with tensorflow

구현을 위한 딥러닝

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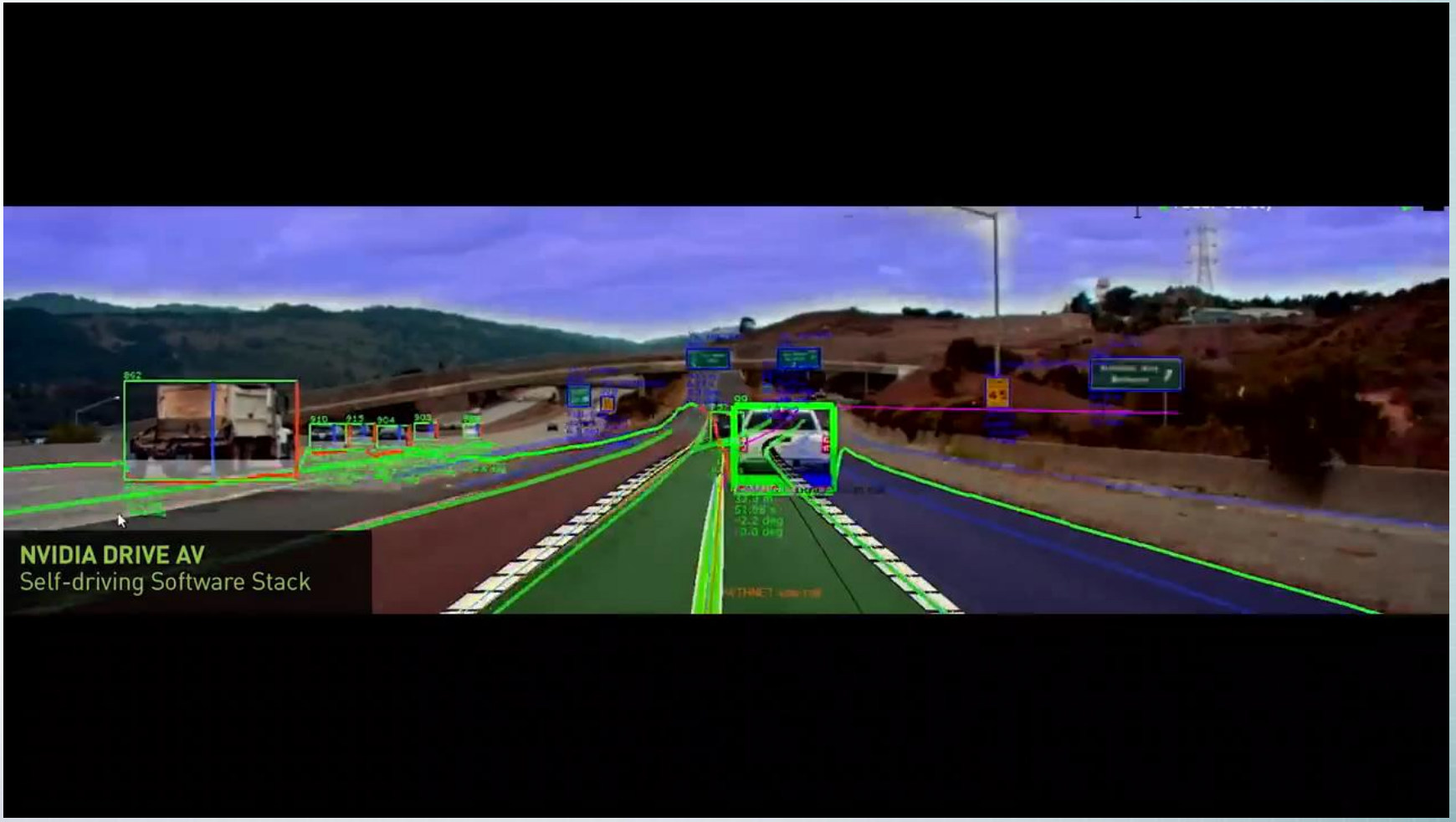
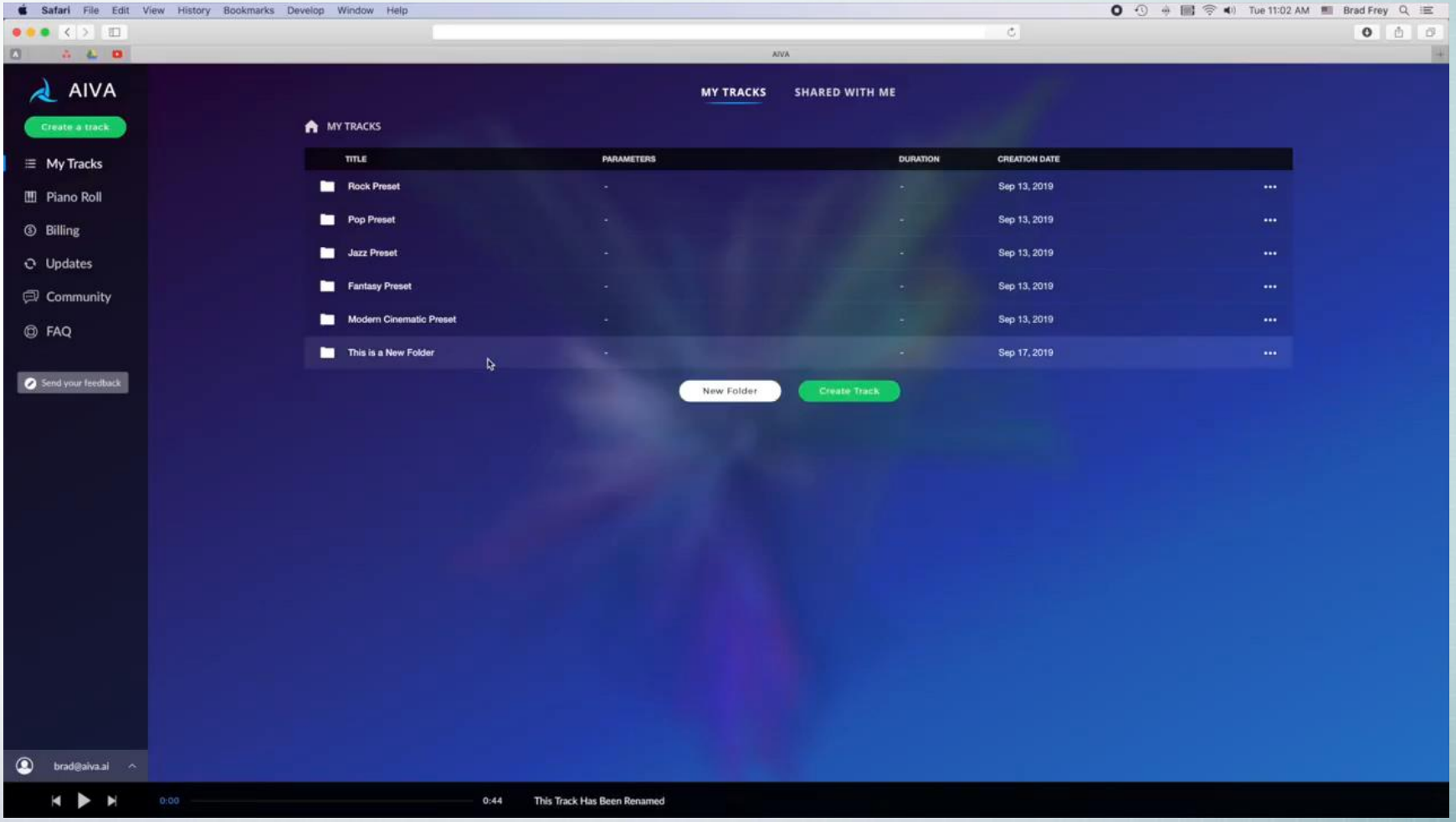
Self Driving Car

Self Driving Car

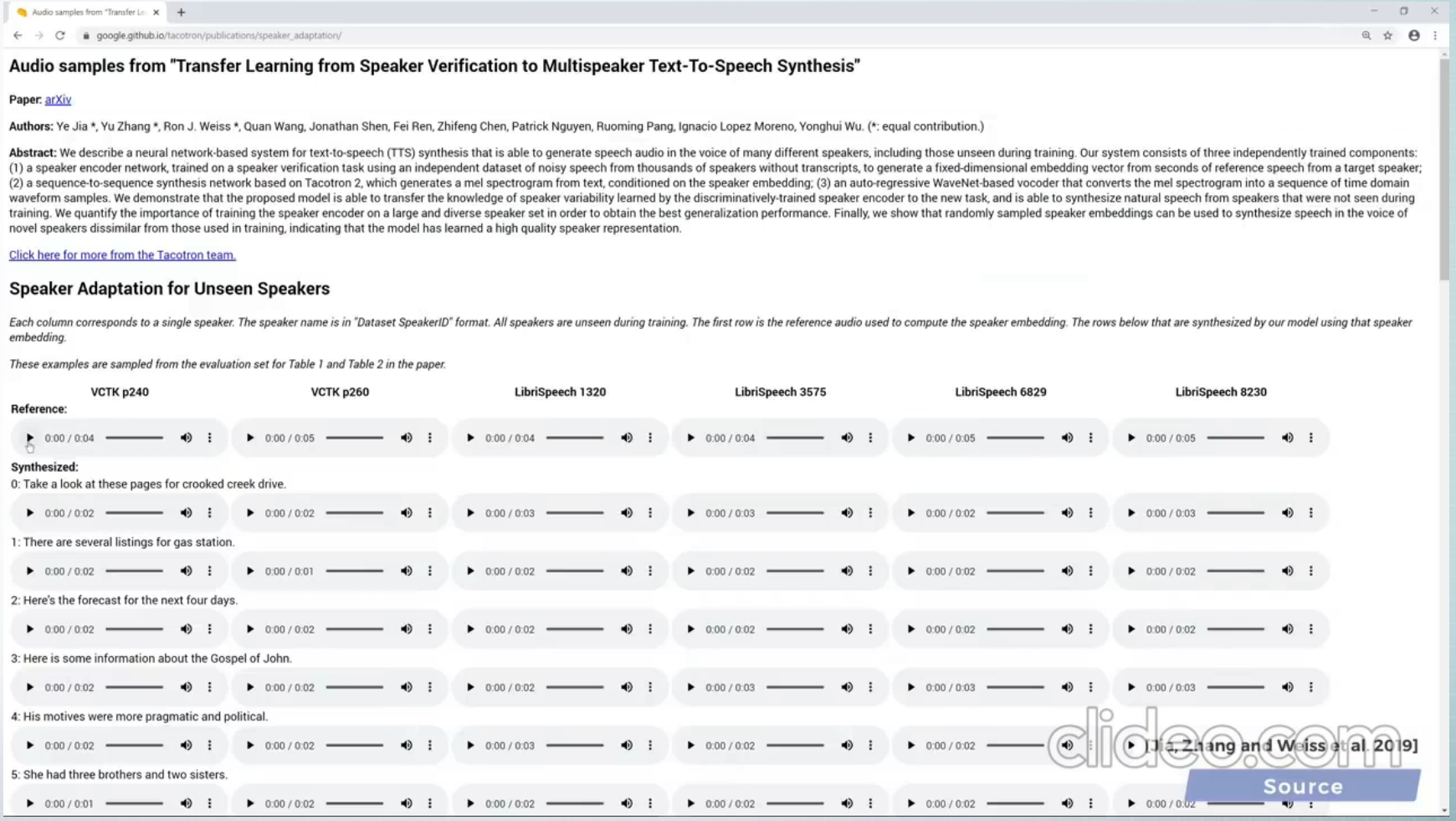


Amazon Prime Air

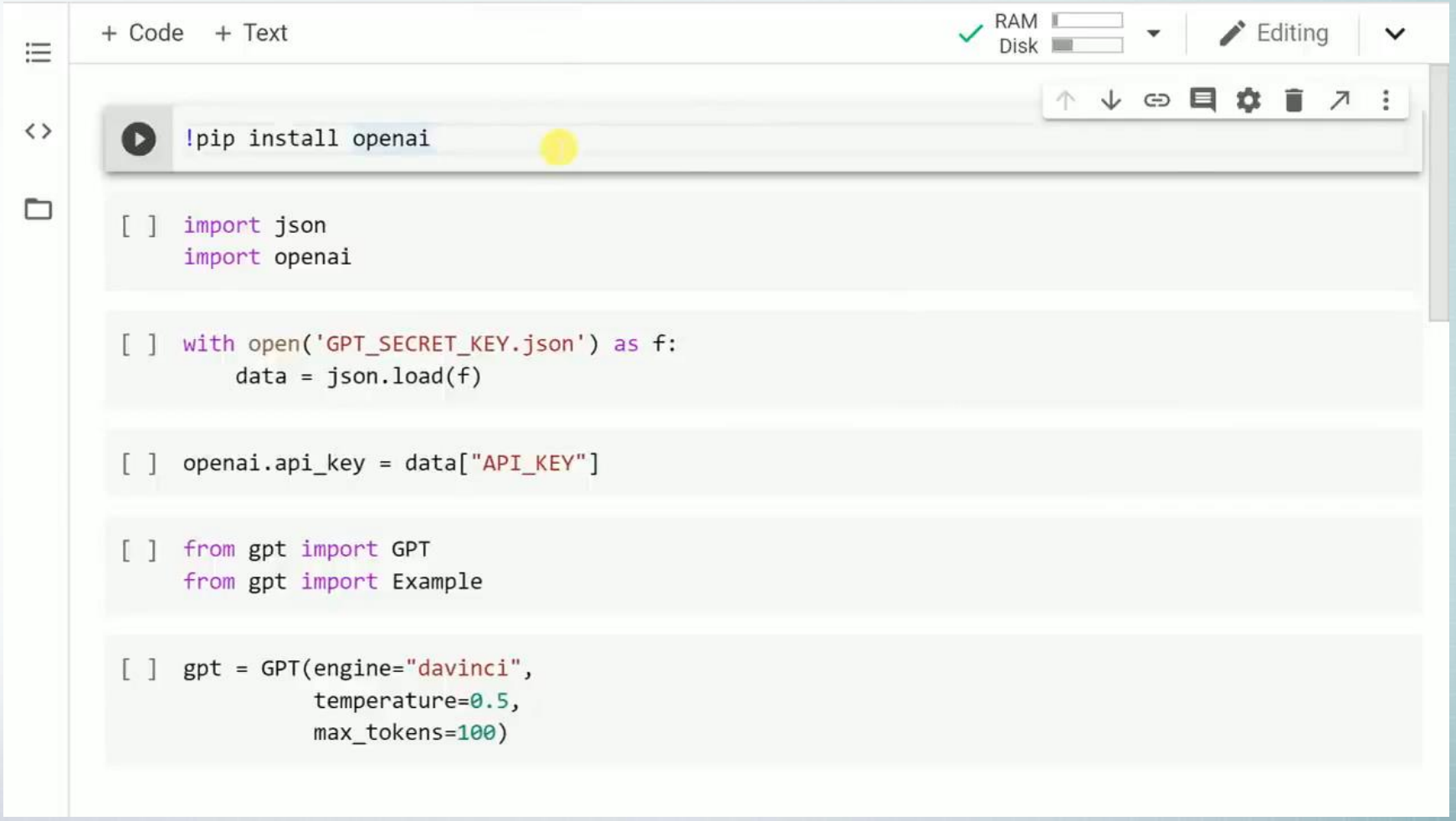
AIVA (AI Virtual Artist)



AI Speech (2018)



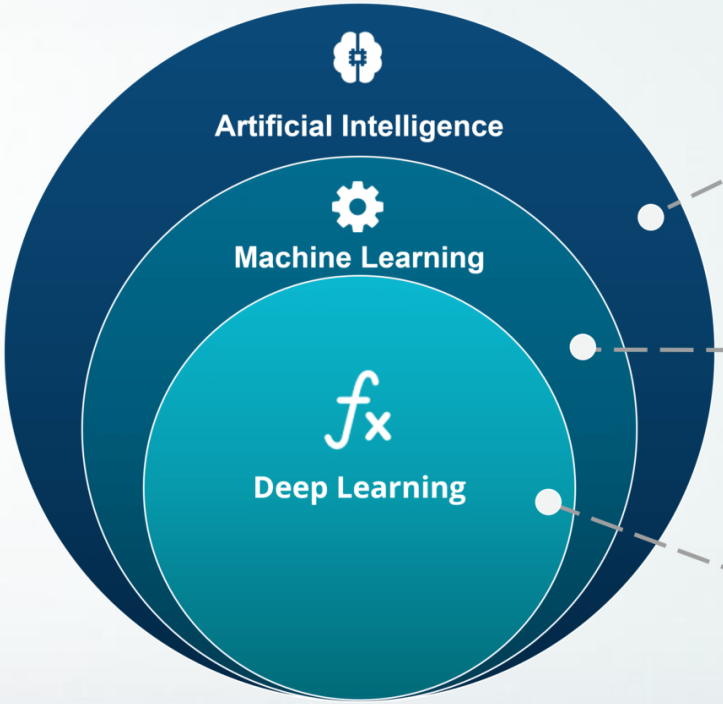
GPT – 3 (OpenAI, 2020)



AI Gaming


Gen 25 species 10 genome 7 (30%)
Fitness: 2365 Max Fitness: 2365
A
Y
Right
MARIO START !

AI vs ML vs DL

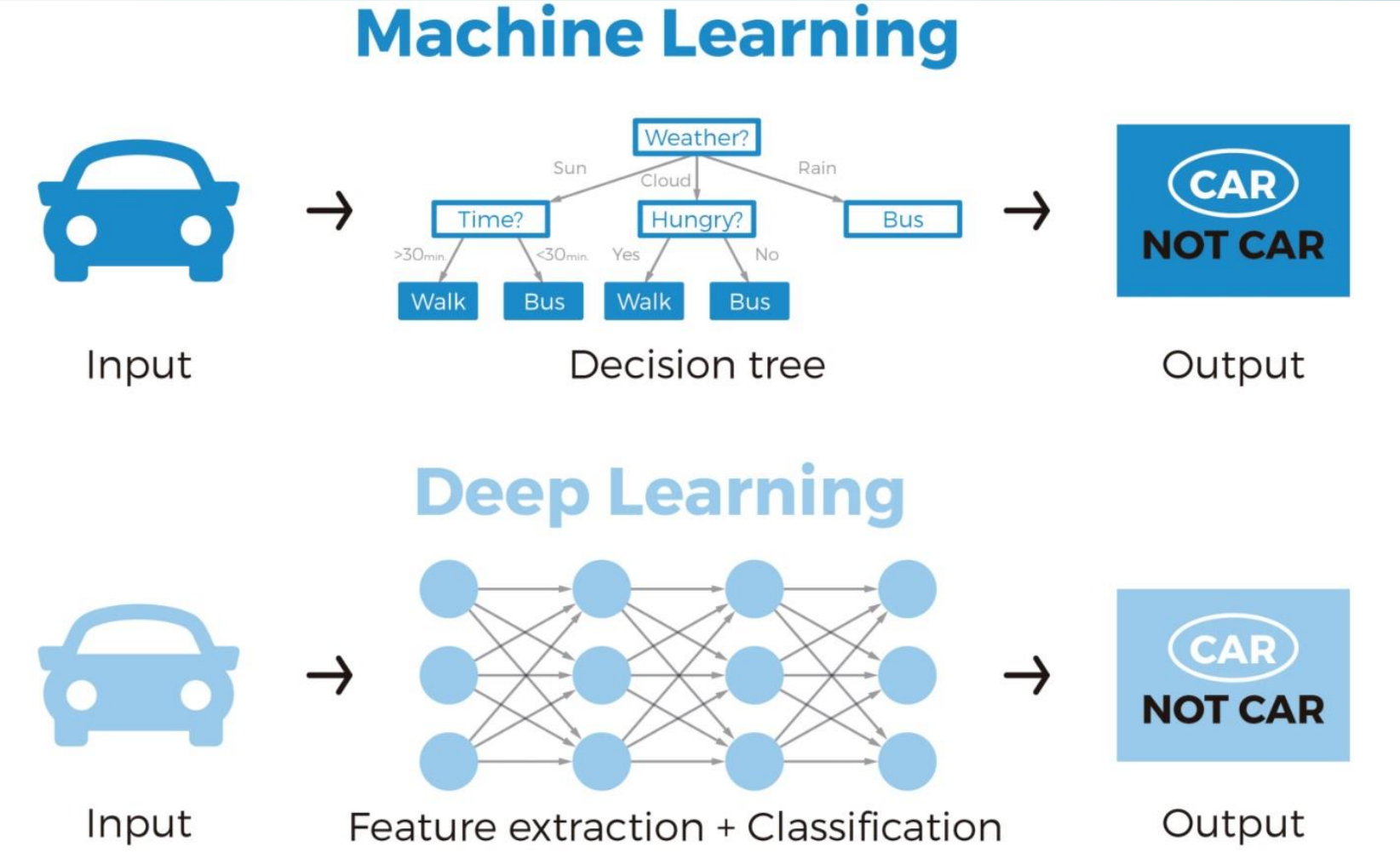


ARTIFICIAL INTELLIGENCE
A technique which enables machines to mimic human behaviour

MACHINE LEARNING
Subset of AI technique which use statistical methods to enable machines to improve with experience

DEEP LEARNING
Subset of ML which make the computation of multi-layer neural network feasible

Deep Learning?



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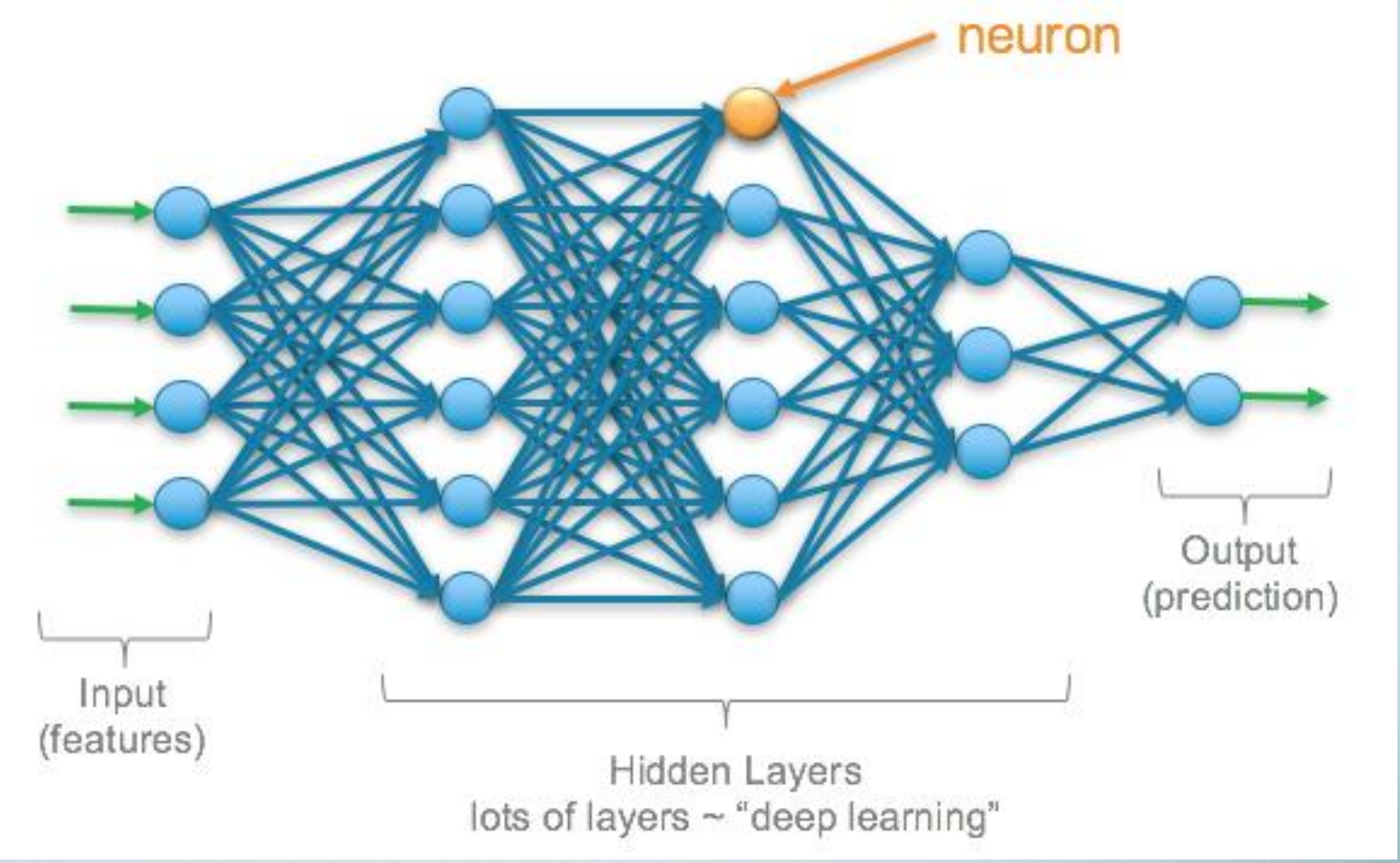
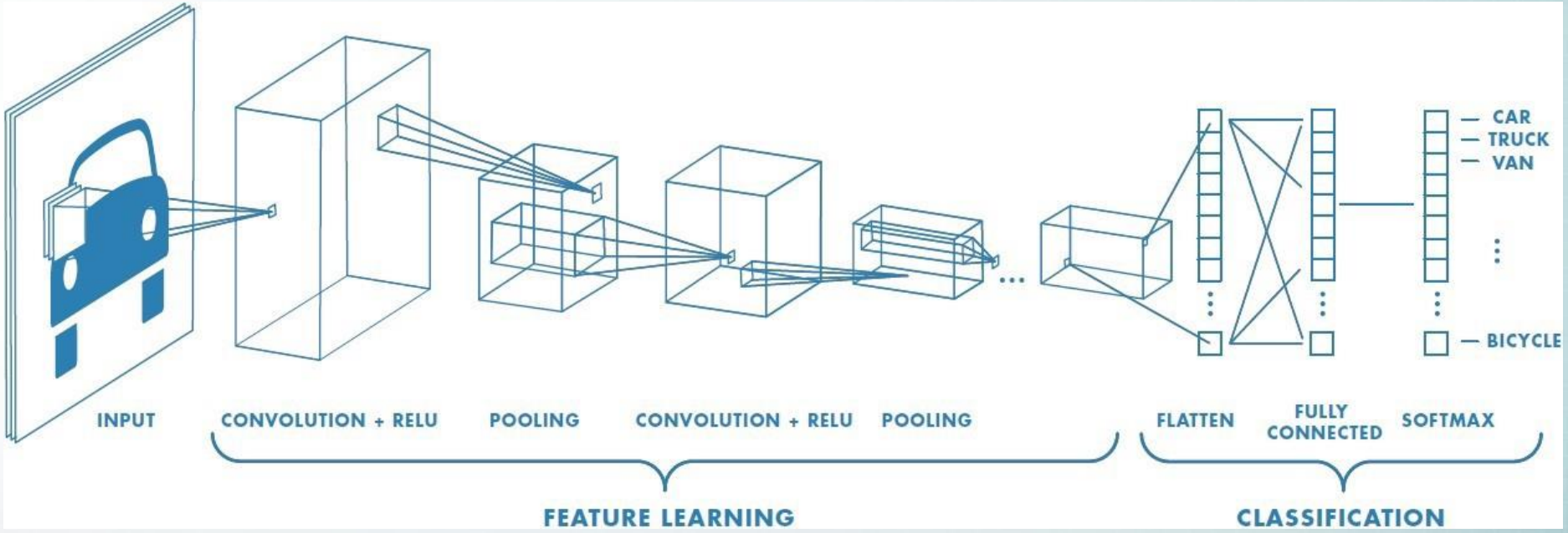
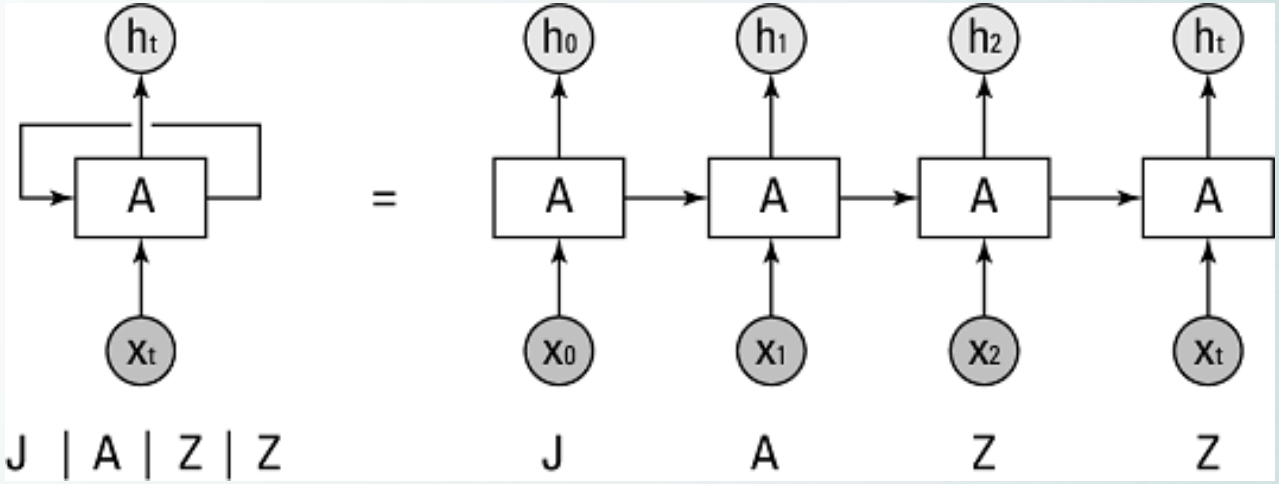
Idea of Neural Networks (NN)



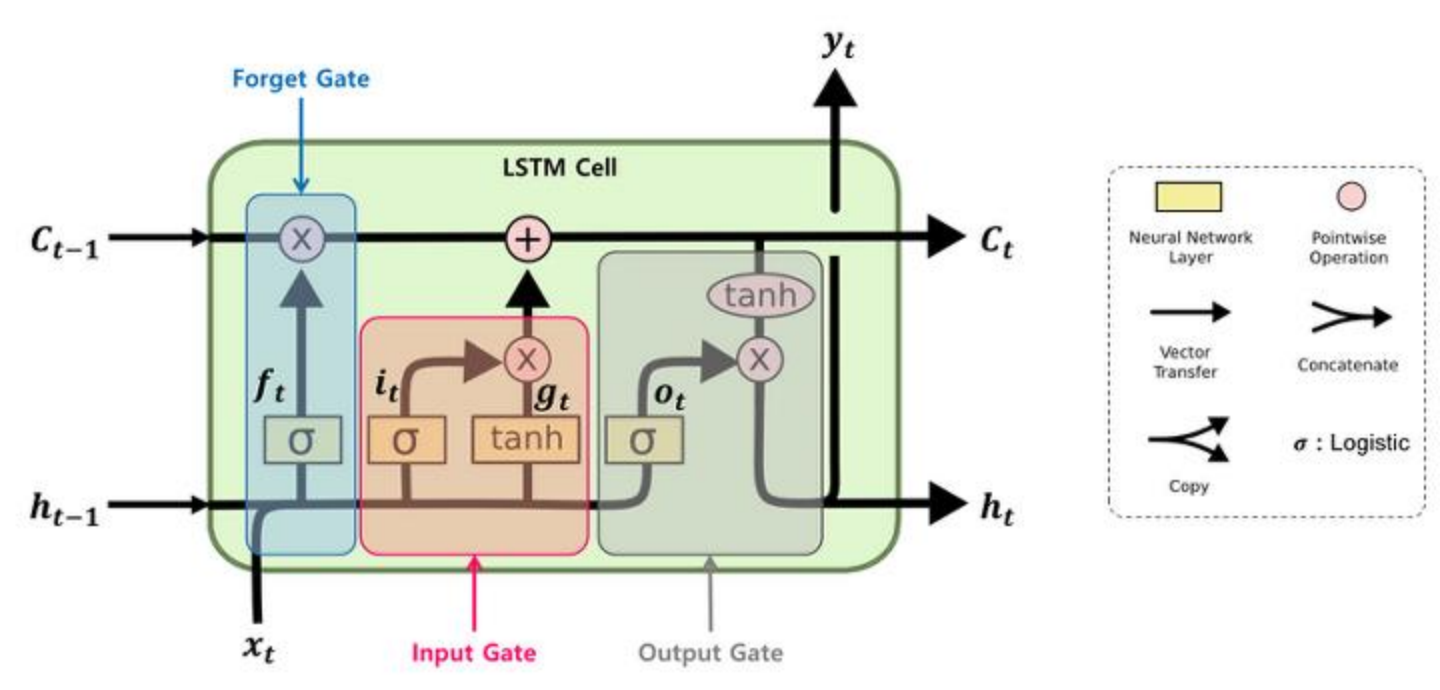
Convolutional NN (CNN)



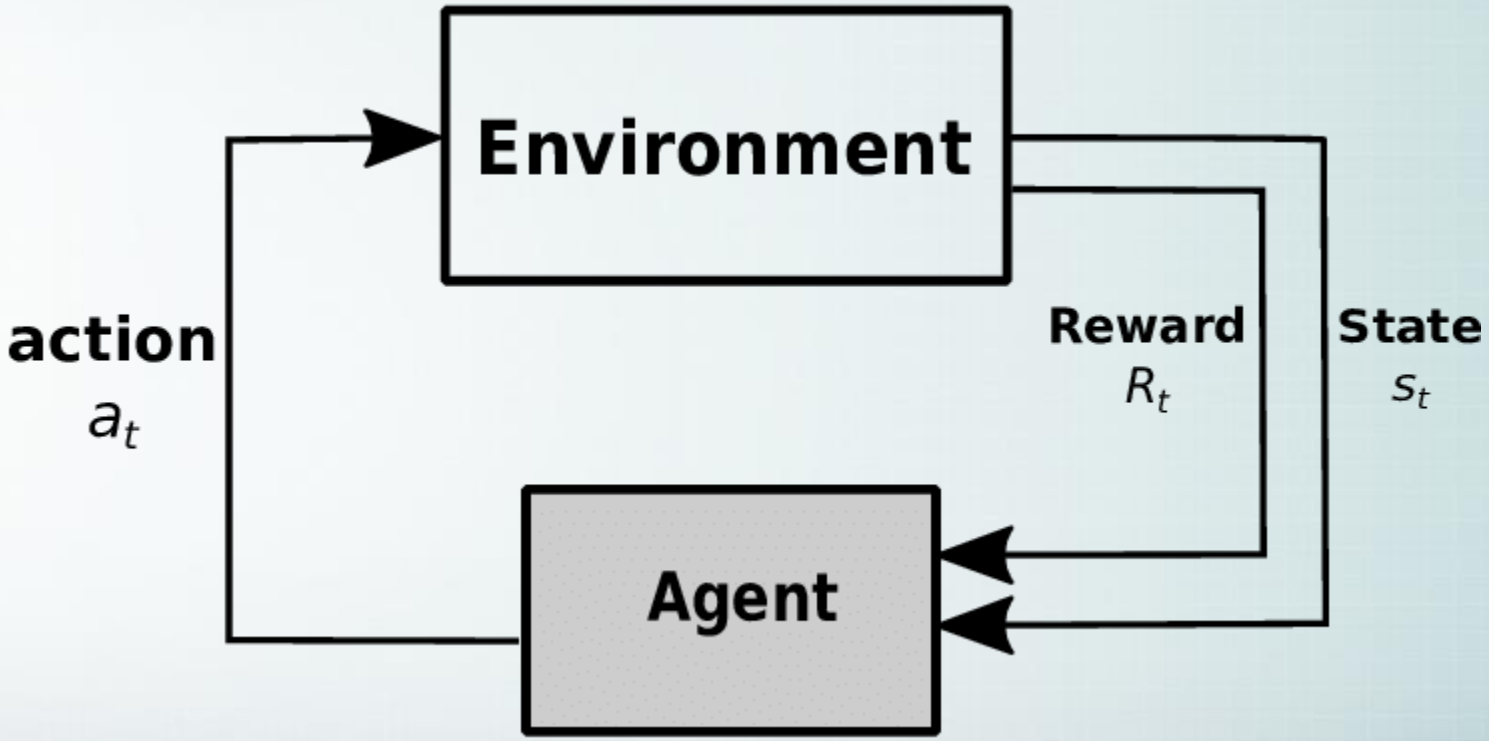
RNN



RNN - LSTM


y_t
Forget Gate
LSTM Cell
C_{t-1}
C_t
tanh
f_t
i_t
g_t
o_t
σ
σ
tanh
σ
h_{t-1}
h_t
x_t
Input Gate
Output Gate
Neural Network Layer
Pointwise Operation
Vector Transfer
Concatenate
Copy
σ : Logistic

Reinforcement Learning

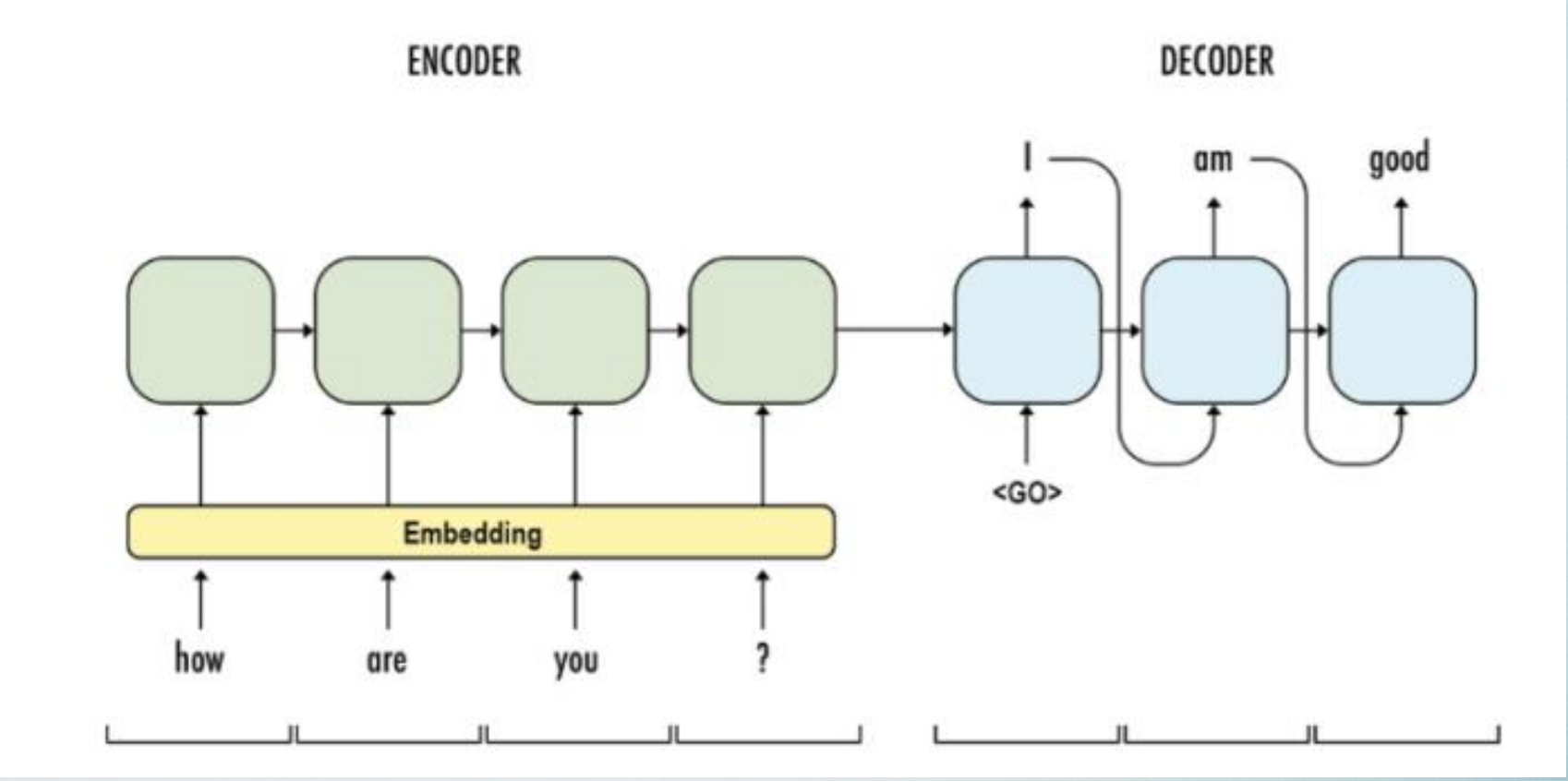


Some Important Models…

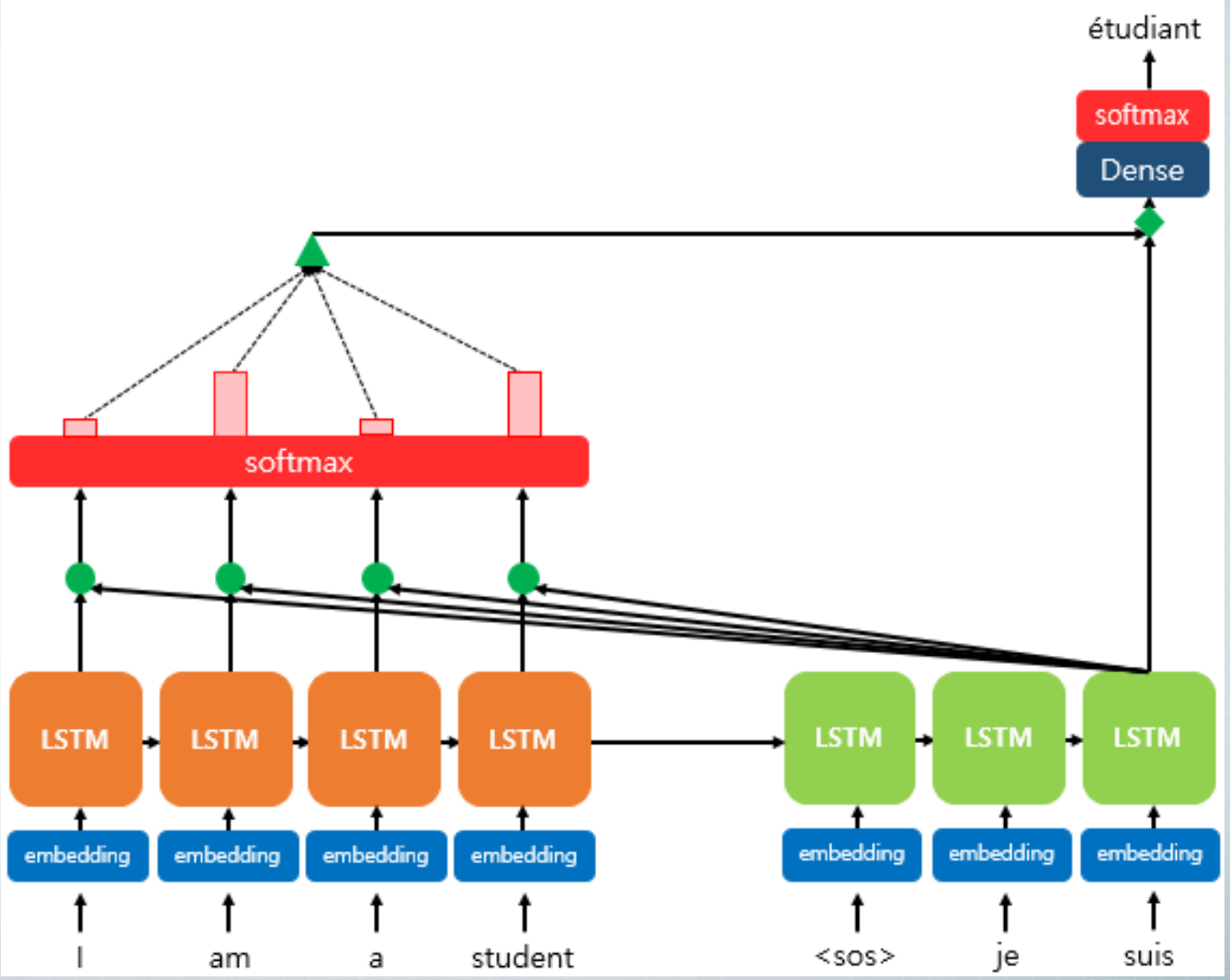
- Resnet (CNN)
- VAE (CNN + probability)
- GAN (CNN + classification)
- Seq2Seq (RNN)
- Image Captioning (CNN + RNN)

- BERT (Transformer)
- Image Captioning (Visual Attention)
- XLNet (Transformer - XL)
- GPT - 3

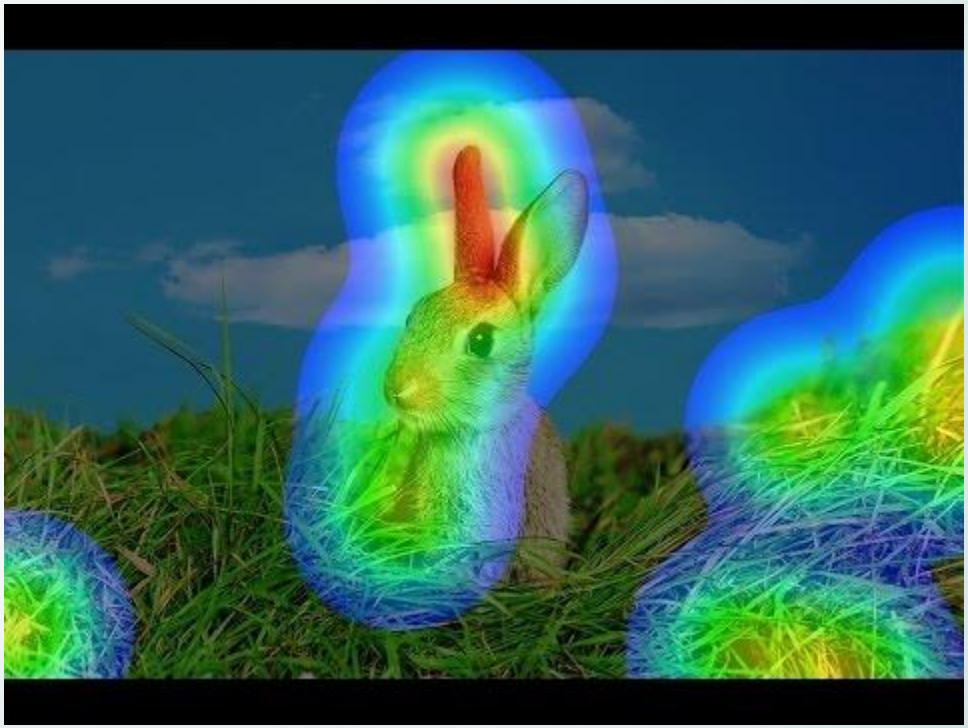
Seq2Seq before Attention



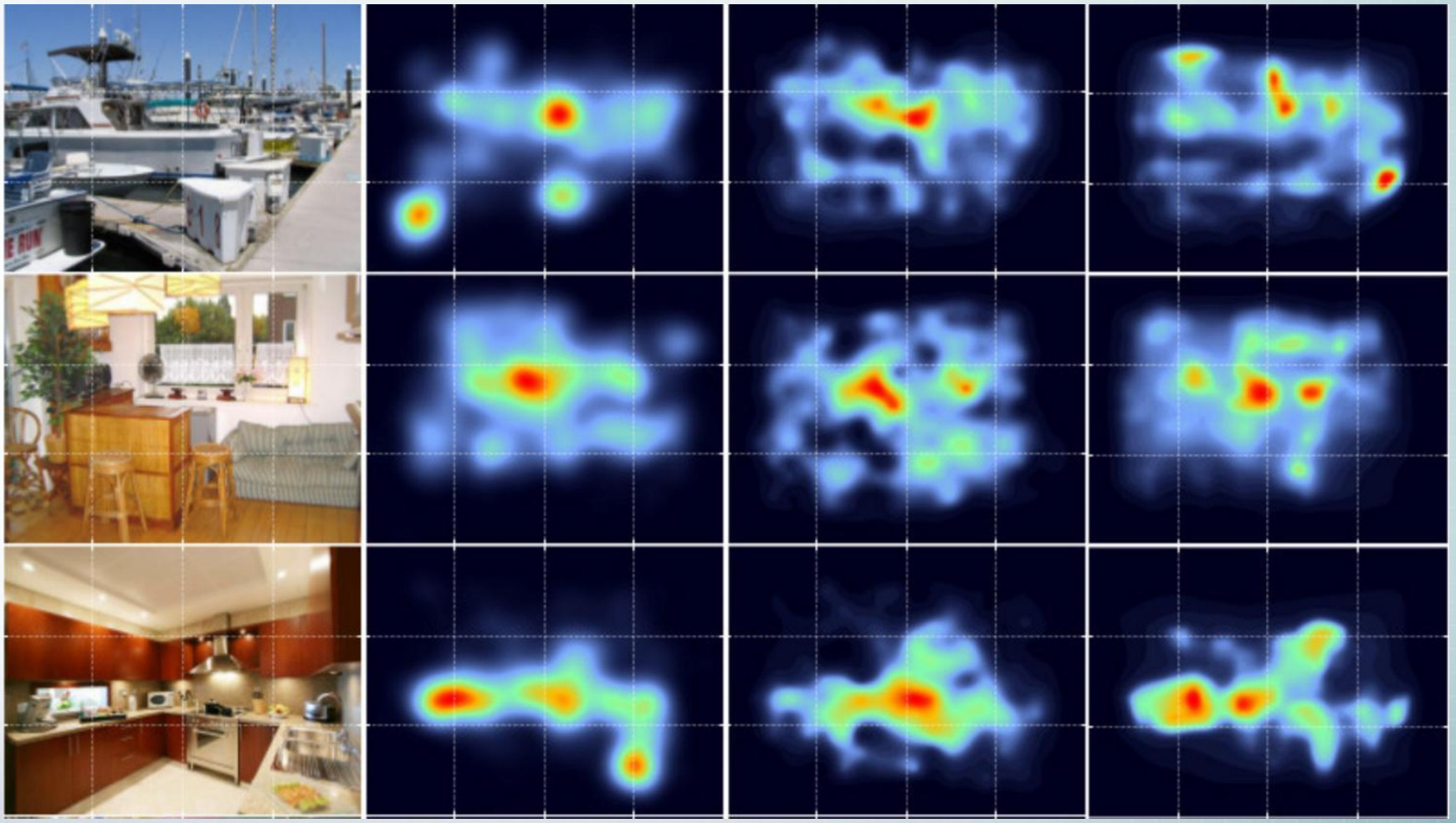
Seq2Seq with Attention



Visual Attention



Visual Attention



Transformer

- **Attention Is All You Need (2017) -** Ashish Vaswani, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N. Gomez, Lukasz Kaiser, Illia Polosukhin

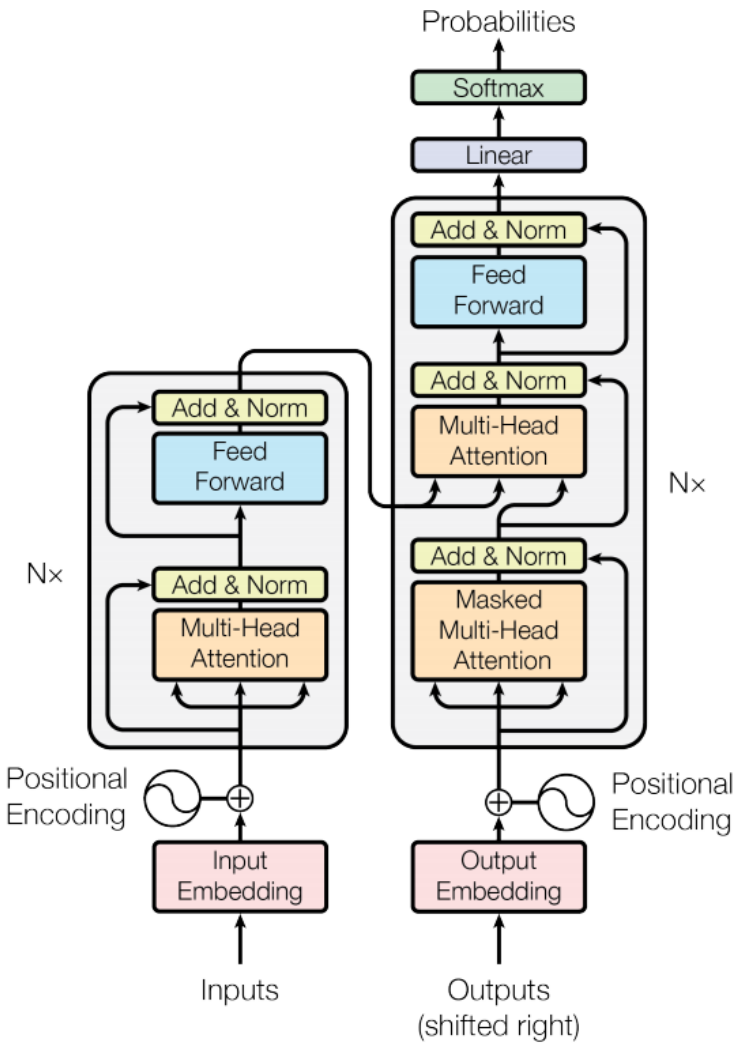
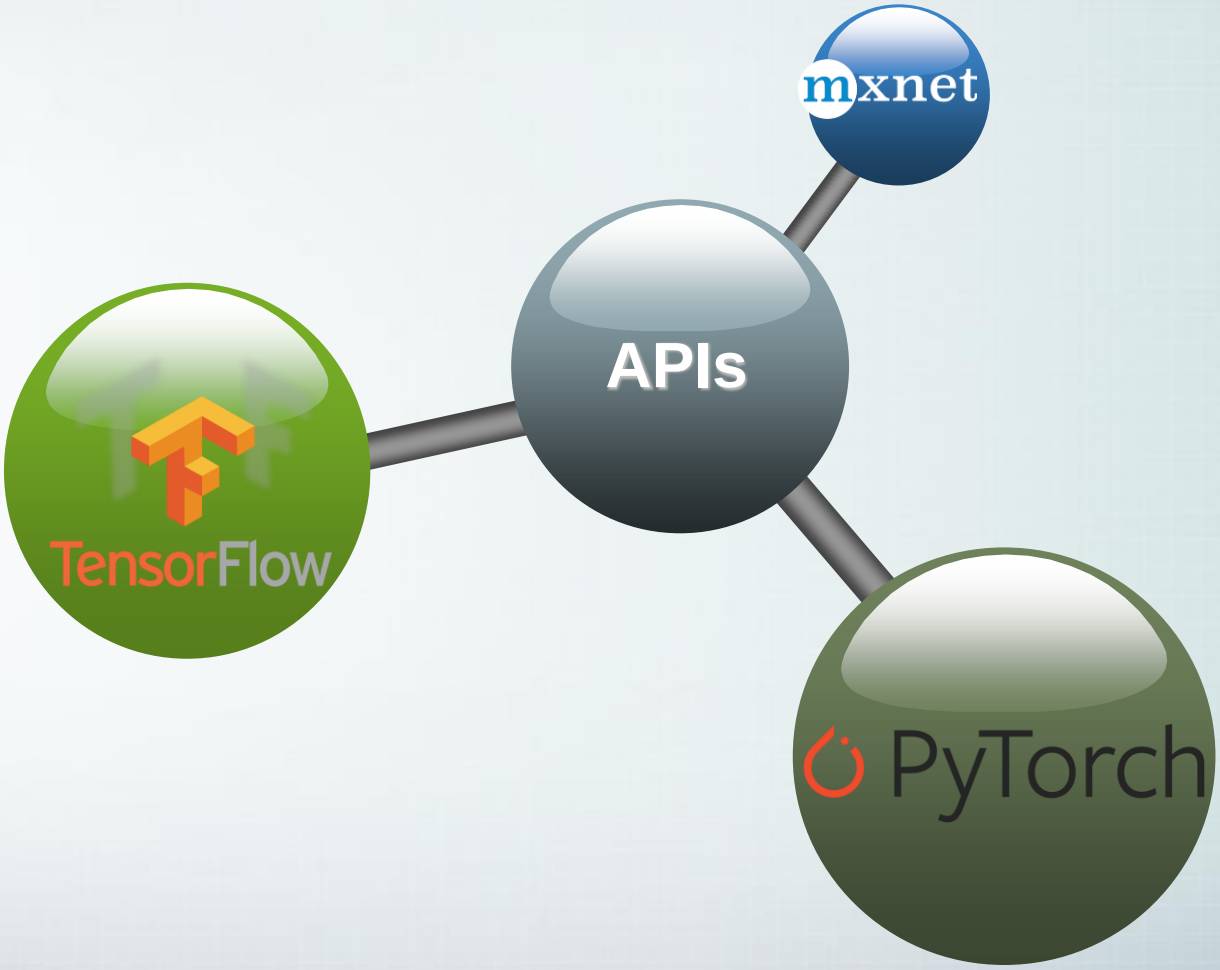


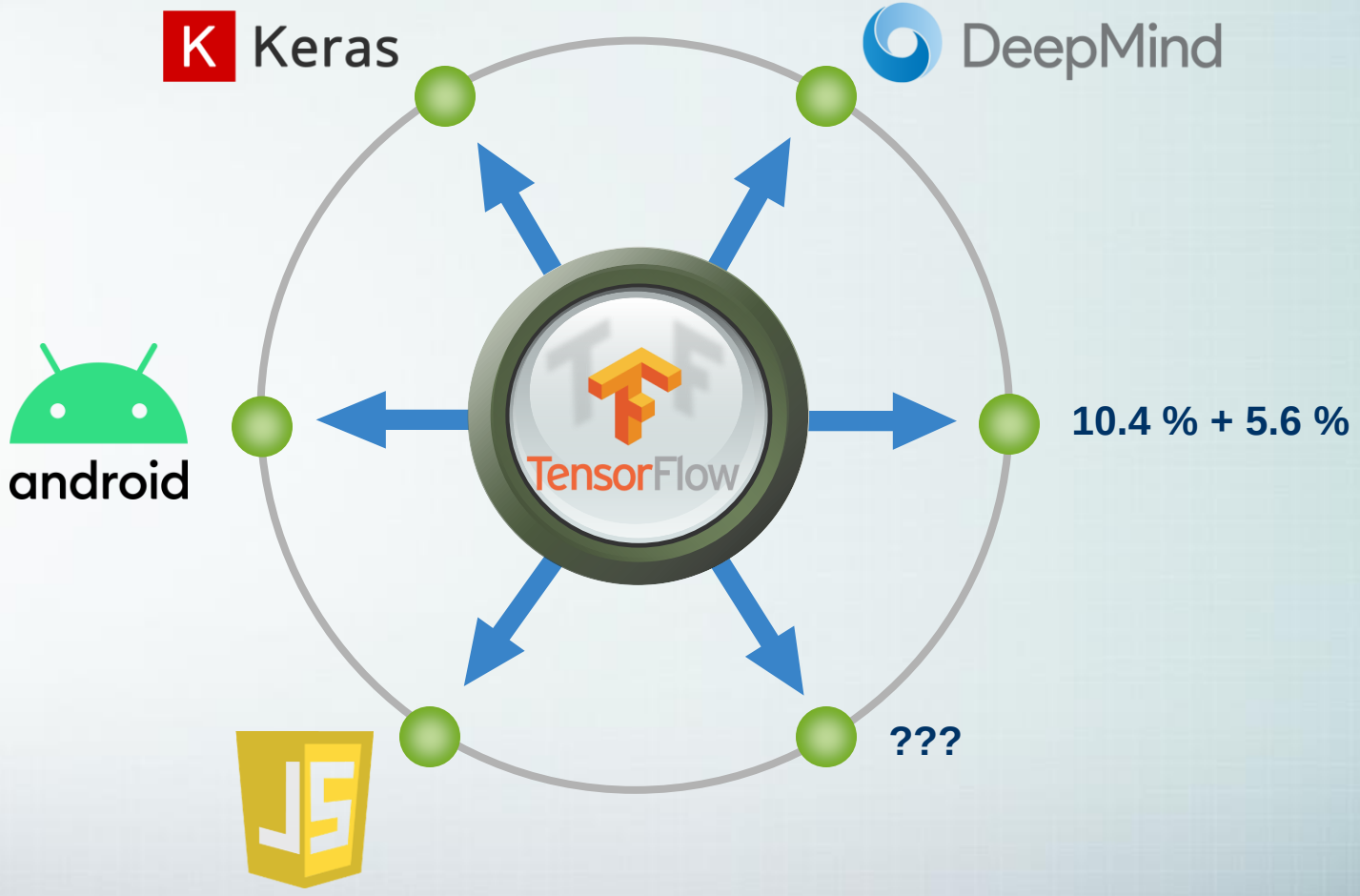
Figure 1: The Transformer - model architecture.

Contents

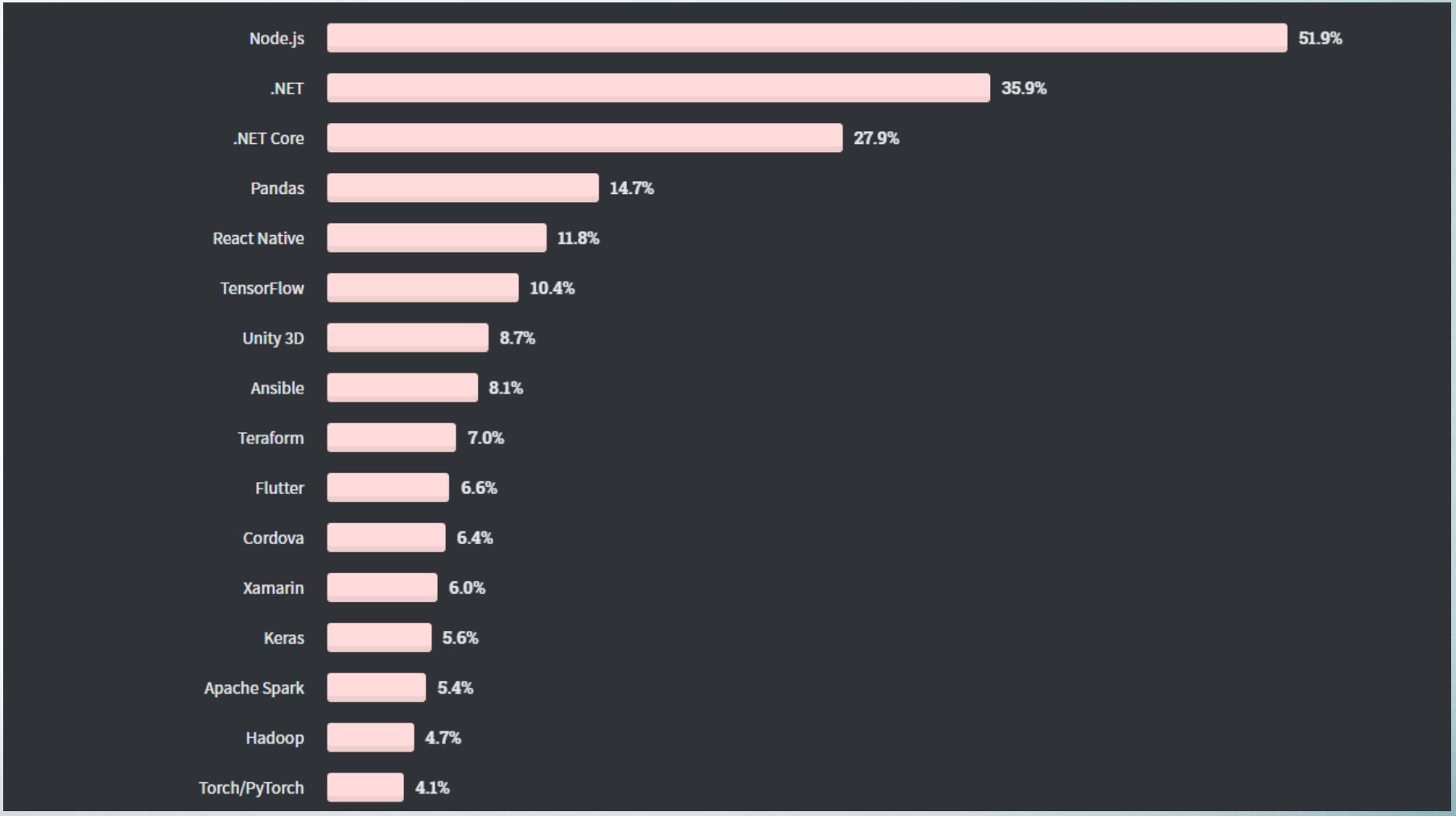
Tensorflow, PyTorch, MXNet



Why TensorFlow?



2020 Stack Overflow Developer Survey



H.W.

- **1. Run NumPy.html & Pandas.html on python (optional)**
- **2. from d2l.ai (Colab recommended)**
  - Run CH2.3.Linear Algebra
  - Run CH2.6.Probability
- **3. DLSeminar.pdf (optional)**
  - Read Lecture 1 ~ 2 (except Lecture2. Confusion Matrix and …)

Thank You !

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