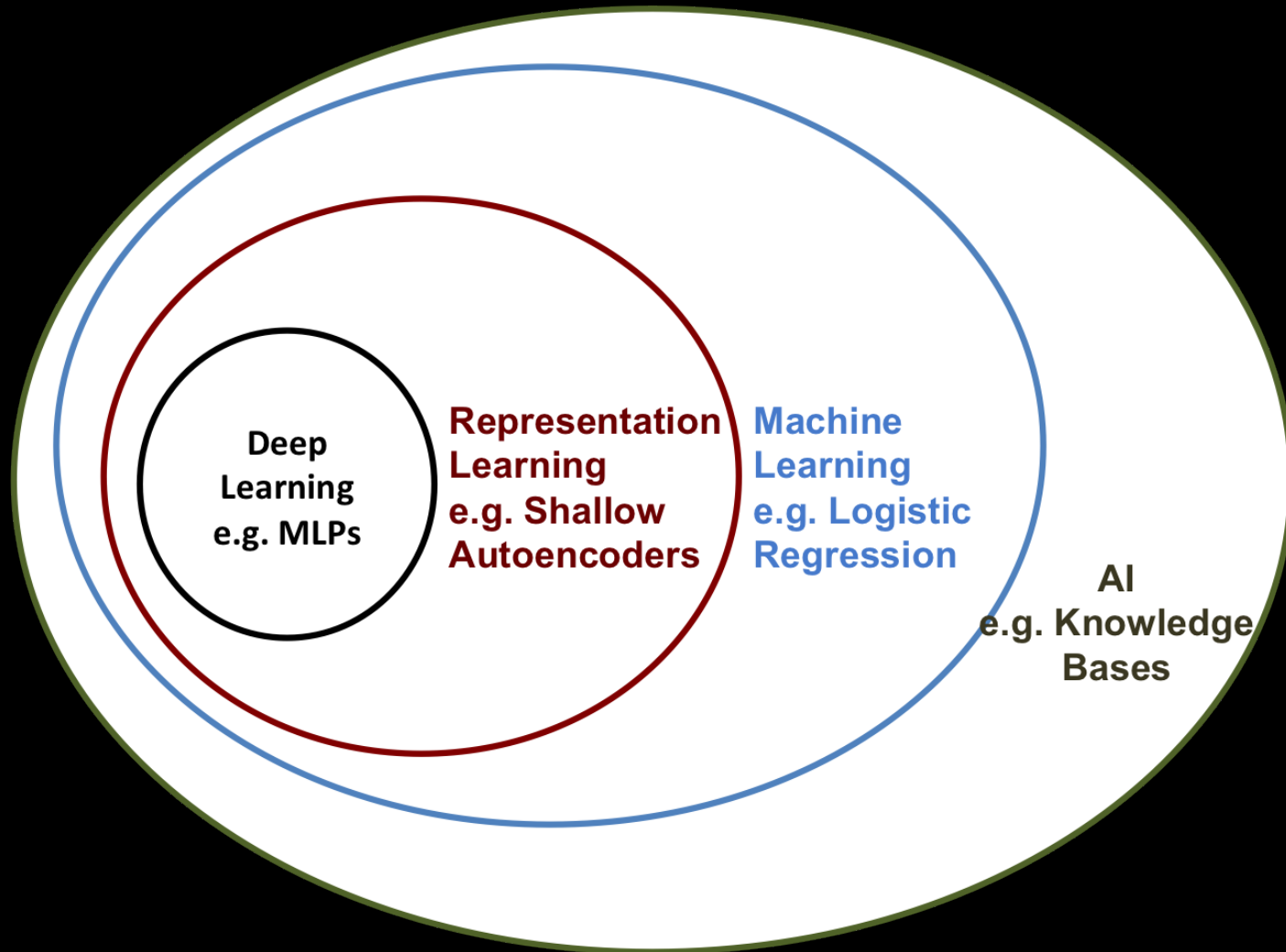
O'rgatish ma'lumotlar to'plami  
(Training dataset)

Test ma'lumotlar to'plami  
(Test dataset)

Soat (x)	Baho(y)
1	2
2	3
3	4
4	?



# Deep Learning



# AI in the News

Quiz show, 2011



Go game, 2016



Drug discovery, 2018. June  
~100 startup



Autonomous vehicle



What's around the corner Episode 2

## Prescription: Watson

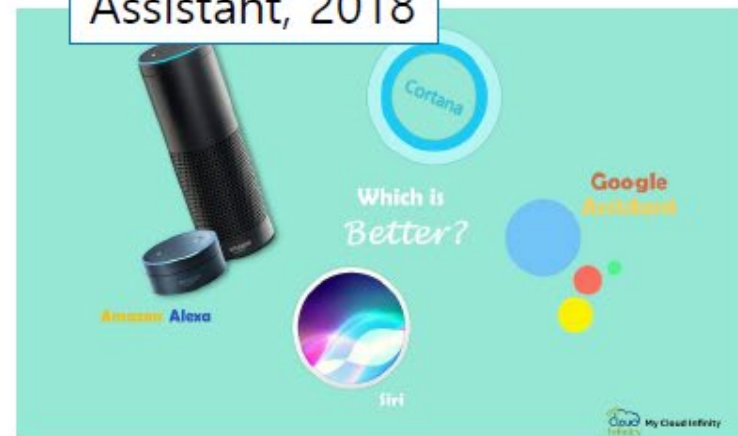
How healthcare can benefit from Watson's unique capabilities



Healthcare

Read this article at IBM Research

Assistant, 2018



[https://www.youtube.com/watch?v=\\_ADl\\_mjhxvgs](https://www.youtube.com/watch?v=_ADl_mjhxvgs)

# Sun'iy odam (Artificial Human)

SAMSUNG

NEON

ARTIFICIAL HUMAN



neon.life

Samsung NEON



# Nega AI ga biz qiziqayapmiz?



Q: What color is court? A: Blue

Visual Question Answering

Answering Questions Based On Images



Generating New Words

Word Generator Using RNNs



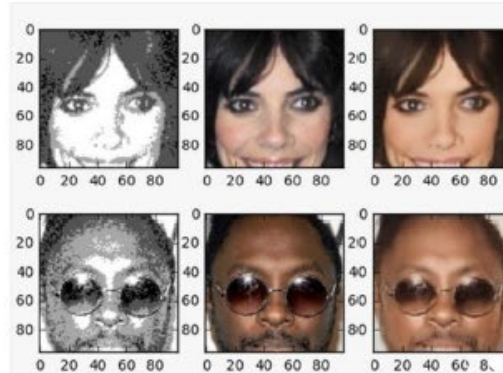
Artistic Style Transfer

Applying The Style Of An Artwork To A Photo



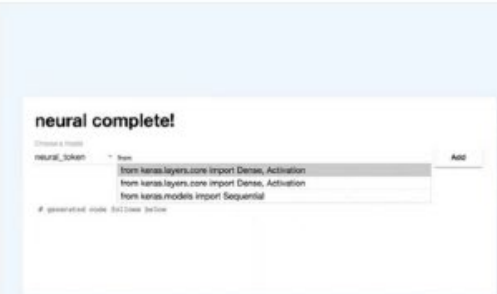
Predicting Cardiac Abnormalities

Using Phonocardiogram (PCG) Data



Creating Photorealistic Images

Improving Images From A Gameboy Camera

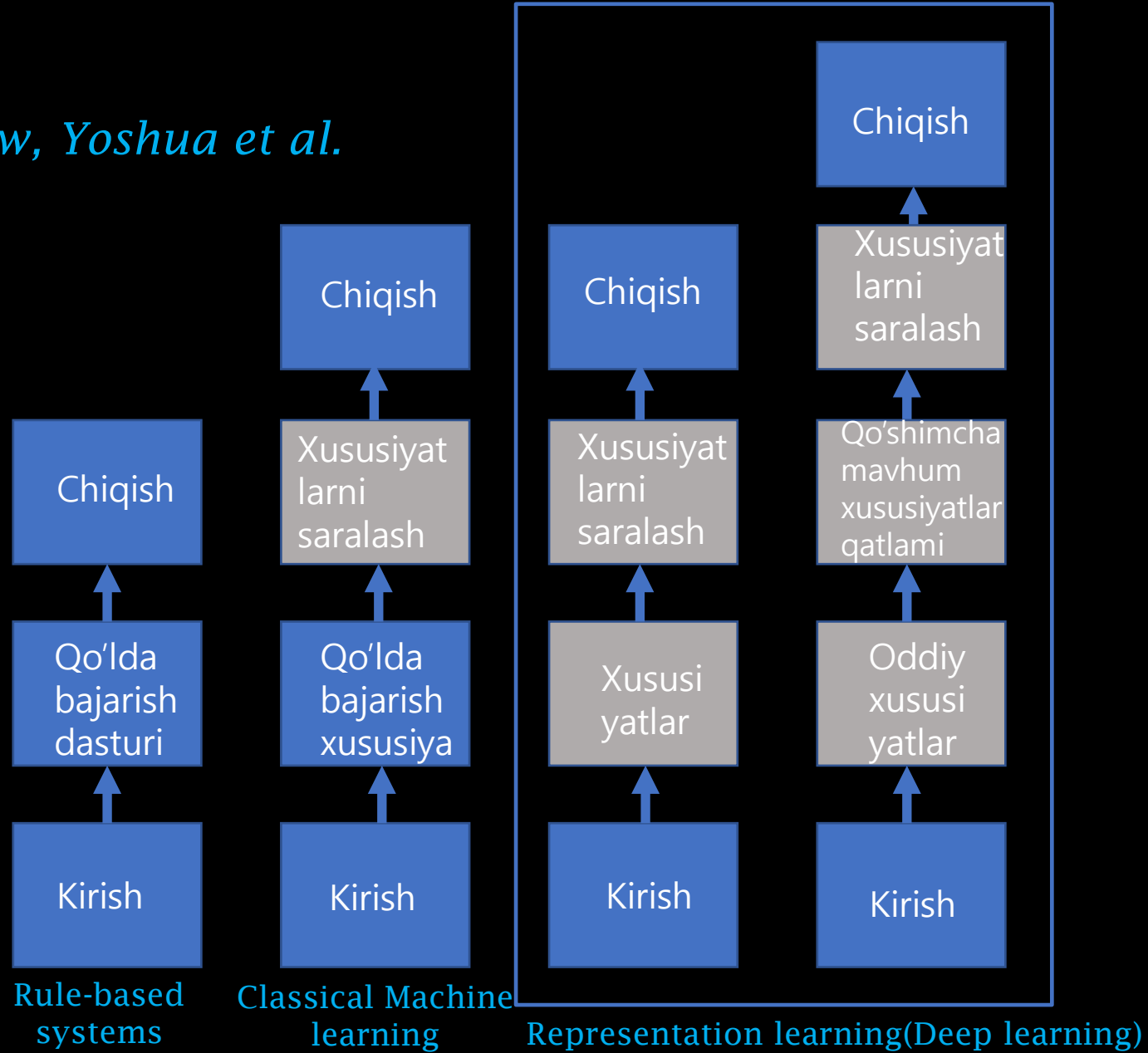


Code Autocompletion

NN That Autocompletes NN Code

# Nega biz dasturchi sifatida qiziqyapmiz?

Deep Learning *by Ian Goodfellow, Yoshua et al.*



# Yaxshi yangilik!!!

- ✓ Deep Learning juda ham qiyin emas(hozirgacha)
  - ✓ Avval aytganimizdek agarda elementar algebra + eht.naz+Pyhton
  - ✓ Bir yildan kam vaqt.
- ✓ Juda ham ko'p framework larni mavjudligi
- ✓ Chegaralanmagan o'quv materiallar
- ✓ Hammasidanam ko'ra bu juda qiziqarli topik.



TensorFlow



PyTorch





Ushbu darsliklarning barchasi PyTorch kutubxonasi orqali olib boriladi.

Nega PyTorch?

- Pythonic(Python tiliga moslashgan)
- Kodlar ketma-ketligi tartibliroq
- Nisbatan keng ko'lamli(more flexible)
- Neyronlar uchun juda qulay:
  - Ketma-ketlik qanday bolsa shunday yozilishi
  - To'g'ri va teskari (hisoblash) forward-backward propagation.

# Topiklar:

- ◆ Chiziqli(Linear), Logik(logistic), softmax modellar
  - ◆ DNN: Deep Neural Network
  - ◆ CNN: Convolutional Neural Network
  - ◆ RNN: Recurrent Neural Network
- 
- ◆ Barchasi PyTorch da yoziladi...



# Vazifa-1:

◆ PyTorch kutubxonasani o'rnatish.



[www.uzbek-ai.gitbook.io](http://www.uzbek-ai.gitbook.io)