

НЕЙРОННЫЕ СЕТИ И ЧЕЛОВЕЧЕСКИЙ ЯЗЫК

КАКИМ ОБРАЗОМ SIRI НАС ПОНИМАЕТ? МОЖНО ЛИ НАУЧИТЬ КОМПЬЮТЕР ПИСАТЬ СТИХИ, КАК ПУШКИН? КАК РАБОТАЕТ GOOGLE TRANSLATE?

СЕРГЕЙ ЦИМБАЛИСТ

ОБО МНЕ

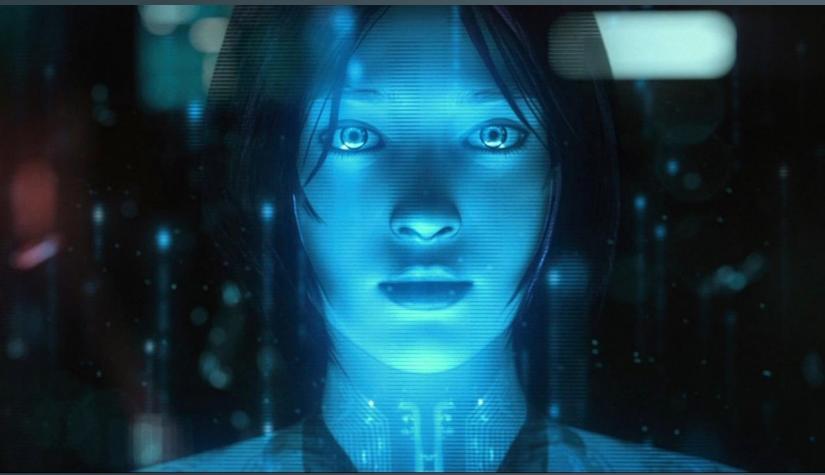


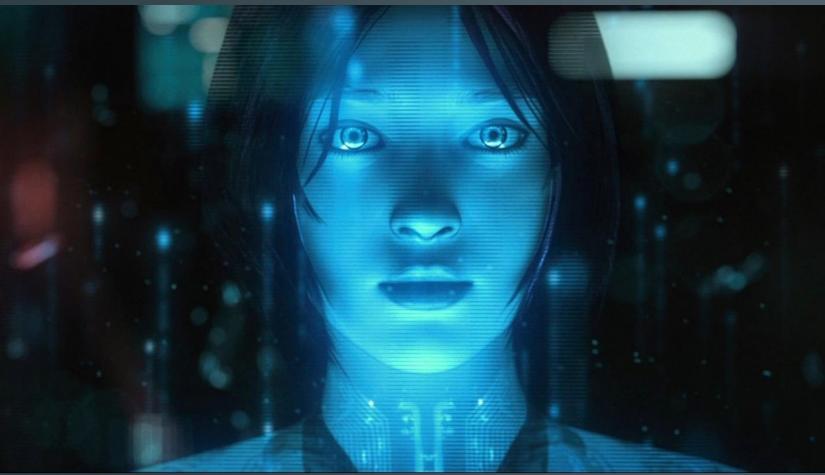
- Начинал как Developer @ Nortal
- С февраля Machine Learning Specialist @ Kodality
- Люблю книги, путешествия и катание на велосипеде

МОТИВАЦИЯ









Cortana (Halo)



EDI (Mass Effect)



JARVIS (Iron Man)

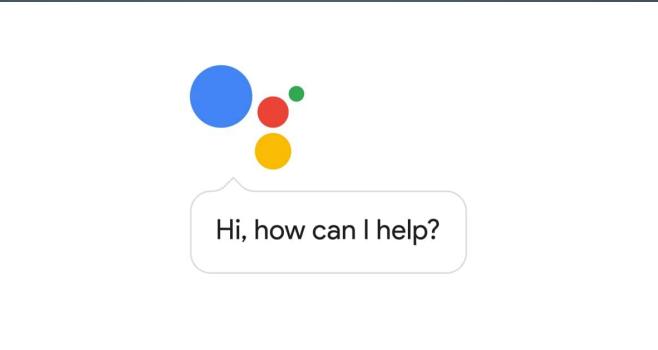




Cortana (Microsoft)



Alexa (amazon)



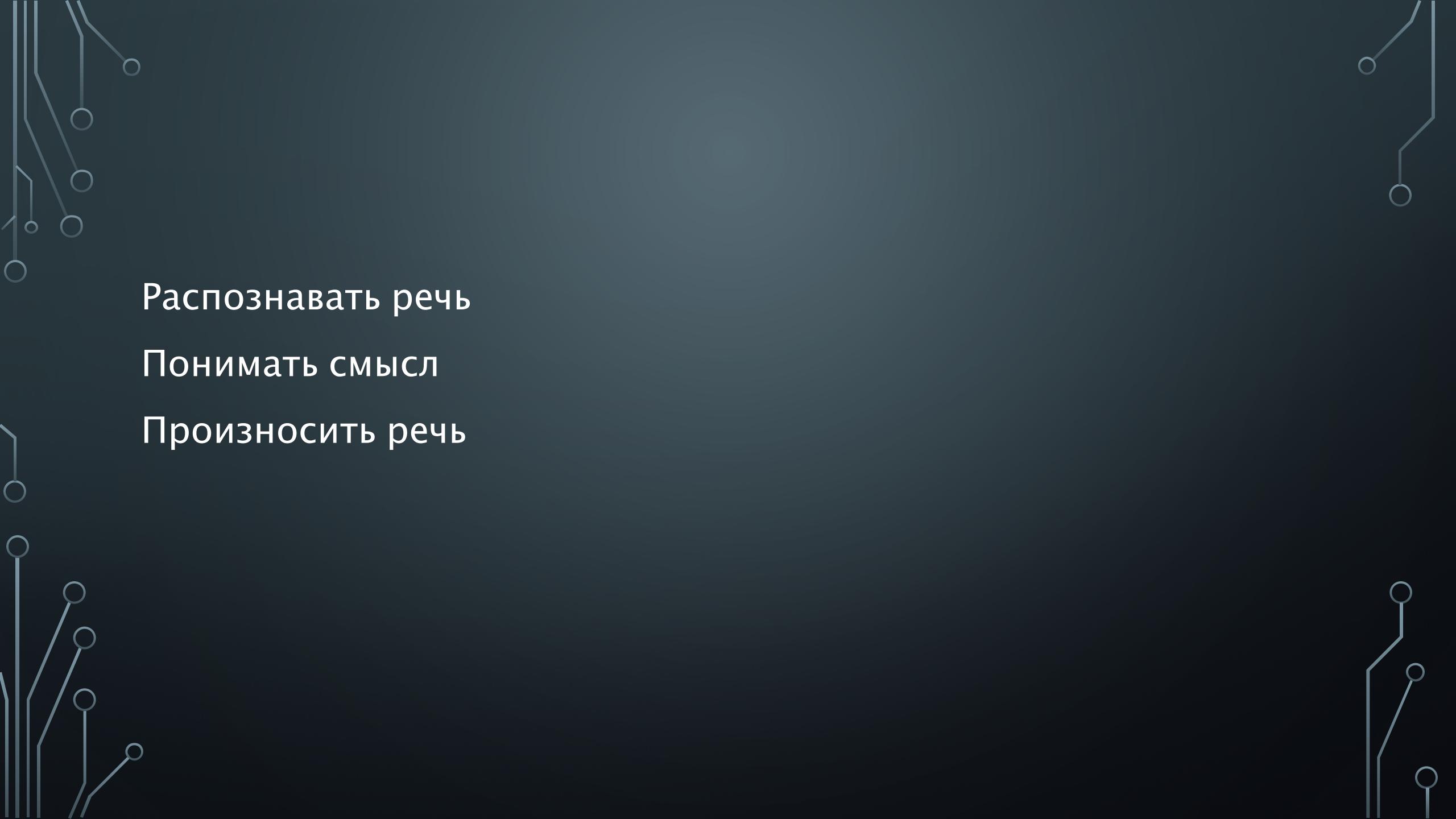
Google Assistant



Jarvis (Zuckerberg)



Siri (Apple)

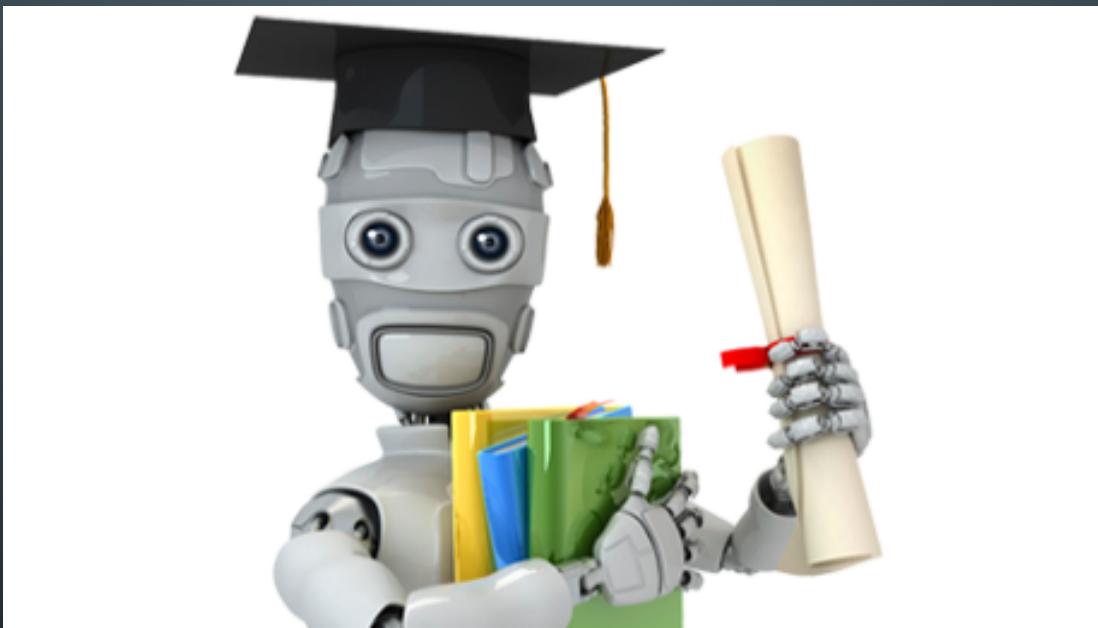


Распознавать речь
Понимать смысл
Произносить речь

...ОН ВИДЕЛ ИХ СЕМЬЮ СВОИМИ ГЛАЗАМИ...



MACHINE LEARNING





devclub.eu



24.08.2017
Константин Третьяков
«Дип Лёрнинг»

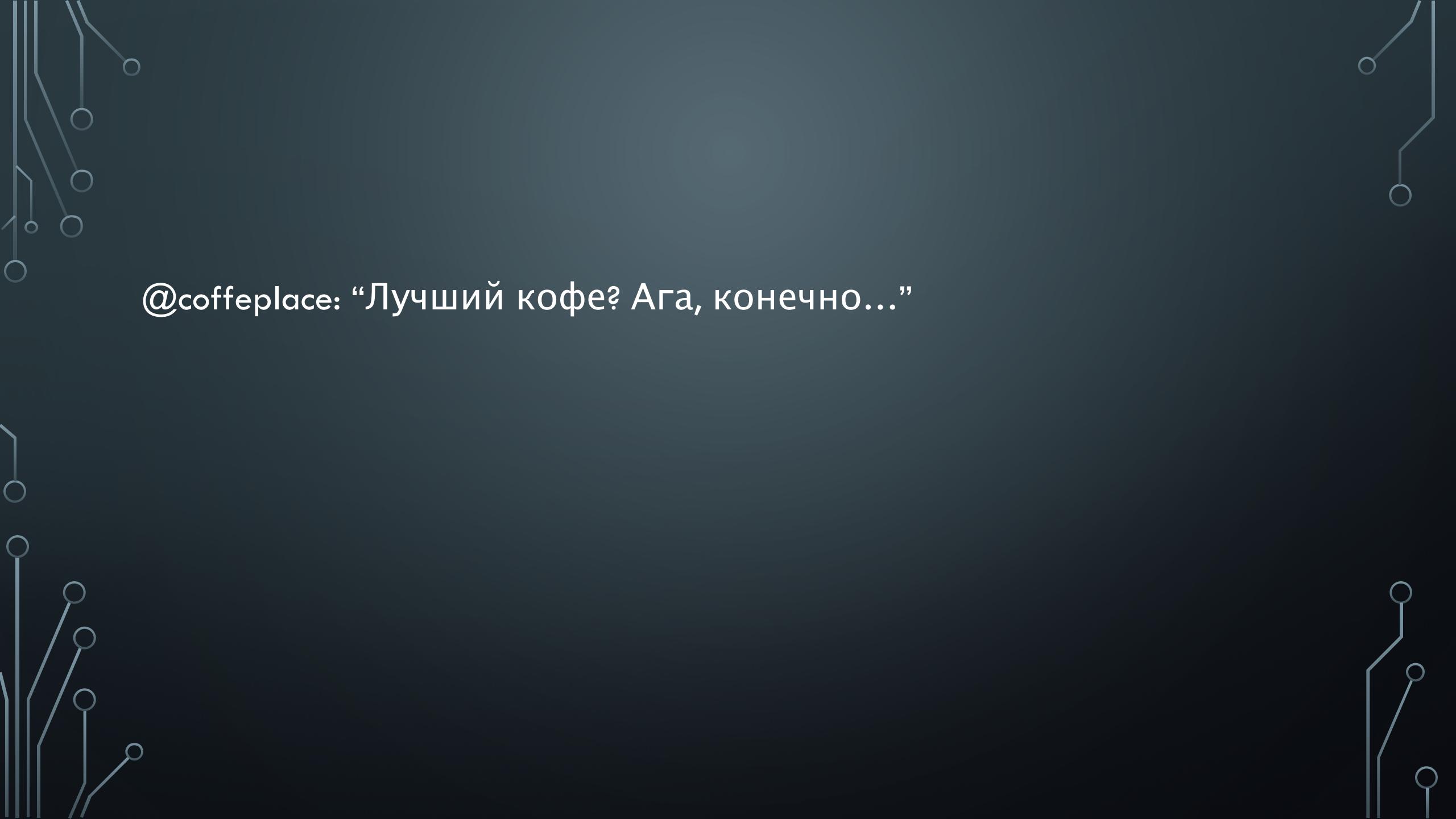


devclub.eu



24.08.2017
Константин Роот
«Переносим художественный стиль картин на ваши фотографии - как сделать аналог Prisma AI, используя Deep Learning»

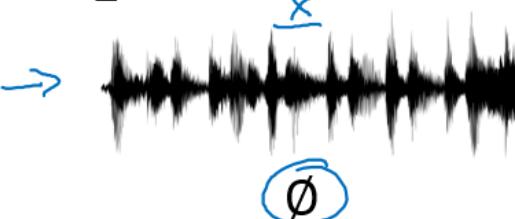




@coffeplace: “Лучший кофе? Ага, конечно...”

Examples of sequence data

Speech recognition



"The quick brown fox jumped
over the lazy dog."



Sentiment classification

"There is nothing to like
in this movie."



DNA sequence analysis → AGCCCCTGTGAGGAAC TAG

AGCCCCTGTGAGGAAC TAG

Machine translation

Voulez-vous chanter avec
moi?

Do you want to sing with
me?



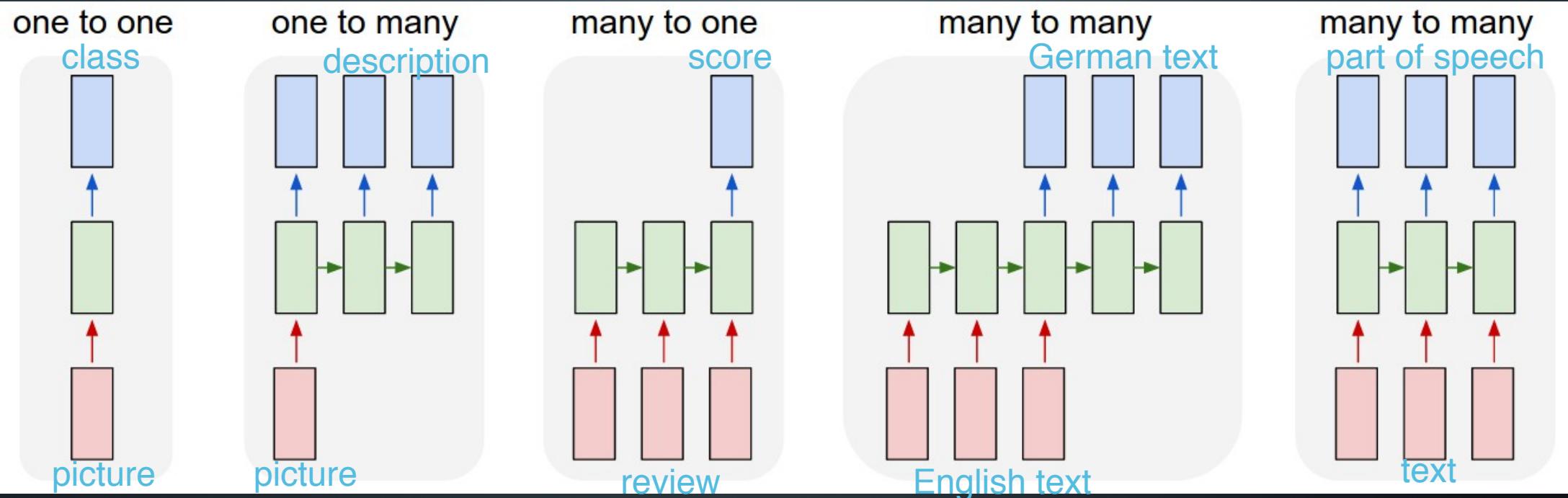
Video activity recognition

Running

Name entity recognition → Yesterday, Harry Potter
met Hermione Granger.

Yesterday, Harry Potter
met Hermione Granger.
Andrew Ng

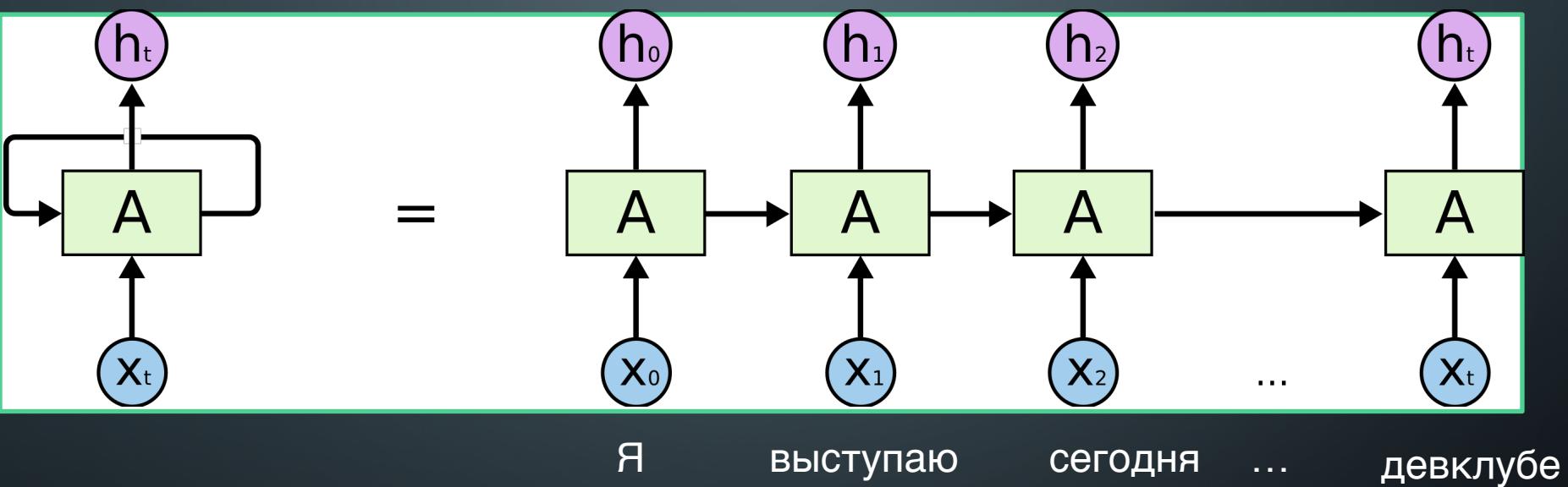
RECURRENT NEURAL NETWORK



<https://karpathy.github.io/2015/05/21/rnn-effectiveness/>

RECURRENT NEURAL NETWORK

молодец \
негодяй



<https://colah.github.io/posts/2015-08-Understanding-LSTMs/>

ONE HOT ENCODING

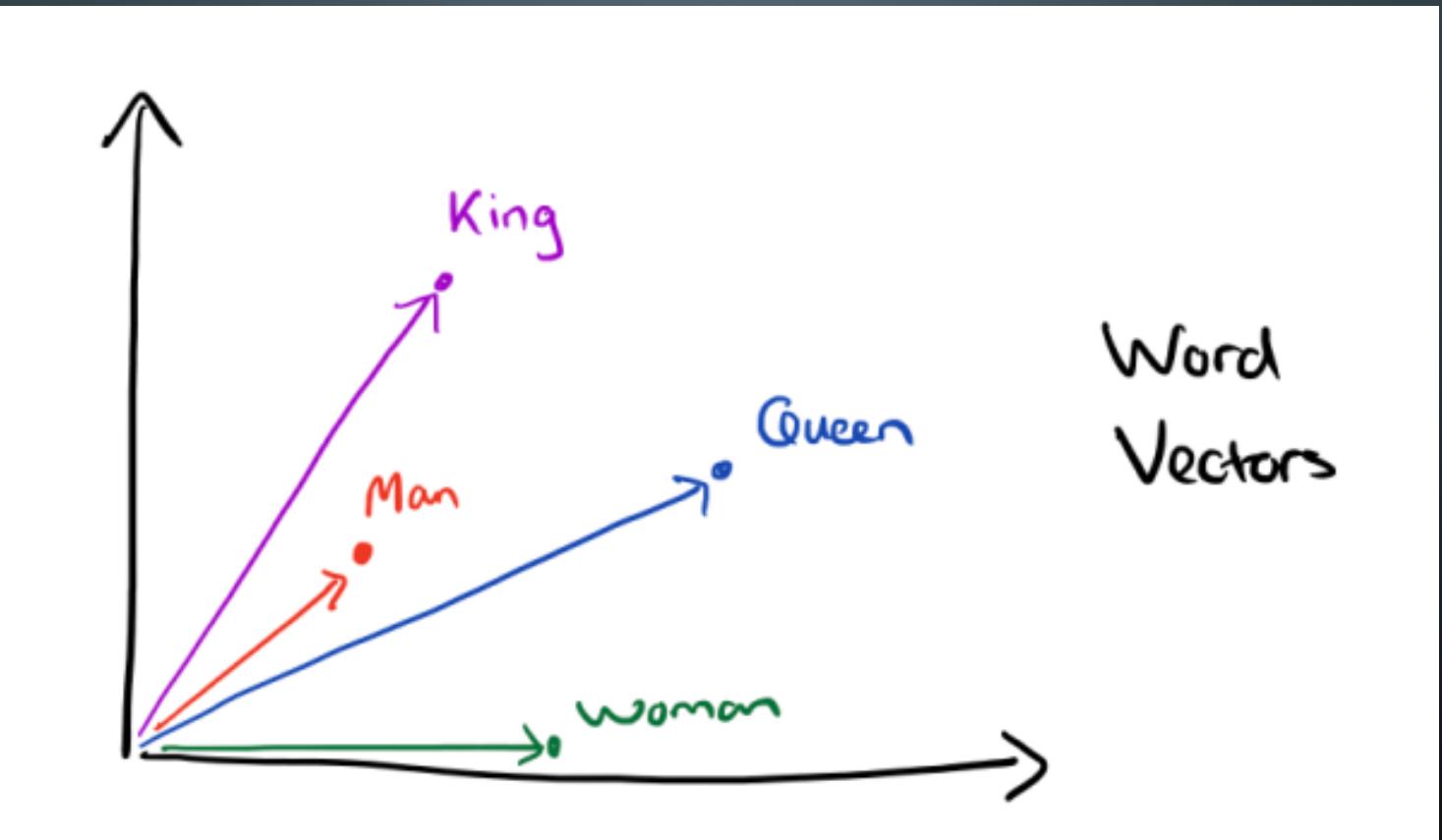
Vocabulary:
Man, woman, boy,
girl, prince,
princess, queen,
king, monarch



	1	2	3	4	5	6	7	8	9
man	1	0	0	0	0	0	0	0	0
woman	0	1	0	0	0	0	0	0	0
boy	0	0	1	0	0	0	0	0	0
girl	0	0	0	1	0	0	0	0	0
prince	0	0	0	0	1	0	0	0	0
princess	0	0	0	0	0	1	0	0	0
queen	0	0	0	0	0	0	1	0	0
king	0	0	0	0	0	0	0	1	0
monarch	0	0	0	0	0	0	0	0	1

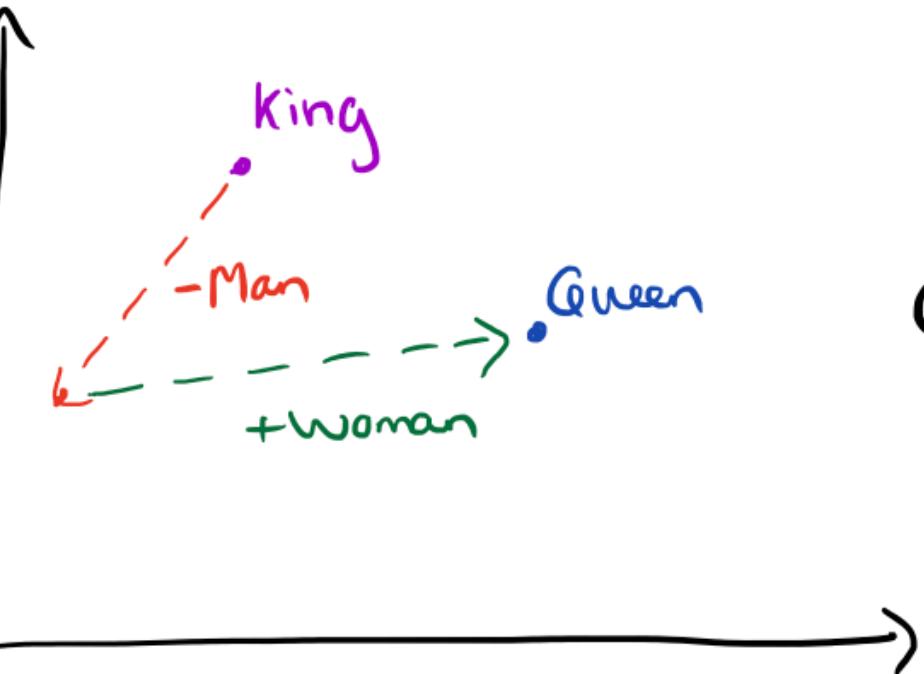
Each word gets
a 1×9 vector
representation

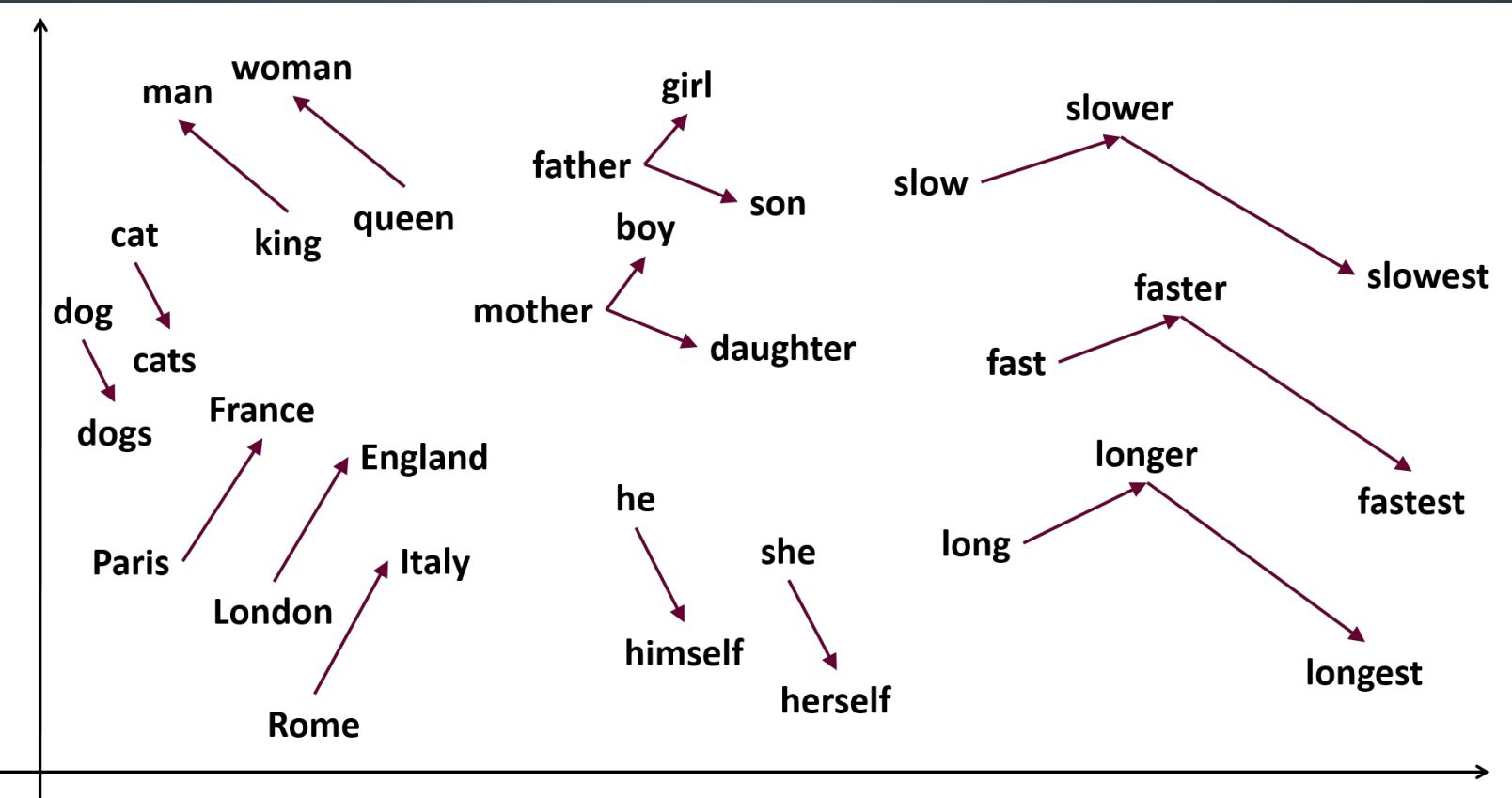
WORD2VEC



<https://blog.acolyer.org/2016/04/21/the-amazing-power-of-word-vectors/>

Vector Composition

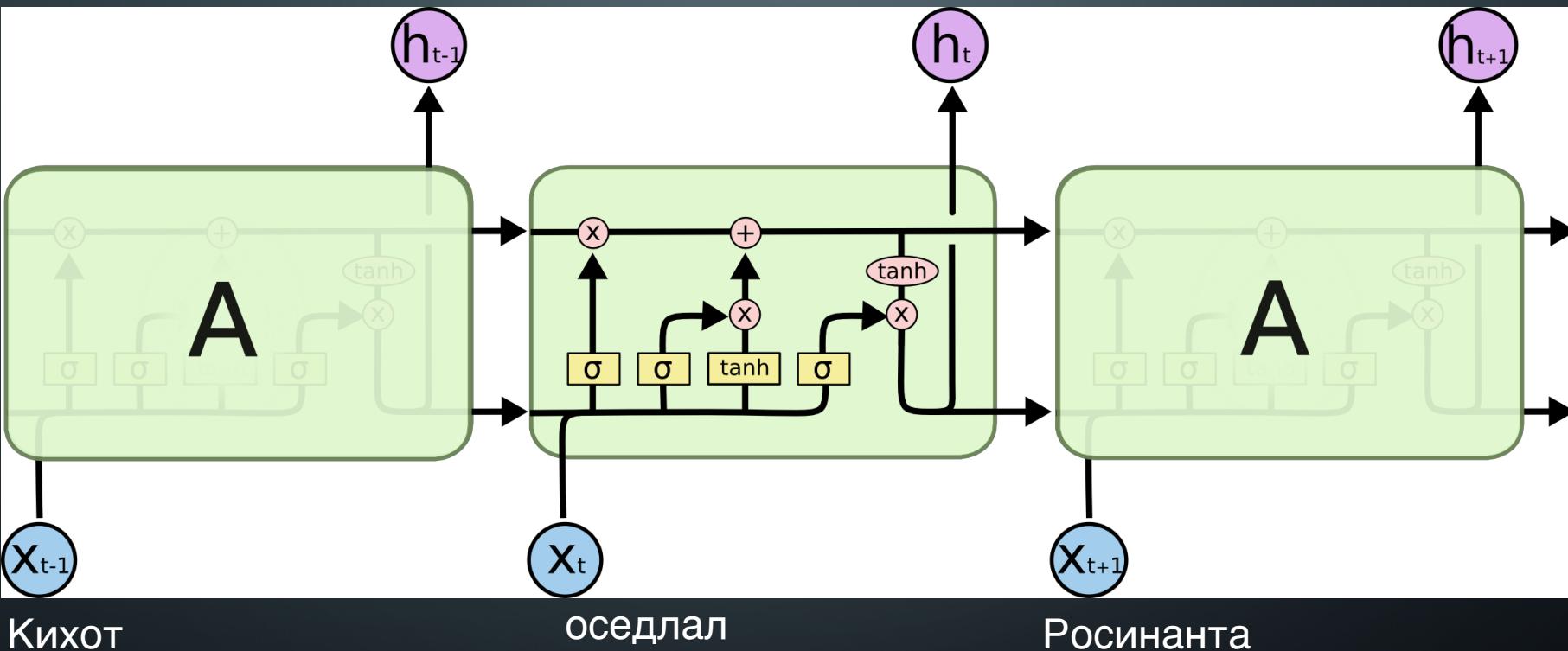




LSTM

Главный герой

Вспомогательный персонаж

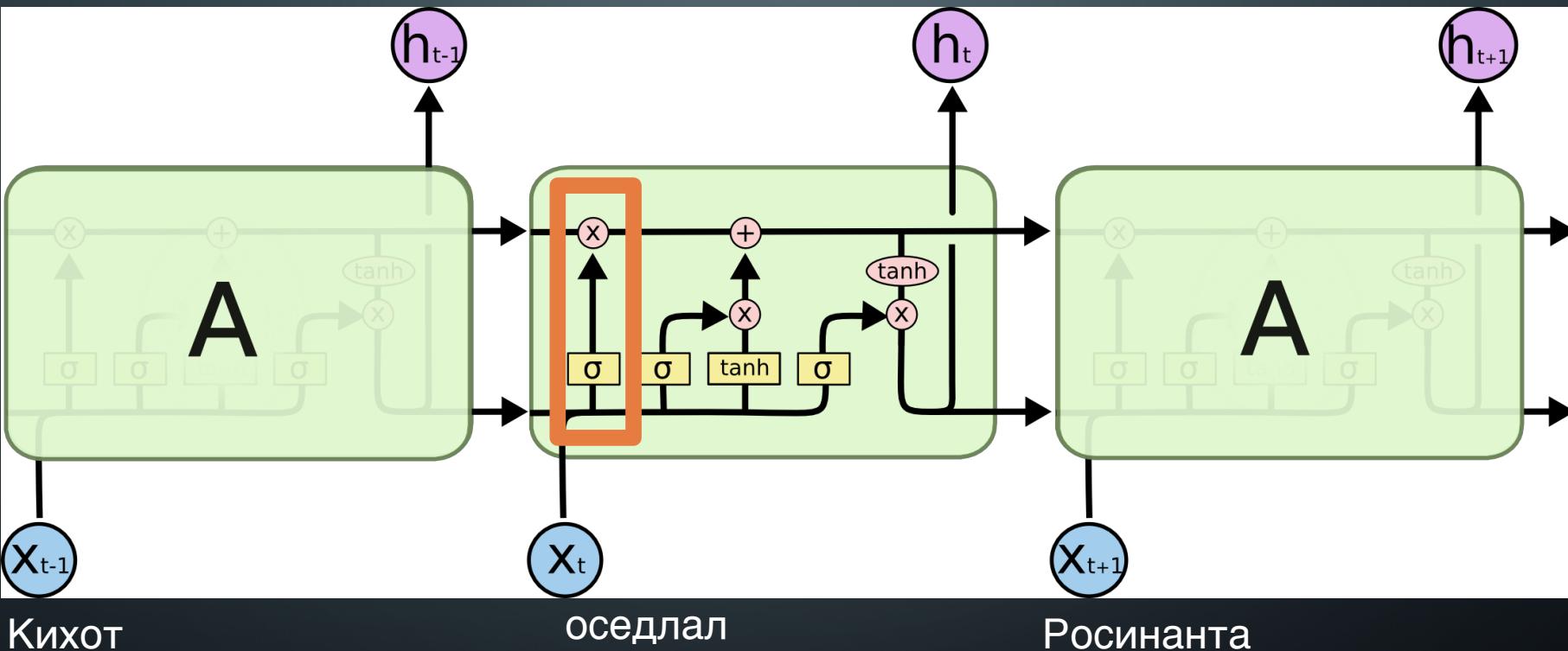


<https://colah.github.io/posts/2015-08-Understanding-LSTMs/>

LSTM

Главный герой

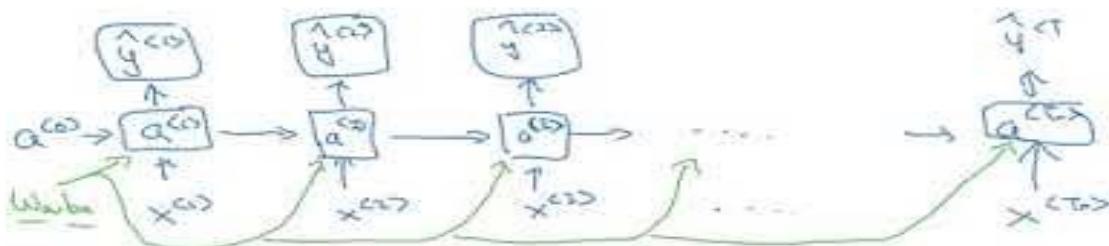
Вспомогательный персонаж



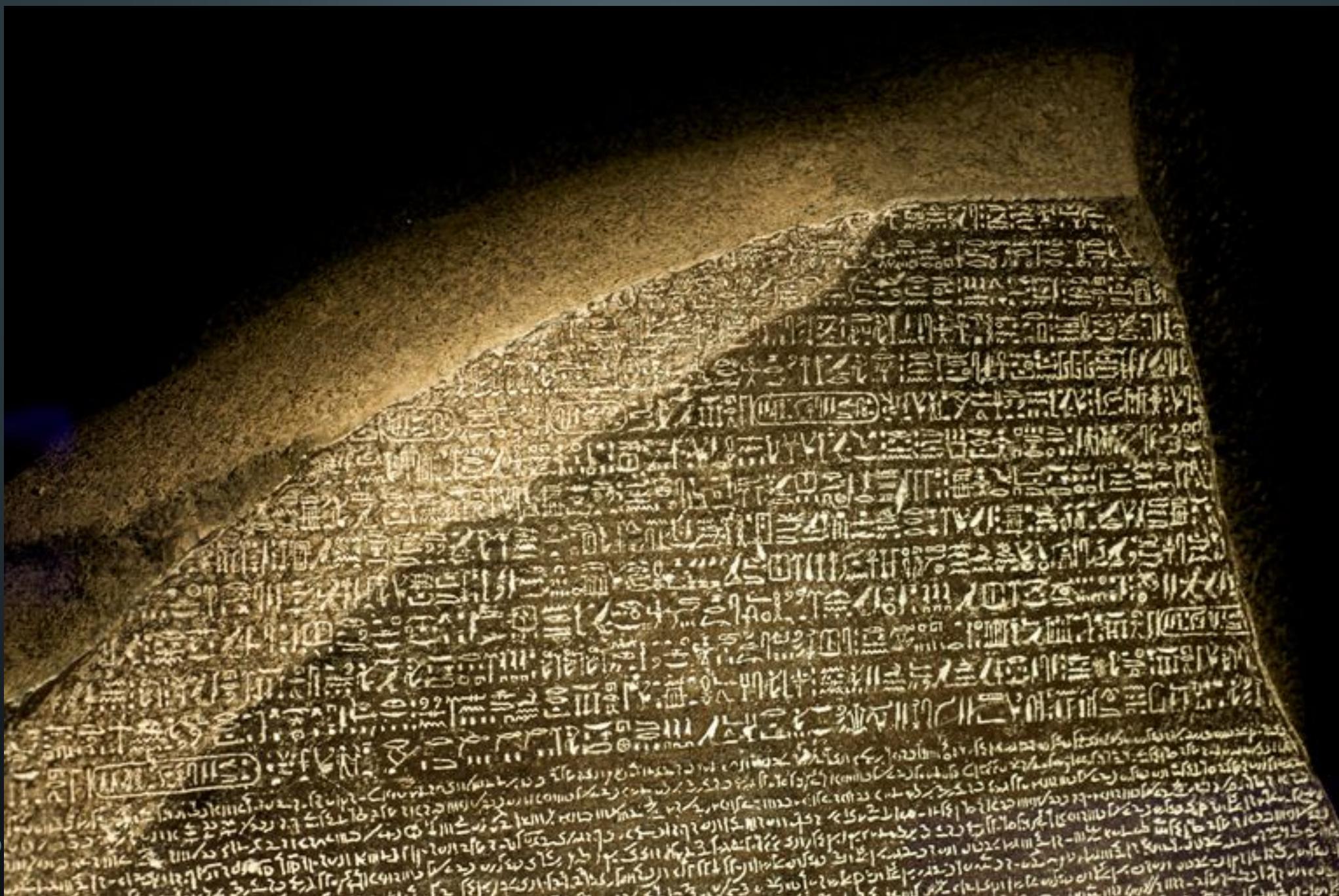
<https://colah.github.io/posts/2015-08-Understanding-LSTMs/>

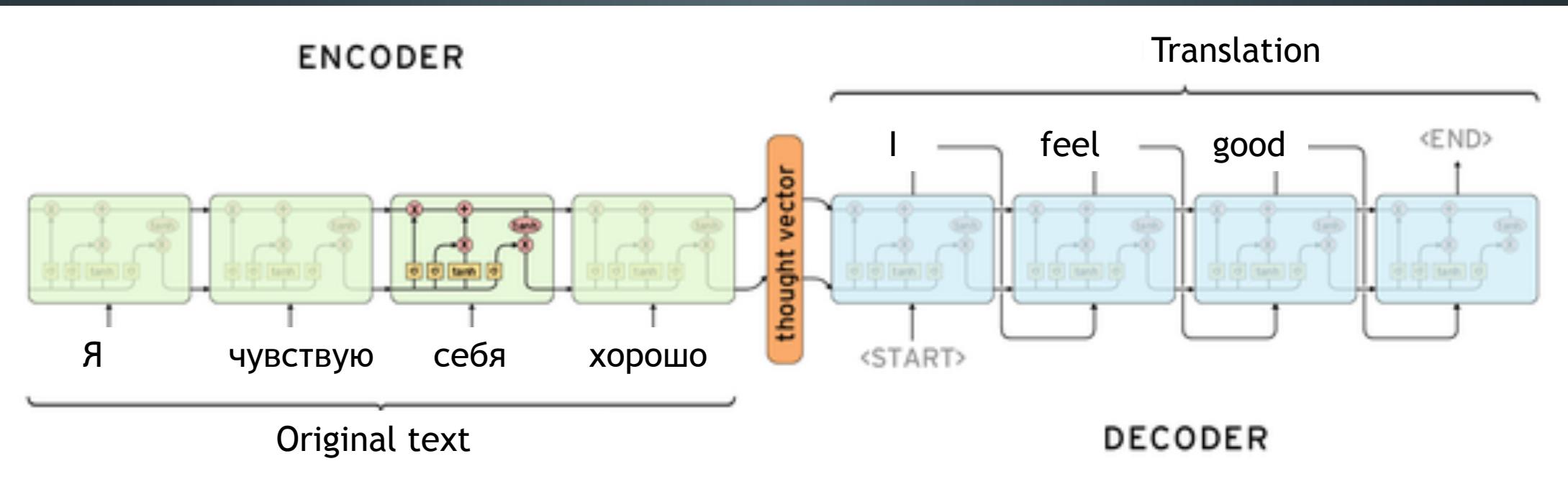
https://www.youtube.com/watch?v=Oxj_-bKq4Ns

Forward propagation and backpropagation



Andrew Ng





ATTENTION

Economic growth has slowed down in recent years .

Das Wirtschaftswachstum hat sich in den letzten Jahren verlangsamt .

Economic growth has slowed down in recent years .

La croissance économique s' est ralentie ces dernières années .



A woman is throwing a frisbee in a park.

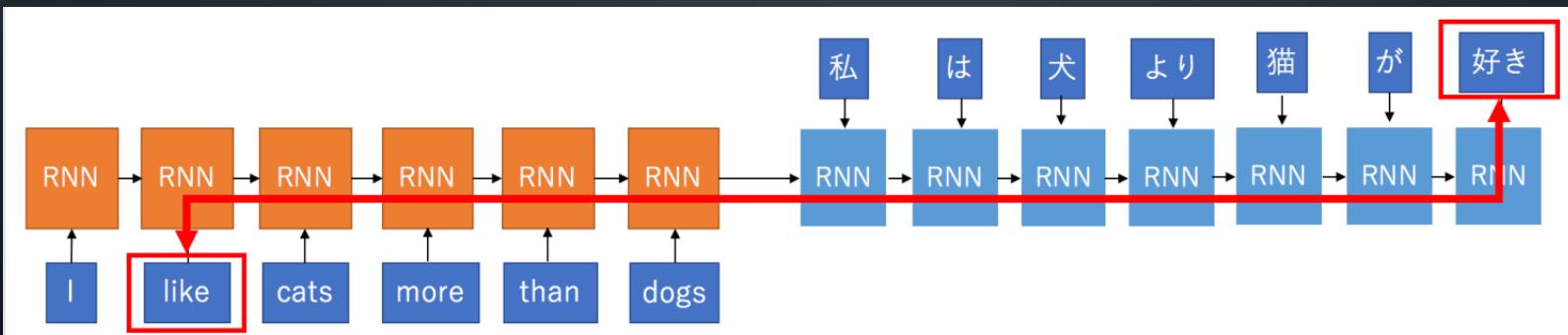
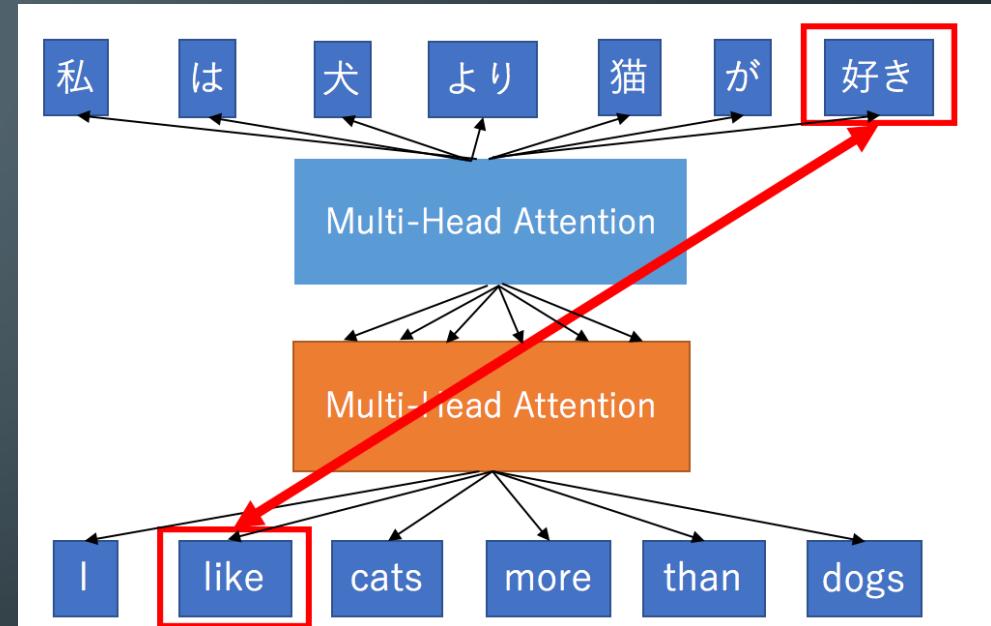
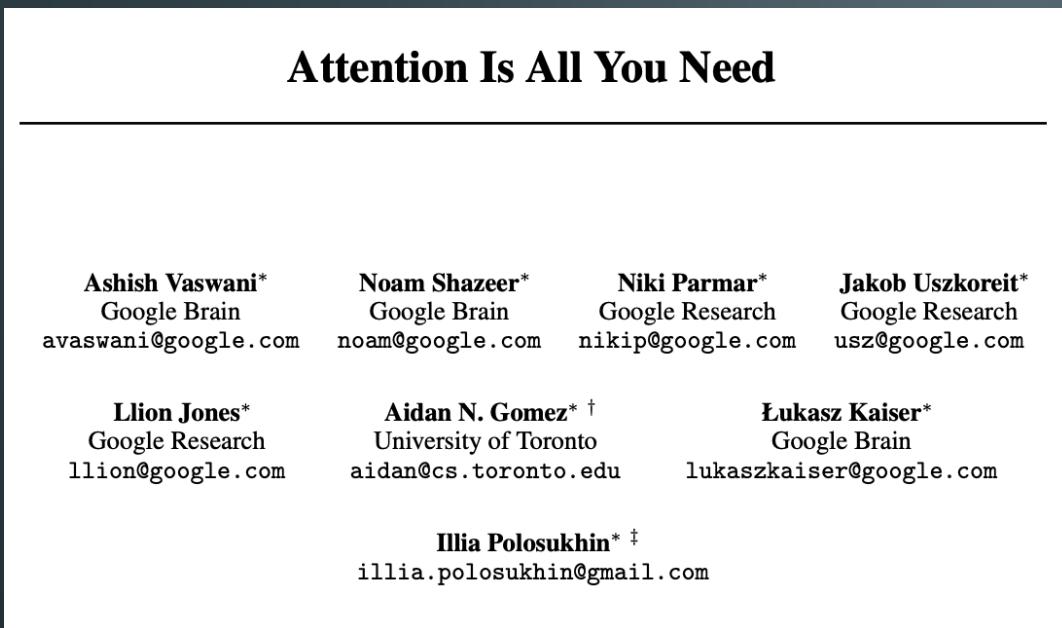


A dog is standing on a hardwood floor.

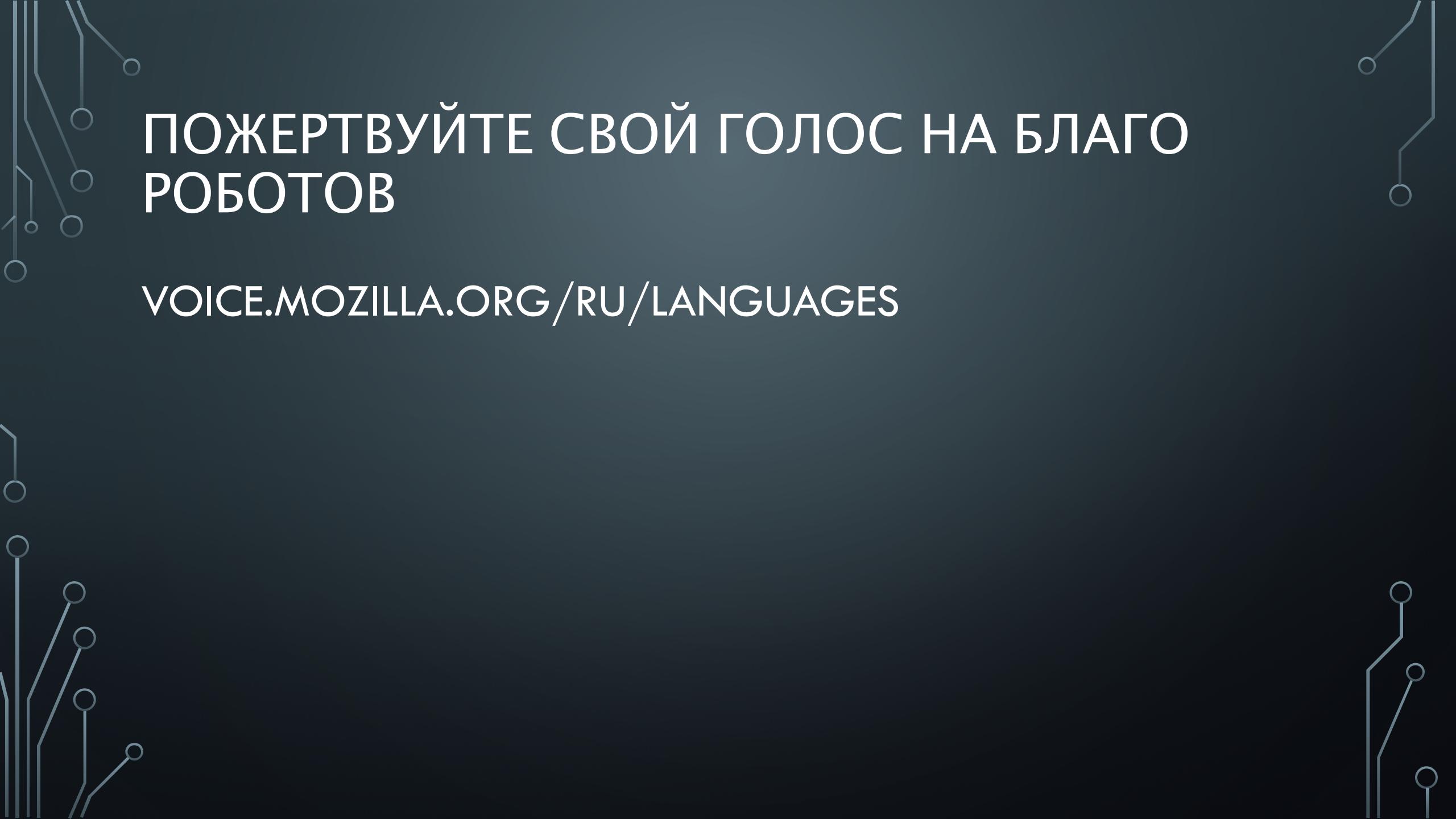


A stop sign is on a road with a mountain in the background.





код



ПОЖЕРТВУЙТЕ СВОЙ ГОЛОС НА БЛАГО
РОБОТОВ

[VOICE.MOZILLA.ORG/RU/LANGUAGES](https://voice.mozilla.org/ru/languages)

НА ЭТОМ ВСЕ. ВОПРОСЫ?

- SERGEI.TSIM@GMAIL.COM
- [GITHUB.COM/SERGTS](https://github.com/SERGTS)
- [LINKEDIN.COM/IN/SERGEI-TSIMALIST-248541155/](https://linkedin.com/in/SERGEI-TSIMALIST-248541155/)
- [KODALITY.COM](https://kodality.com)