The background of the image is a dark blue color with a subtle, glowing network of interconnected lines and dots. The lines form a grid-like structure that curves across the frame. Interspersed among these lines are numerous small, glowing spheres in shades of blue, green, and yellow. Some of these glowing nodes are more prominent, appearing as bright highlights against the darker background. The overall effect is one of a complex, dynamic system or a futuristic digital landscape.

DEEP LEARNING НА ПАЛЬЦАХ

1 -

Всегда:

# Что нужно знать

Чуть-чуть



python™

```
my_string = "Hello, World!"  
print(my_string)
```

Чуть-чуть  
линейной алгебры

$$\begin{bmatrix} 2 & -3 \\ 5 & 4 \end{bmatrix} -$$

Чуть-чуть  
матанализа

Например, градиент функции  
 $\varphi(x, y, z) = 2x + 3y^2 - \sin z$  будет  
представлять собой:

$$\nabla \varphi = \left( \frac{\partial \varphi}{\partial x}, \frac{\partial \varphi}{\partial y}, \frac{\partial \varphi}{\partial z} \right) = (2, 6y, -\cos z).$$

Если не – [сюда](#).



Семен Козлов

НГУ, выпуск 2005, ФФ  
Сейчас – [Instrumental](#)  
Раньше – Dropbox, Microsoft, Softlab-Nsk,  
еще всякое



Юрий Бабуров  
Павел Петроченко  
Александр Гончаренко



Максим Вахрушев  
Кирилл Бродт



## Definition of ARTIFICIAL INTELLIGENCE

- 1 : a branch of computer science dealing with the simulation of intelligent behavior in computers
- 2 : the capability of a machine to imitate intelligent human behavior

[Merriam-Webster](#)

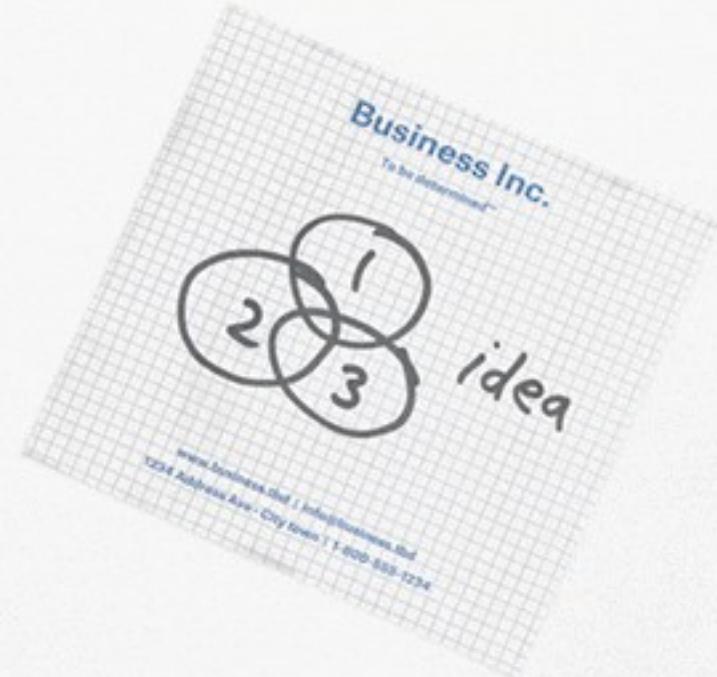
## AI Effect

**"Every time we figure c  
'Oh, that's just a compu  
of MIT's Artificial Intel  
means 'almost impleme**

[It's Alive!, Wired, 2002](#)

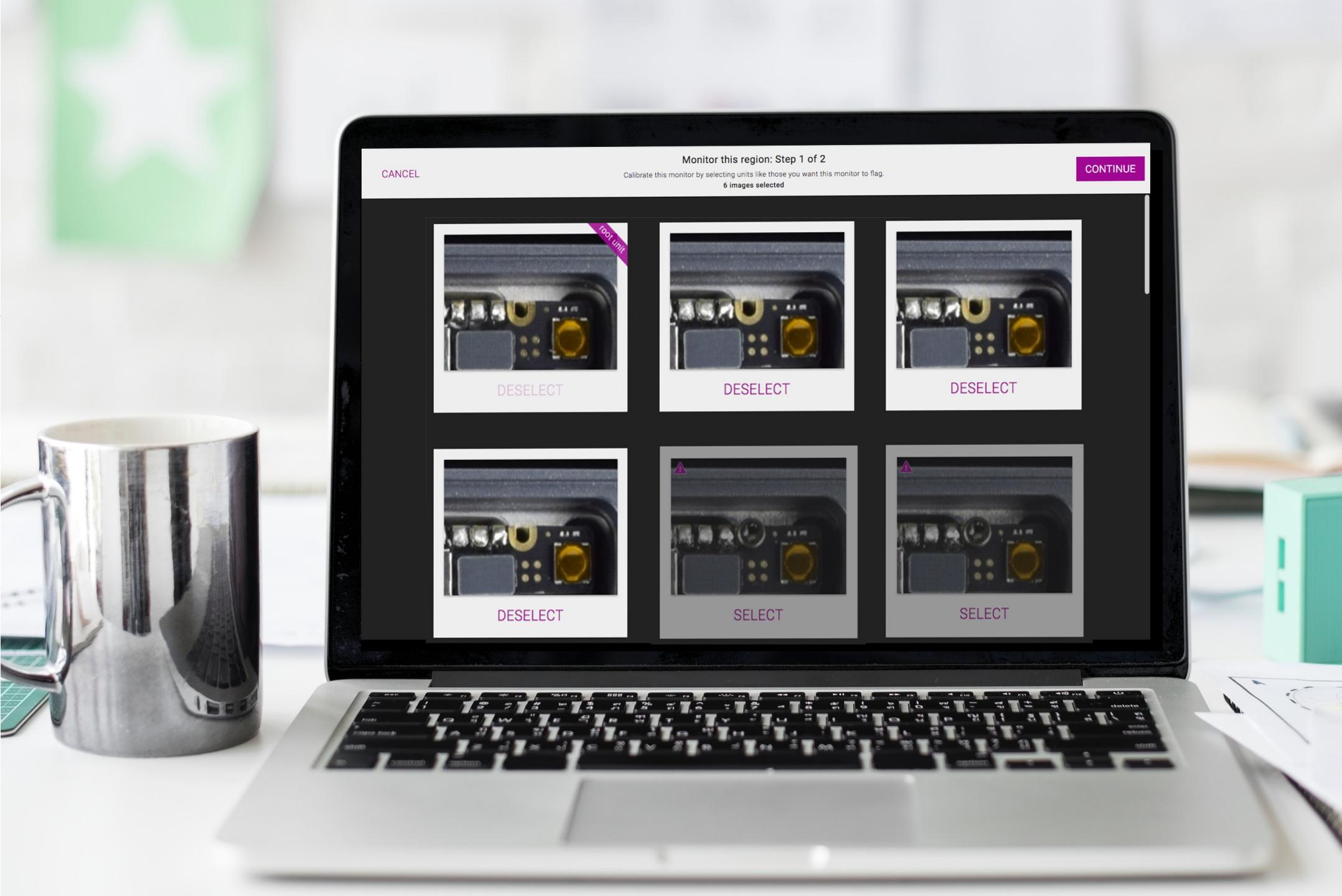






# Кошечки или собачки



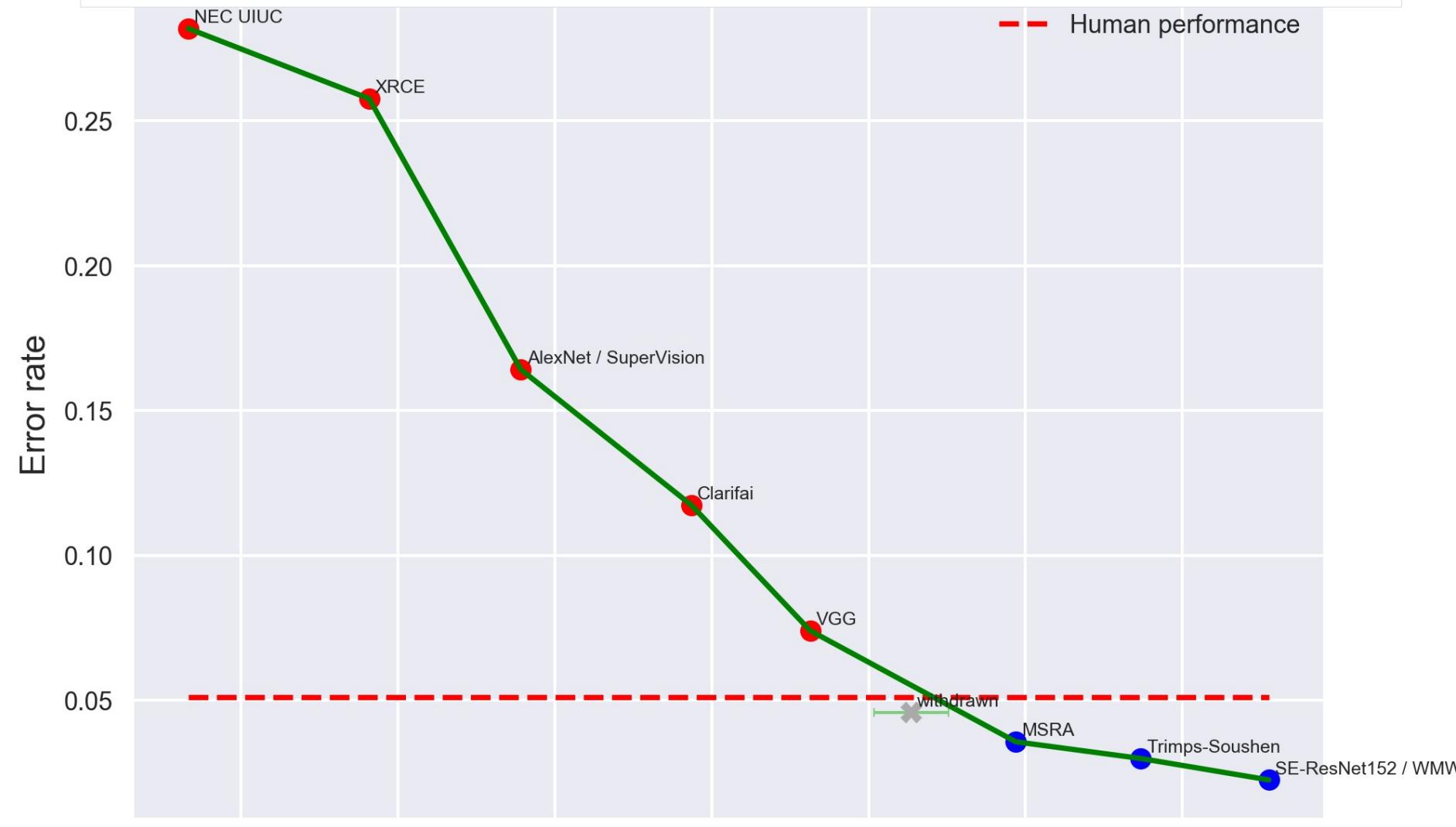


# IMAGENET



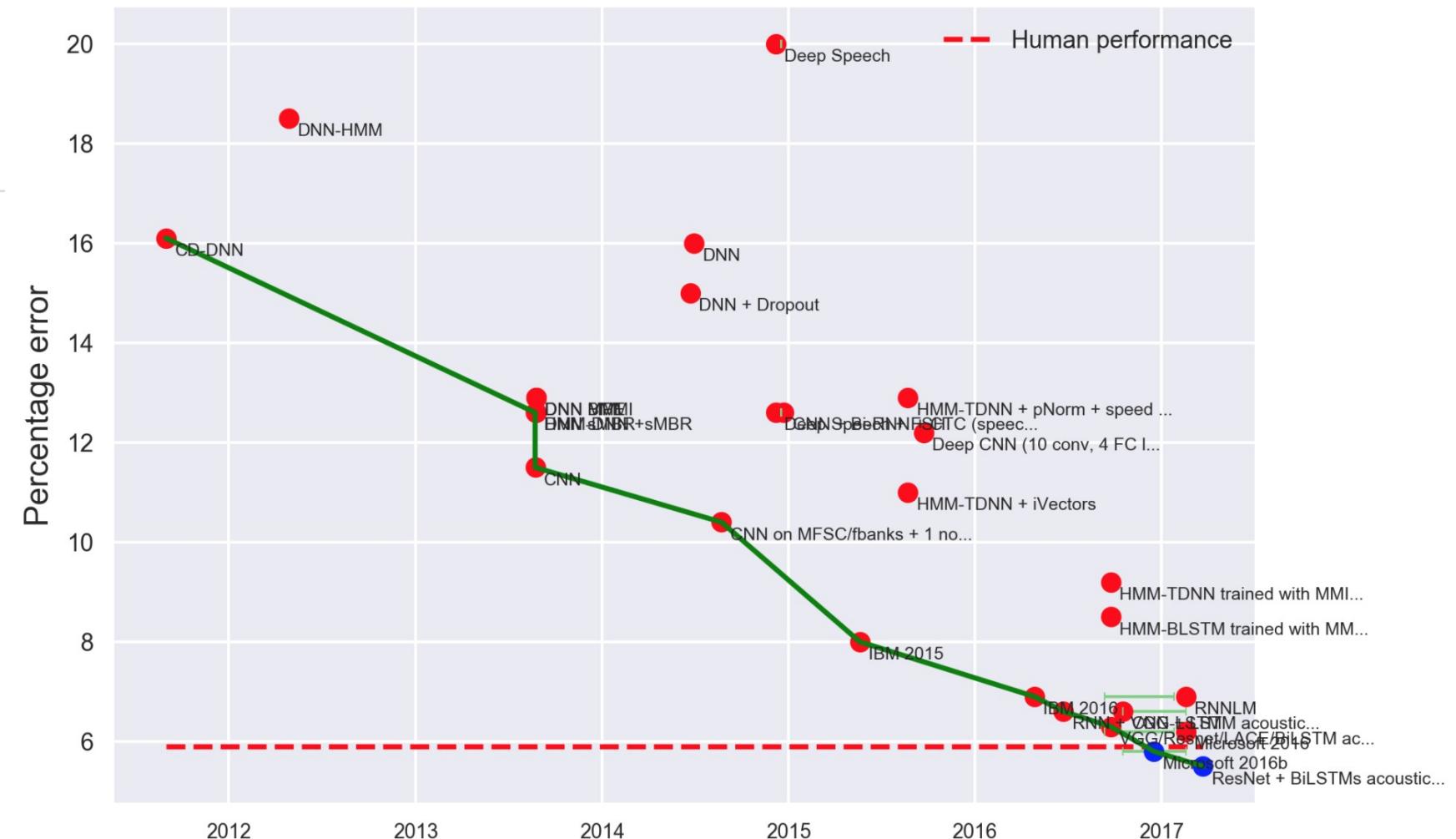
[Source](#)

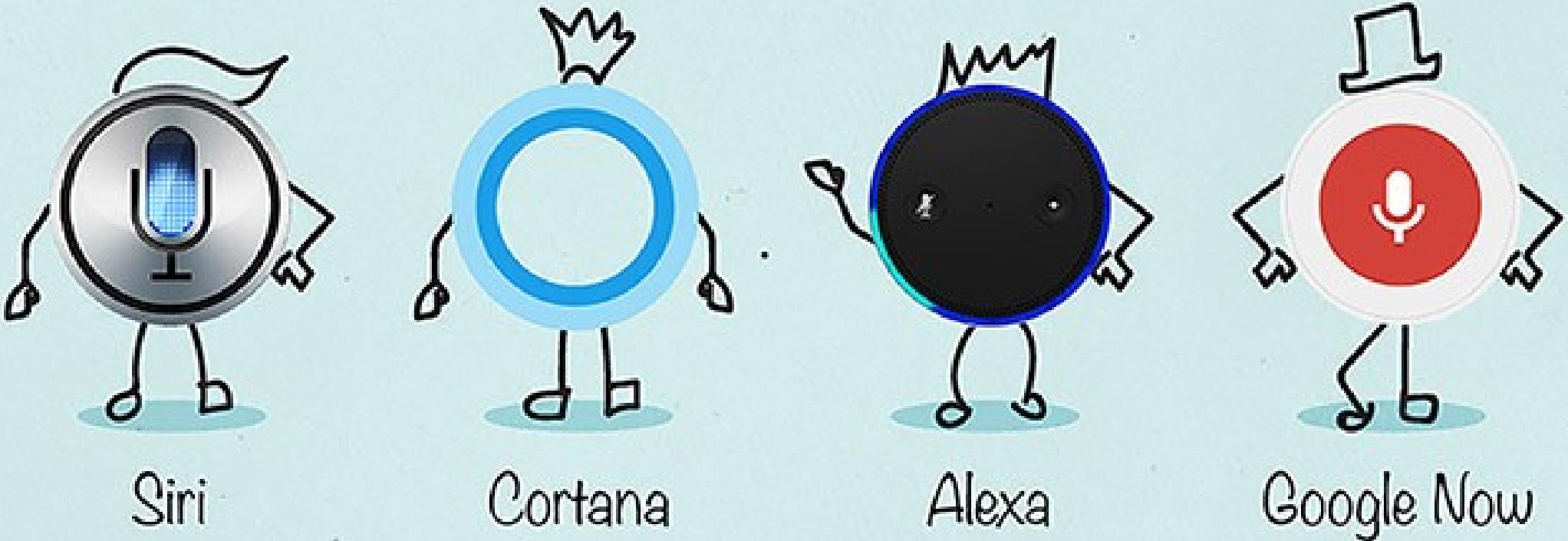
# Распознавание изображений



# Распознавание речи

## Word error rate on Switchboard trained against the Hub5'00 dataset





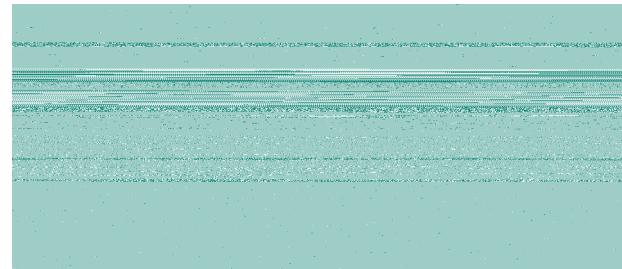
## Машинный перевод

Kilimanjaro is 19,710 feet of the mountain covered with snow, and it is said that the highest mountain in Africa. Top of the west, “Ngaje Ngai” in the Maasai language, has been referred to as the house of God. The top close to the west, there is a dry, frozen carcass of a leopard. Whether the leopard had what the demand at that altitude, there is no that nobody explained.

Kilimanjaro is a mountain of 19,710 feet covered with snow and is said to be the highest mountain in Africa. The summit of the west is called “Ngaje Ngai” in Masai, the house of God. Near the top of the west there is a dry and frozen dead body of leopard. No one has ever explained what leopard wanted at that altitude.

# Web search

Google



Yandex

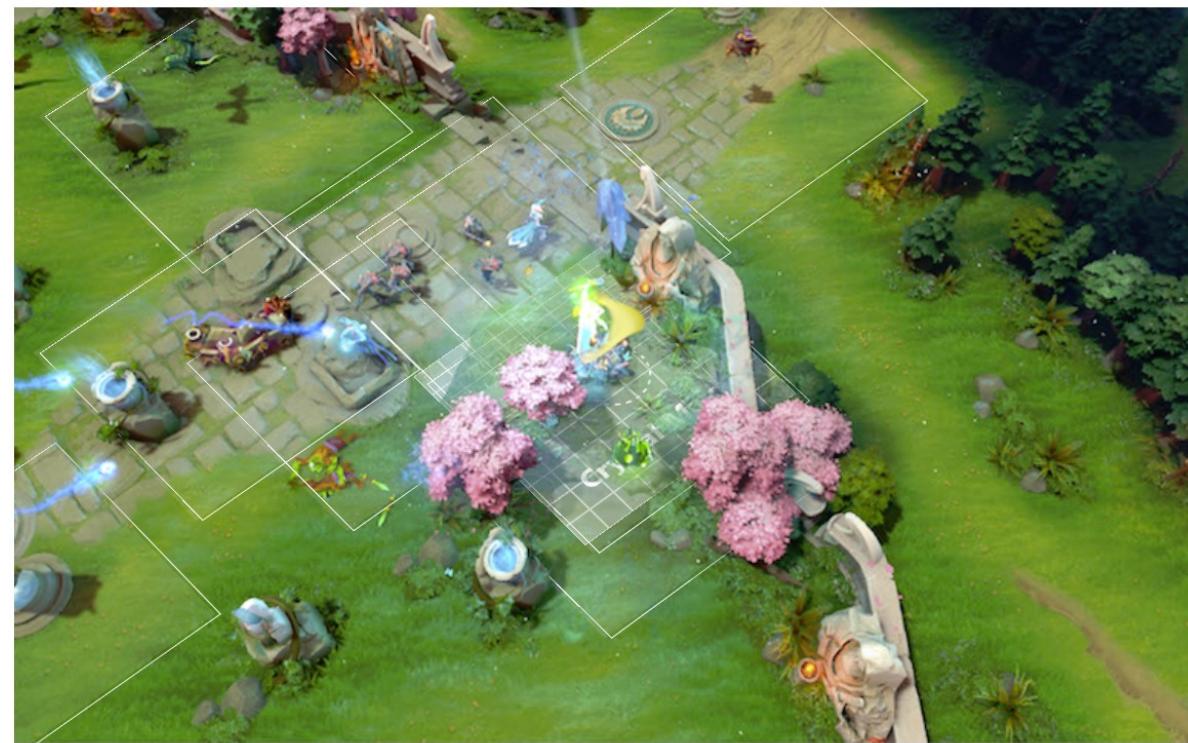
<https://m.habrahabr.ru/company/yandex/blog/336094/>

# Обучение с подкреплением

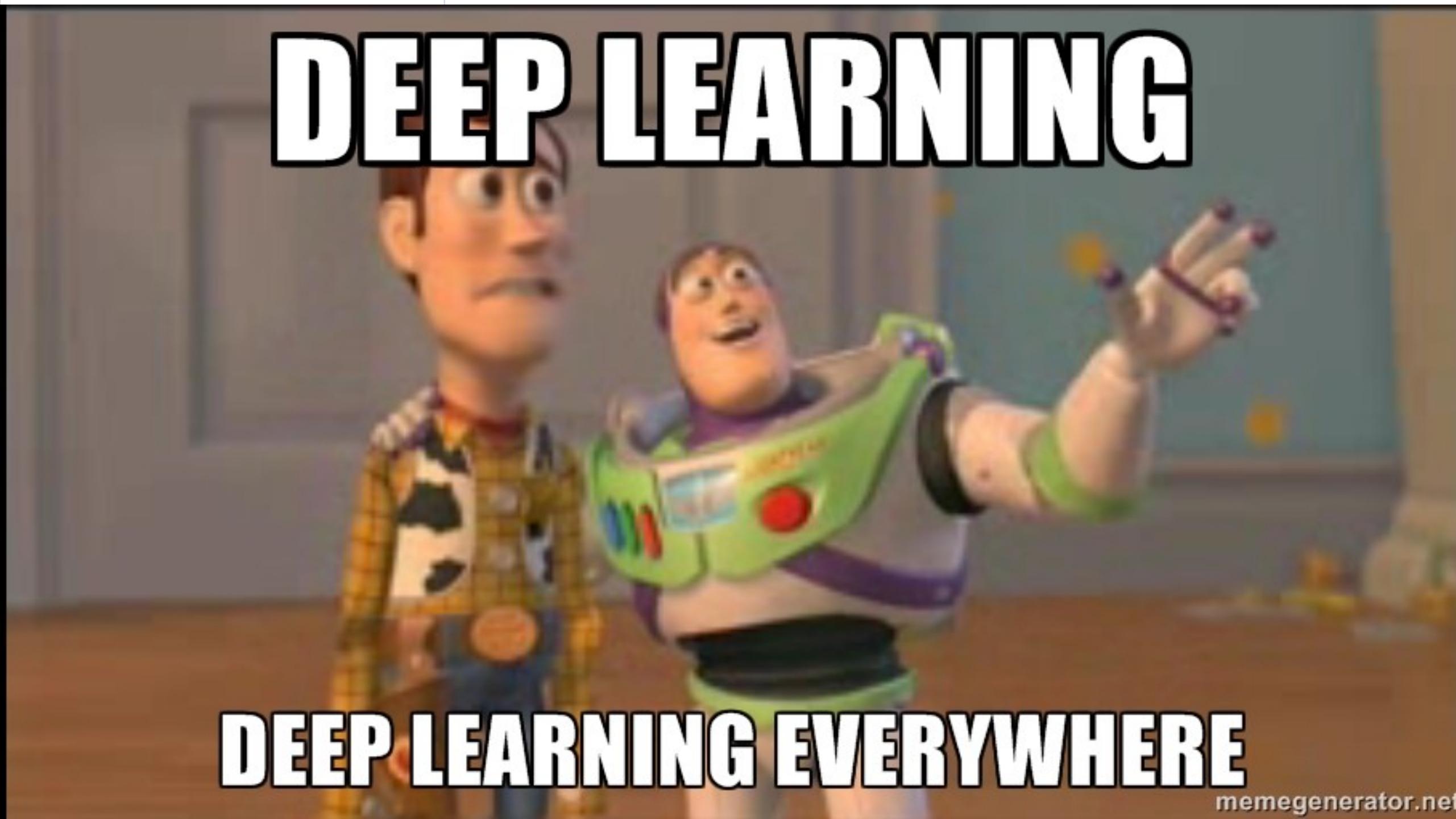


AlphaZero AI

# Ура, дожили!!!



# DEEP LEARNING



## DEEP LEARNING EVERYWHERE

# Машинное обучение

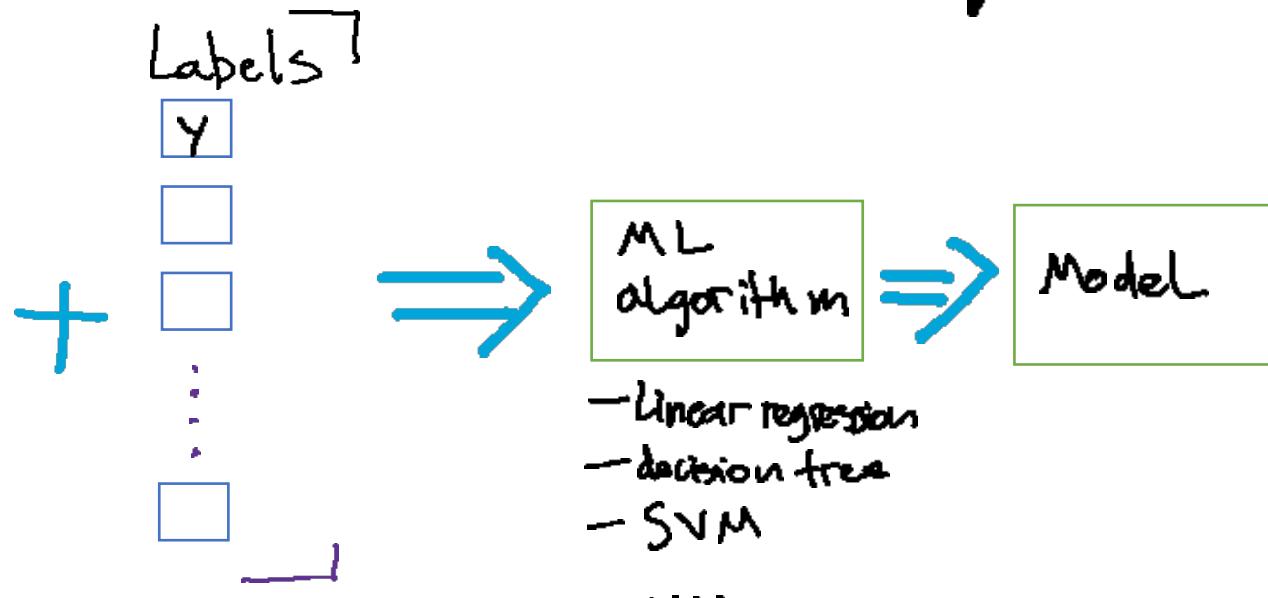
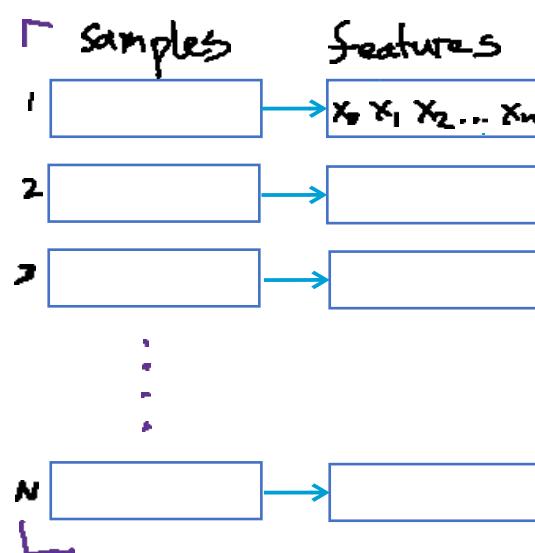
# Machine Learning

Machine learning is a field of computer science that gives computers the ability to learn without being explicitly programmed.<sup>[1]</sup>

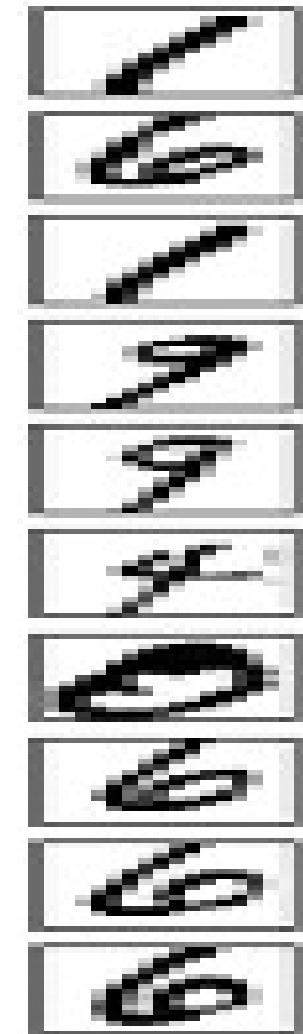
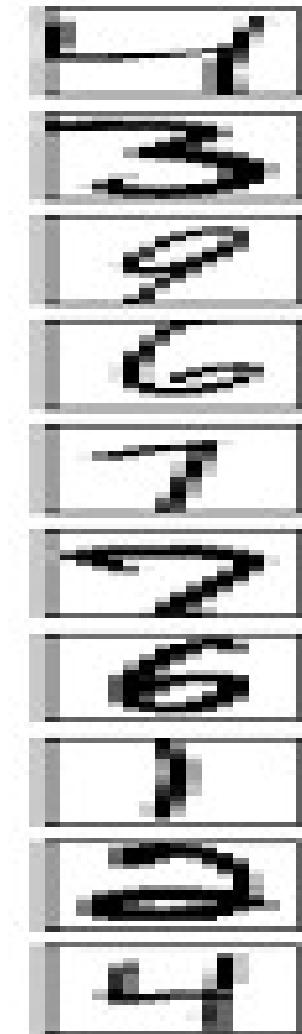
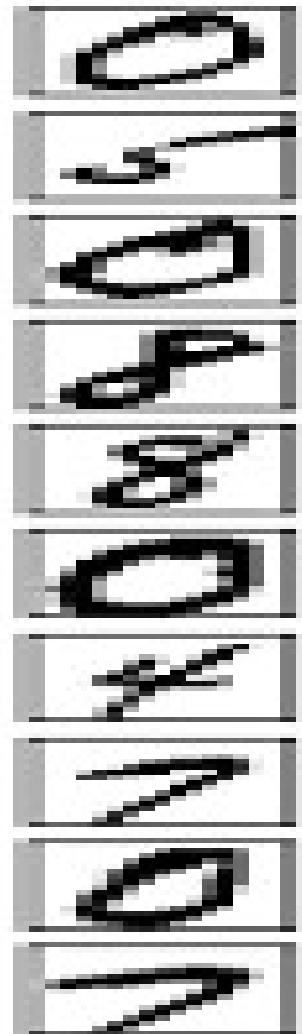
[Wikipedia](#)

## Supervised Learning

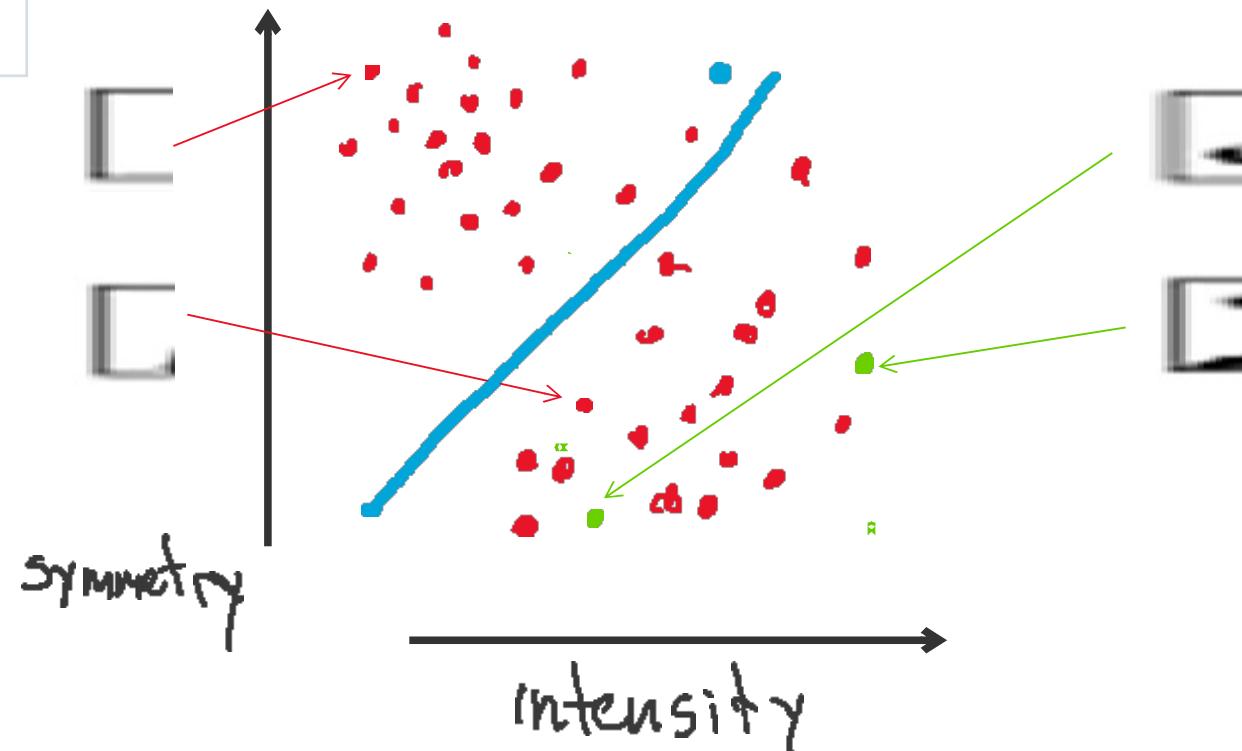
data



prediction

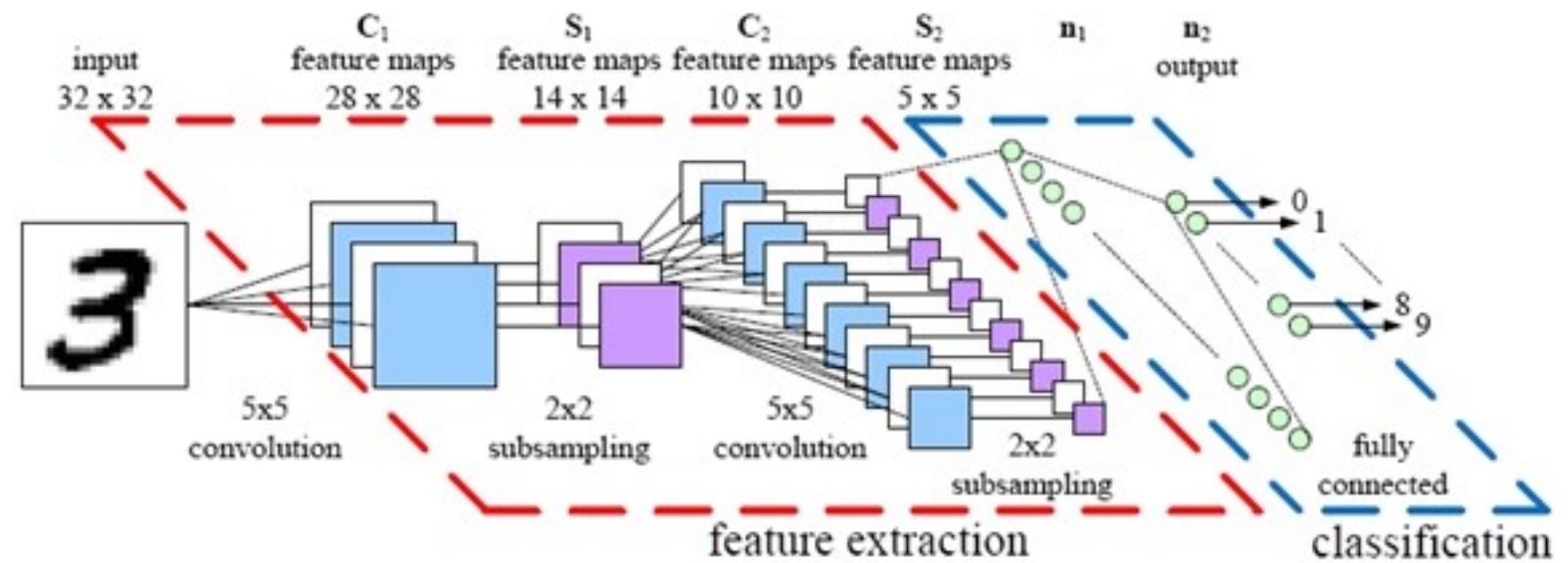


# Признаки Features



# Глубокое обучение

## Deep Learning



MASSACI

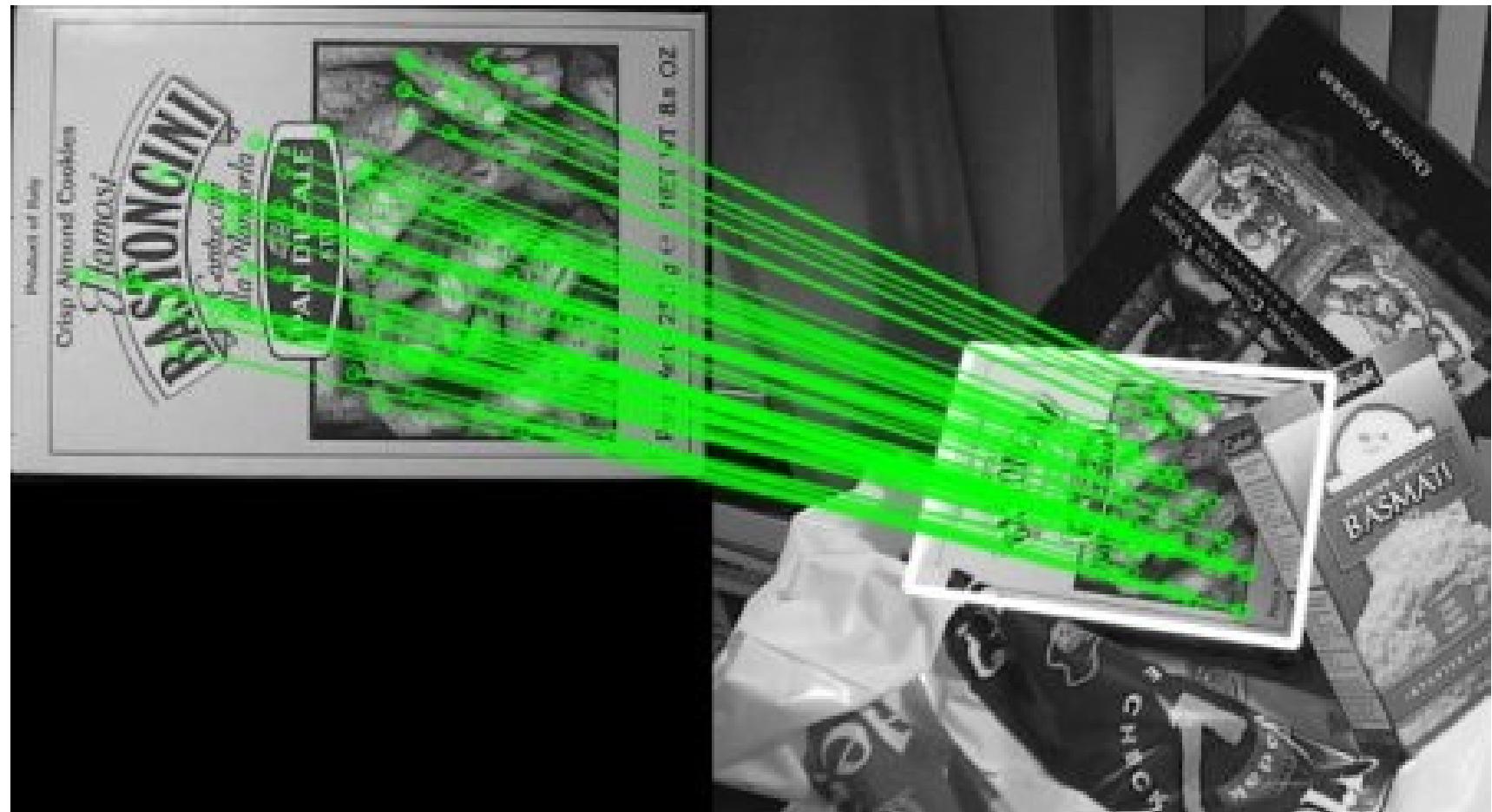
Artificial Intelligence  
Vision Memo. No. 100.

The summer vision effectively in the cons. The particular task was sub-problems which will participate in the cons. landmark in the develop-

# Computer vision features- SIFT

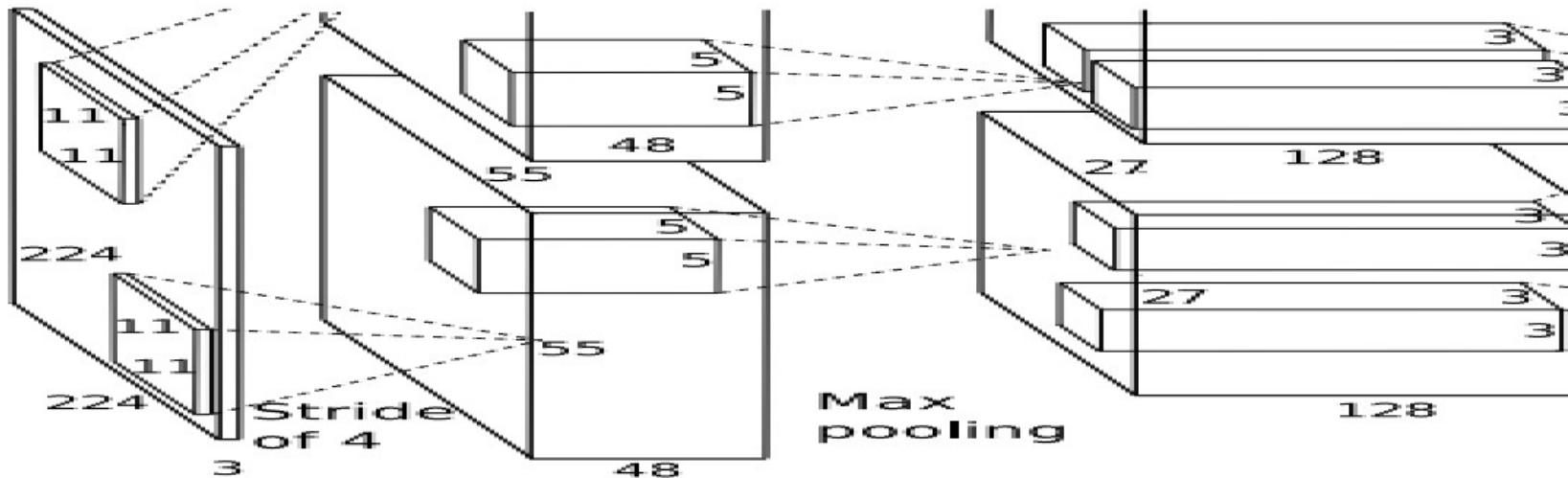


# Homography



# Convolutional Neural Networks

## AlexNet



В курсе мы дойдем где-то до состояния 2014-2015 года  
...и коротко посмотрим на текущее состояние

## О курсе

Компьютерное зрение

Computer vision

Обработка речи и естественного  
языка

Natural Language Processing (NLP), Speech Recognition

Обучение с подкреплением

Reinforcement learning

# Что будет в курсе

В классе

Контрольная работа

Доклад о современной научной работе на выбор

Курсовой проект – основной вклад в оценку!

Онлайн

6 заданий на Python

Пока не придумали

Рекомендуем написать пост про какой-то пейпер!

Рекомендуем поучаствовать в Kaggle

# Другие ресурсы- онлайн-курсы

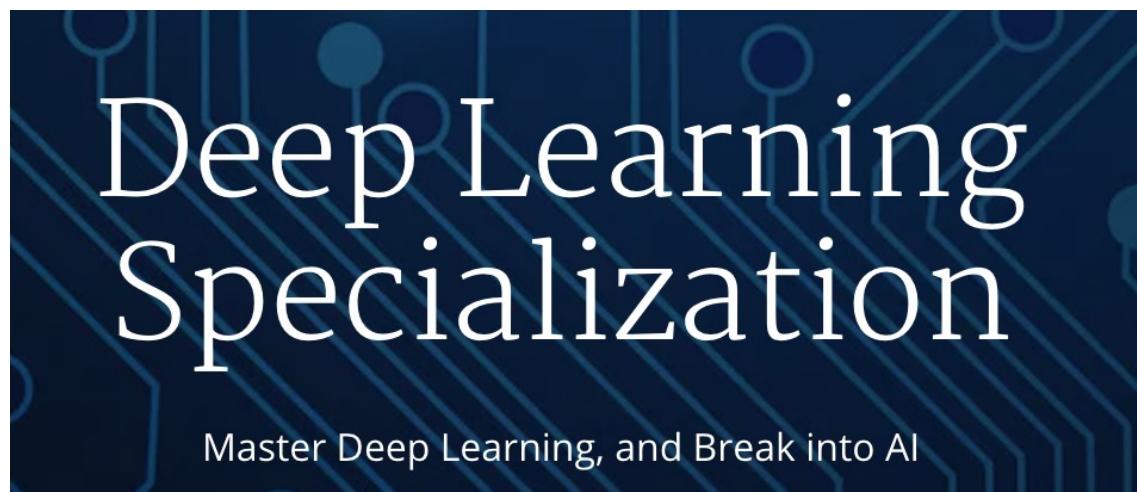
CS231n: Convolutional Neural Networks for Visual Recognition

2016

[cs231n.stanford.edu](https://cs231n.stanford.edu)

CS224d: Deep Lea

[cs231n.stanford.edu](https://cs231n.stanford.edu)

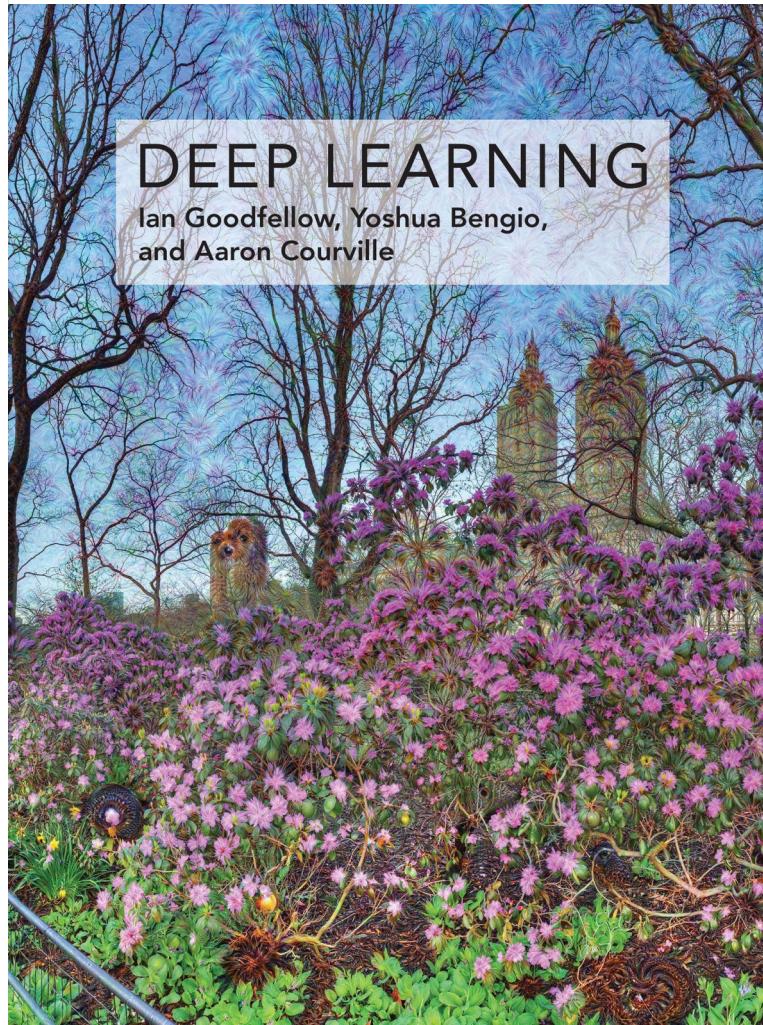


[Coursera](#)

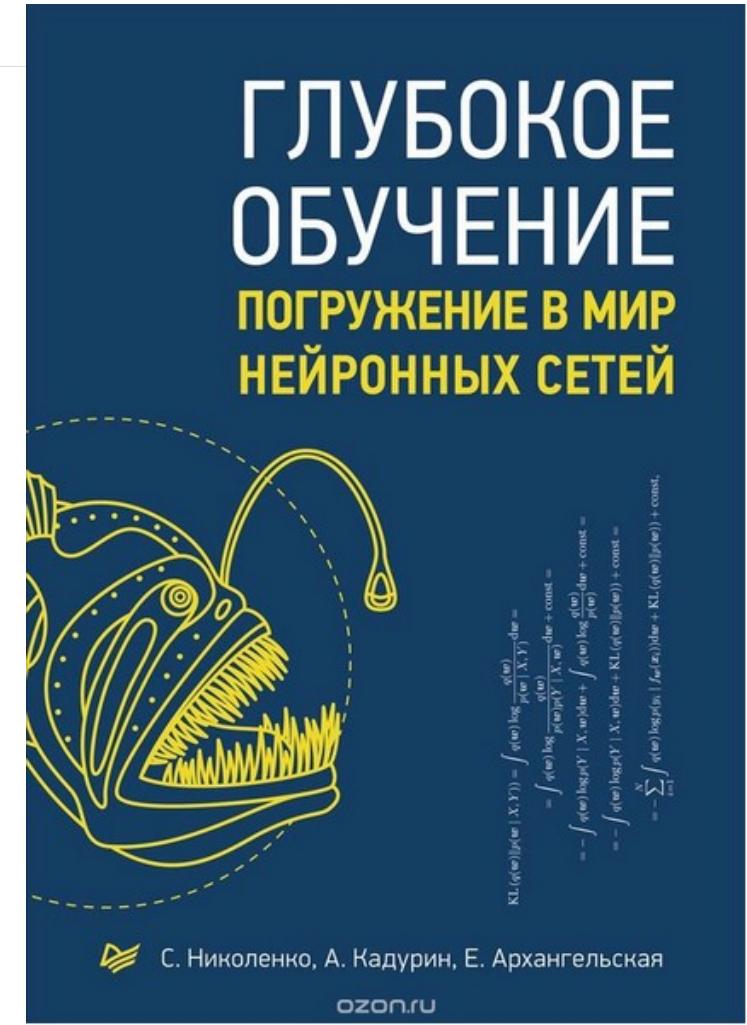


[fast.ai](#)

# Другие ресурсы- книги



[deeplearningbook.org](http://deeplearningbook.org)



[ozon.ru](http://ozon.ru)

$$\begin{aligned} \text{KL}(q(\mathbf{w})||p(\mathbf{w}|\mathbf{X}, \mathbf{Y})) &= \int q(\mathbf{w}) \log \frac{q(\mathbf{w})}{p(\mathbf{w}|\mathbf{X}, \mathbf{Y})} d\mathbf{w} = \\ &= \int q(\mathbf{w}) \log \frac{q(\mathbf{w})}{p(\mathbf{w})} d\mathbf{w} + \text{const} = \\ &= \int q(\mathbf{w}) \log p(\mathbf{Y}|\mathbf{X}, \mathbf{w}) d\mathbf{w} + \int q(\mathbf{w}) \log \frac{q(\mathbf{w})}{p(\mathbf{w})} d\mathbf{w} + \text{const} = \\ &= - \int q(\mathbf{w}) \log p(\mathbf{Y}|\mathbf{X}, \mathbf{w}) d\mathbf{w} + \text{const} + \text{const} = \\ &= - \sum_{i=1}^N \int q(\mathbf{w}) \log p(y_i|\mathbf{x}_i) d\mathbf{w} + \text{const} + \text{const} = \end{aligned}$$

# А поговорить?



[Группа](#) в Telegram



[#dlcourse](#) на [ClosedCircles.com](#)



#dlcourse\_ai в [ODS.ai](#)