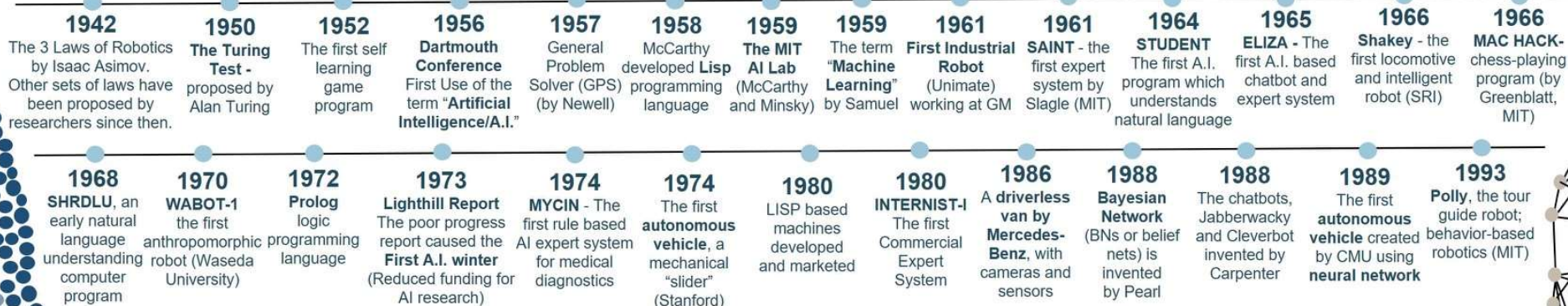


The Evolution of A.I.

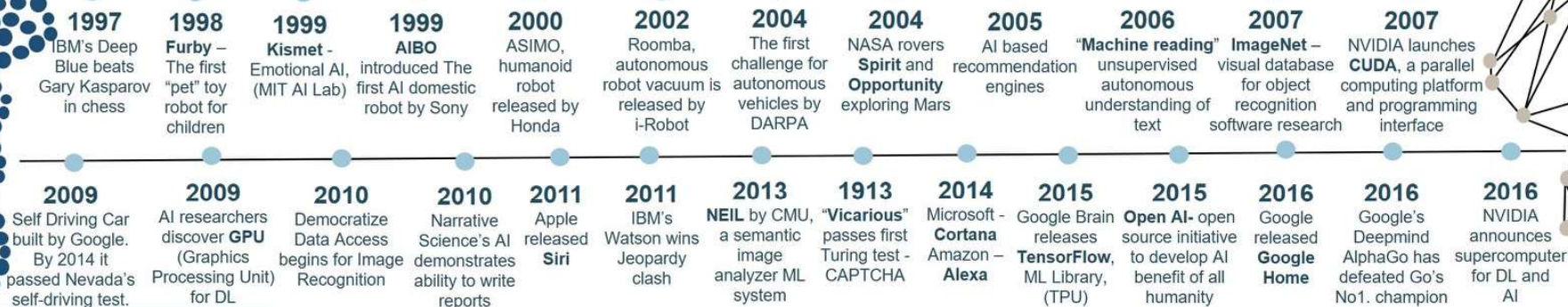
The 1st. Period 1950-1970

Trivial problem solving, no practicality, GOFAI - Good Old Fashioned Artificial Intelligence



The 2nd. Period 1980-2000

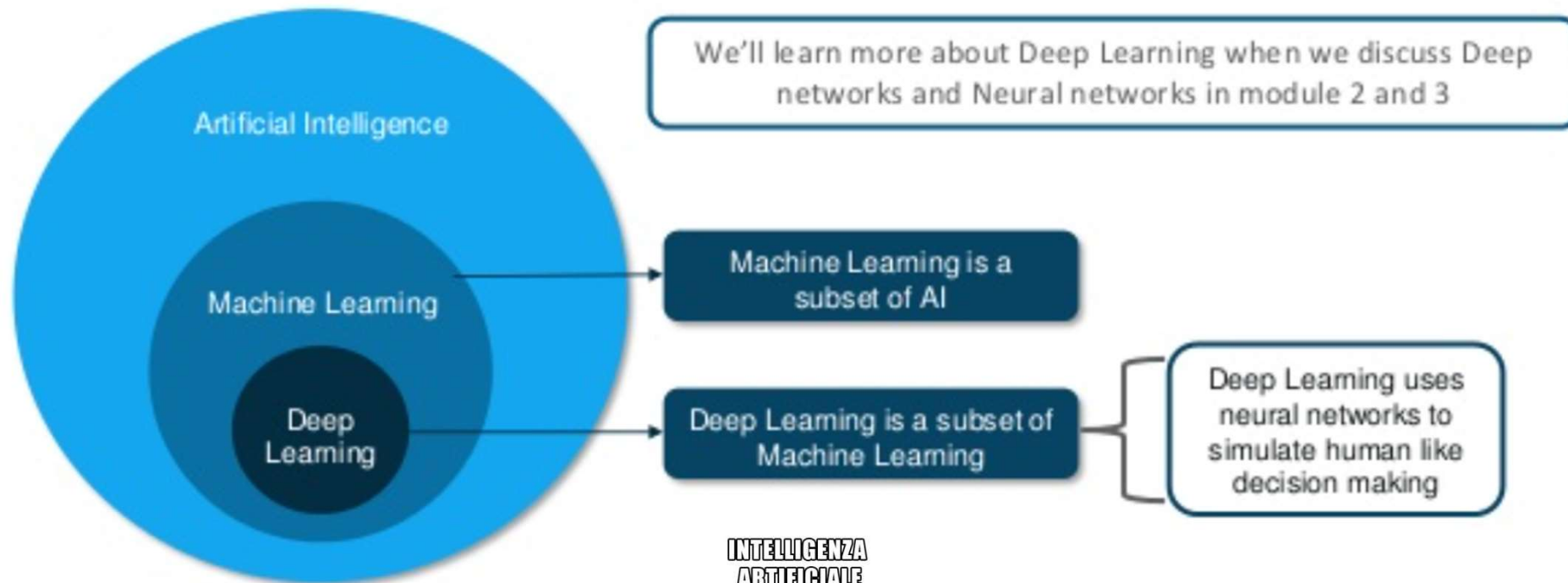
Researchers feeding machines with labeled data. Projects: ICOT - Japan '82, MCC - US '83, Alvey - UK '84. Algorithms began to appear as parts of larger systems. AI solutions proved to be useful throughout the technology industry, such as data mining, industrial robotics, logistics, speech recognition, banking software, medical diagnosis and search engines

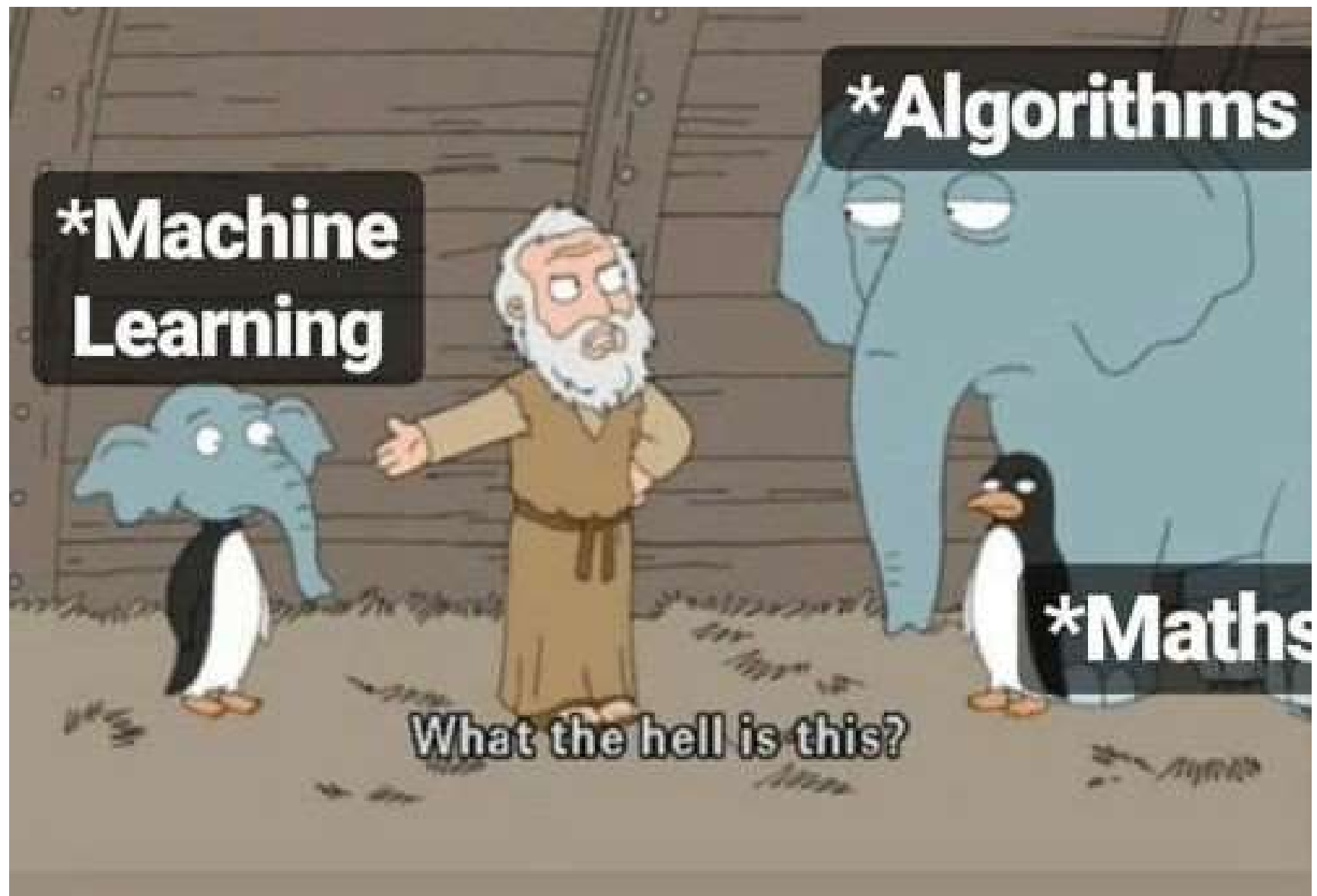


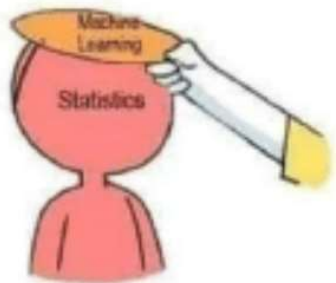
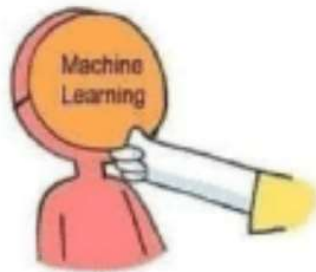
The 3rd. Period 2010-

The age of machine learning. Computers acquire knowledge from data, not humans. Large tech companies invest in commercial applications of AI/ML.









Analisi di rischio	Elaborazione del linguaggio parlato	Recommender system
Riconoscimento di oggetti	Fraud detection	Veicoli a guida autonoma
Customer segmentation		Diagnosi mediche

Analisi di rischio	Elaborazione del linguaggio parlato	Recommender system
Riconoscimento di oggetti	Fraud detection	Veicoli a guida autonoma
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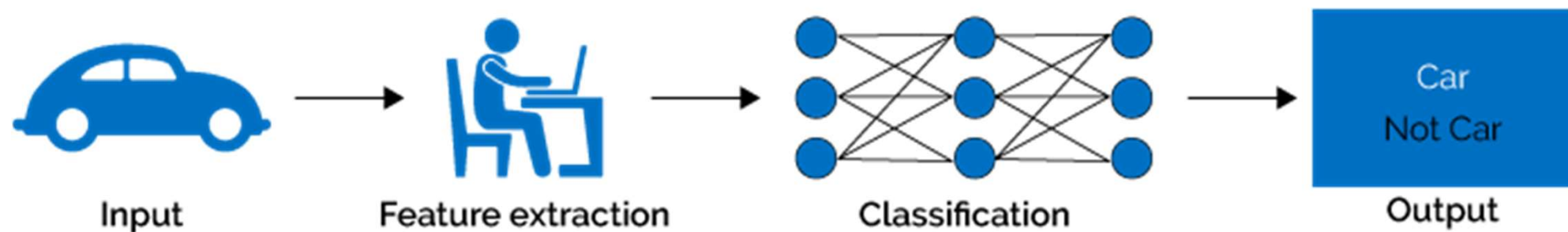
becomes
continue **models**
machine **AI**
use still COVID IoT
applications year work
technology used time about
people **data** science
value start model
healthcare GPT digital being business
new management another NLP Deep
Language real life need
MLOps **Analytics**
issues
organizations **learning**

CAN I KNOW WHAT IS

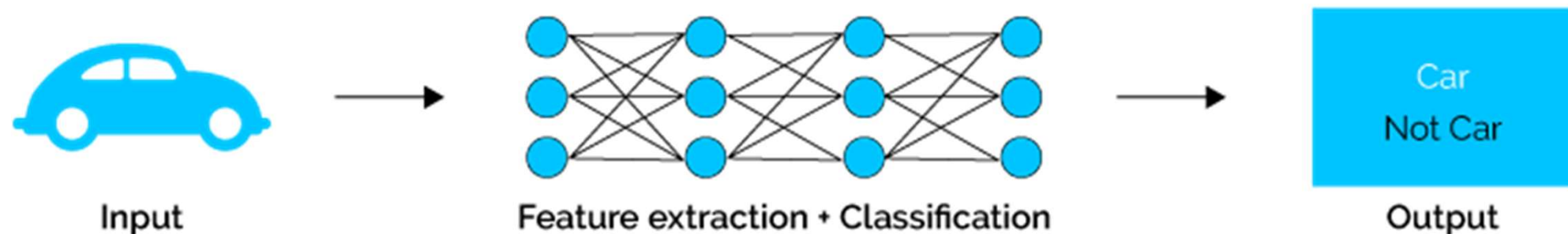


DEEP LEARNING?

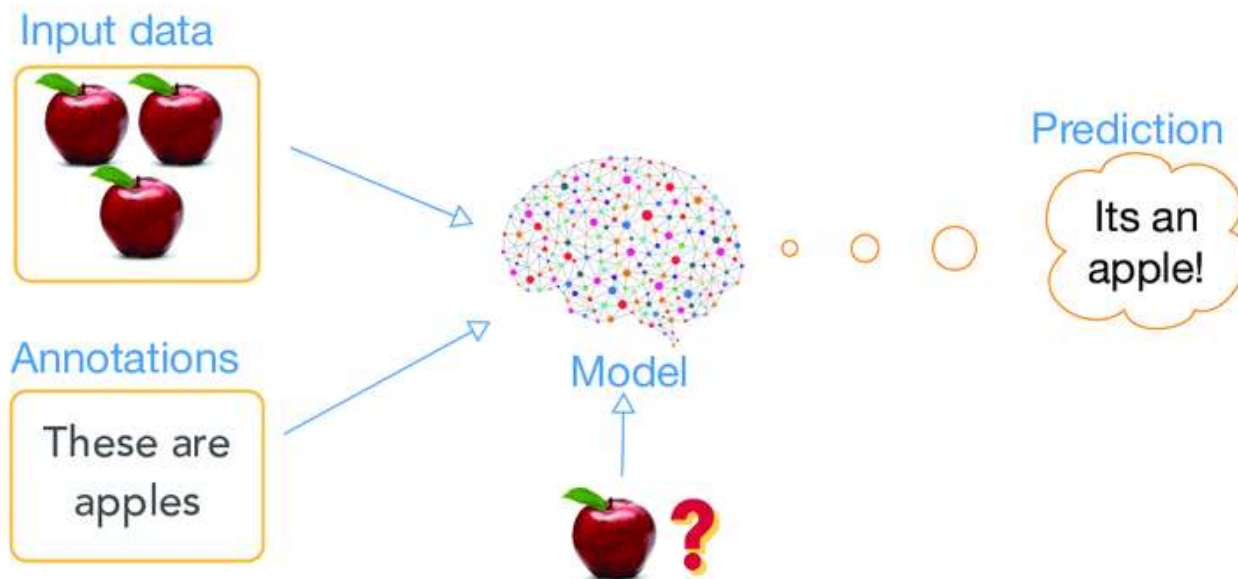
Machine Learning



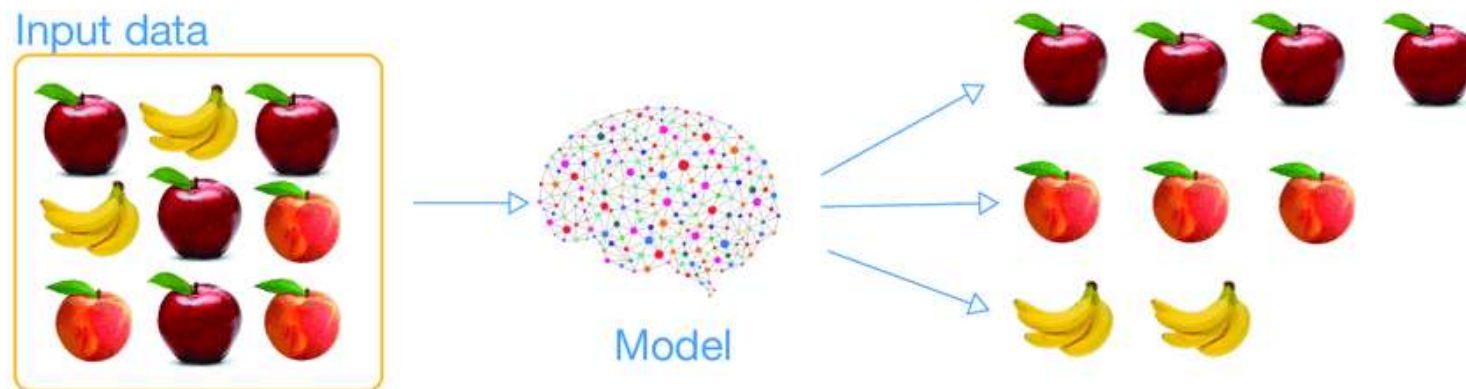
Deep Learning

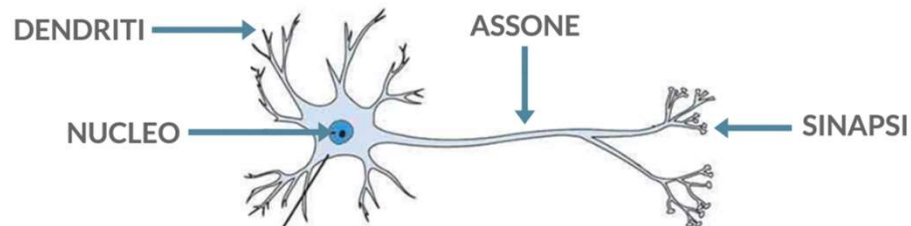


supervised learning

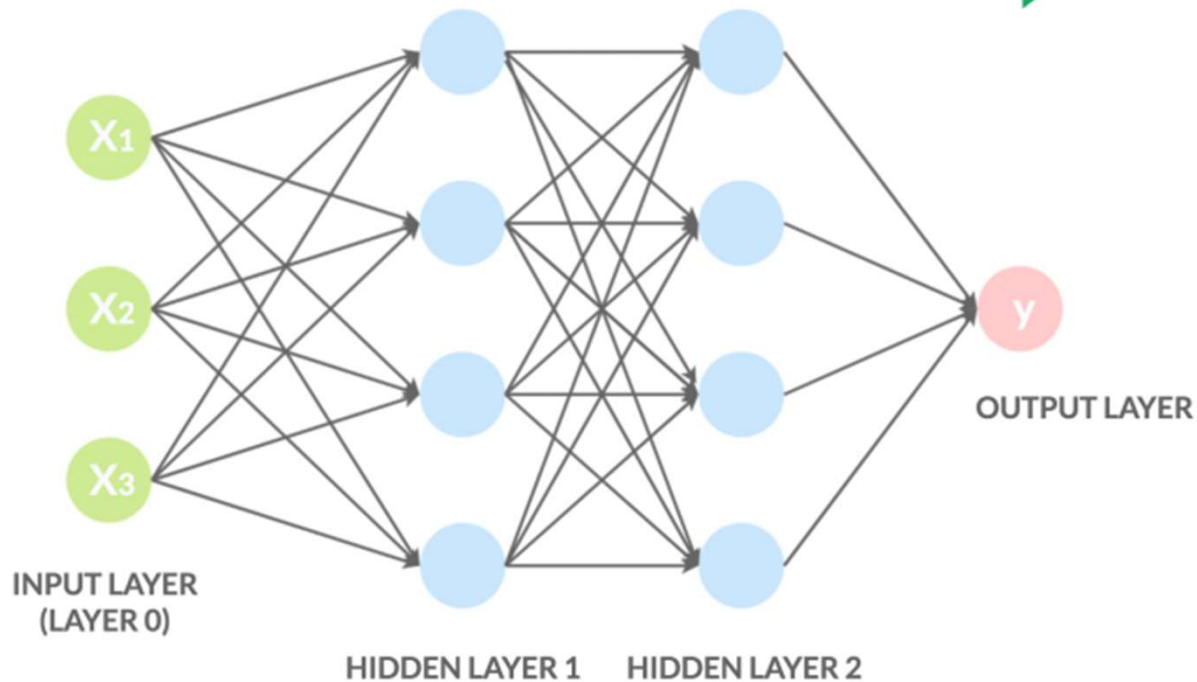


unsupervised learning





FORWARD PROPAGATION: Calcolare le predizioni



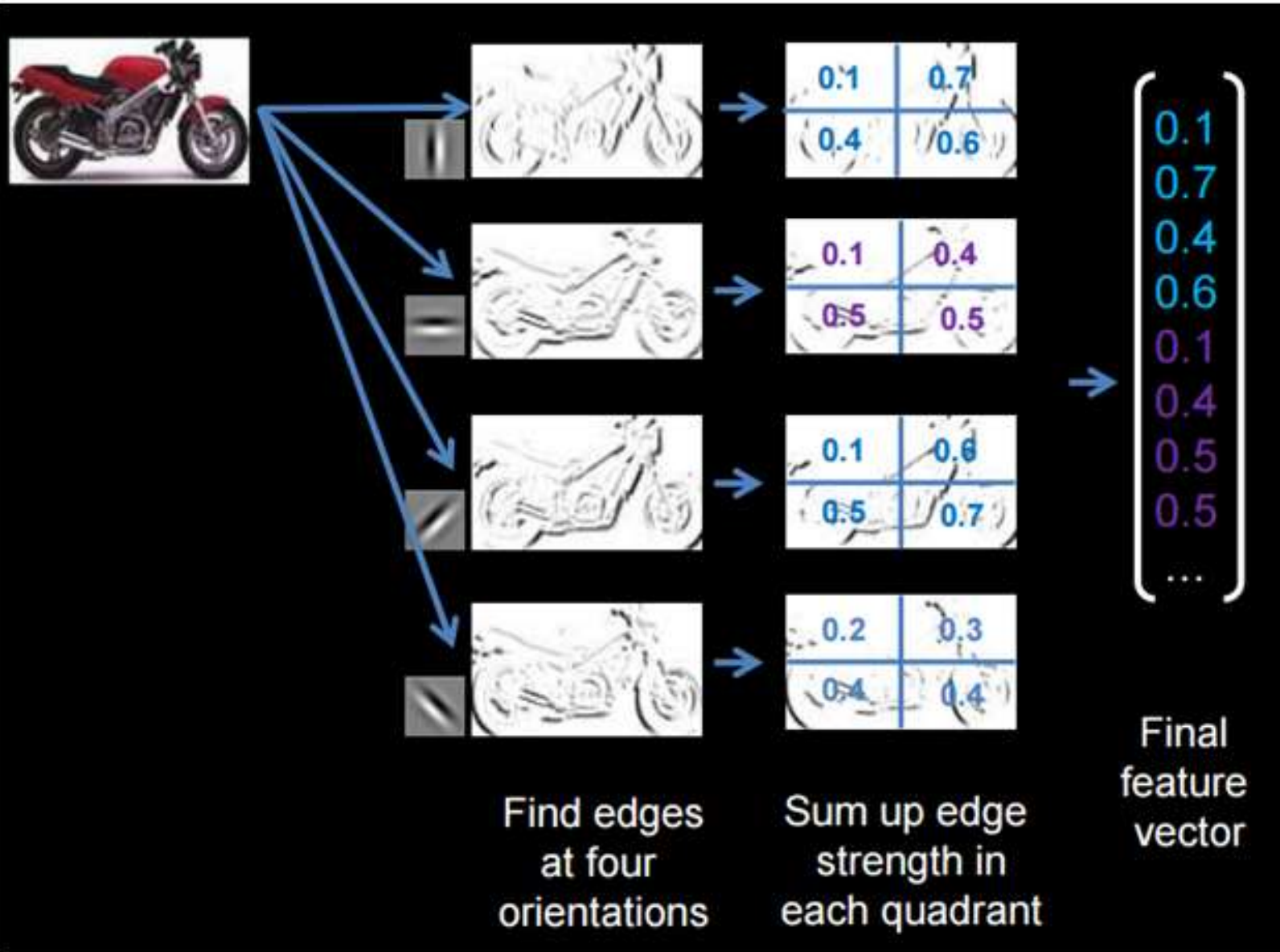
BACKWARD PROPAGATION: Aggiornare i pesi

PROBLEMA

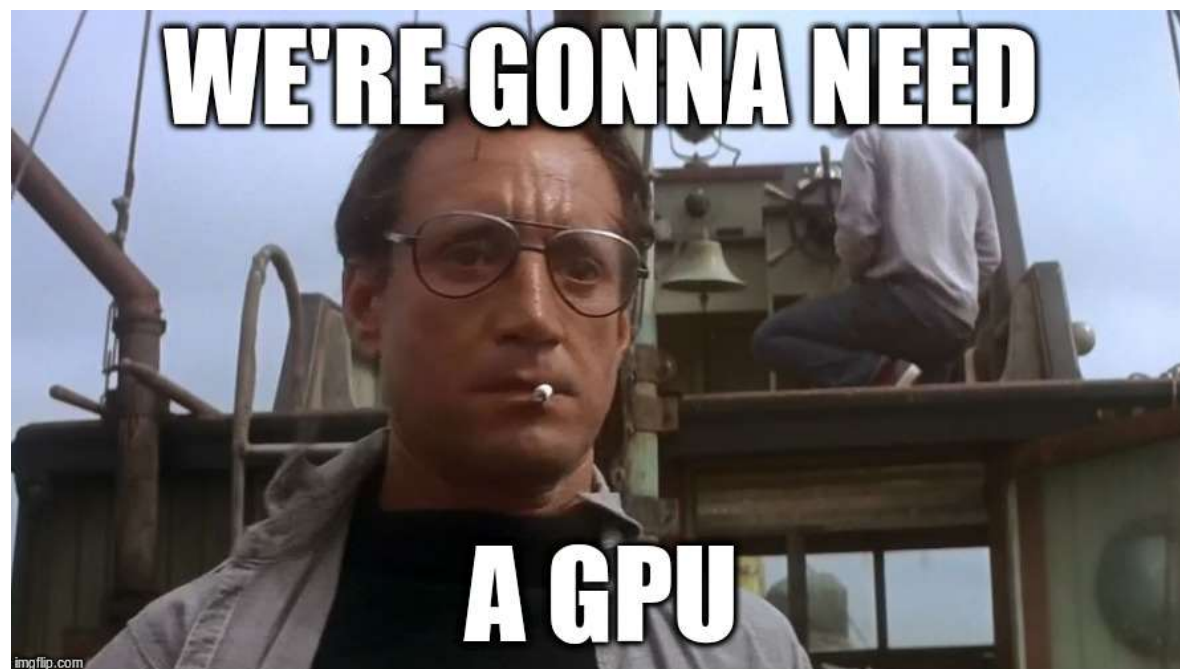
Una rete neurale ha un enorme numero di pesi, per eseguire il gradient descend dobbiamo sapere quanto ogni peso di ogni layer ha influenzato l'errore.

SOLUZIONE: BACKPROPAGATION

Propagando all'indietro l'errore la backpropagation ci permette di sapere in che quantità ogni nodo di ogni layer ha influito sull'errore e possiamo utilizzare questi valori per aggiornare i pesi eseguendo il gradient descend.



HEAVY





**Waiting for an
experiment to
finish on my local
machine.**

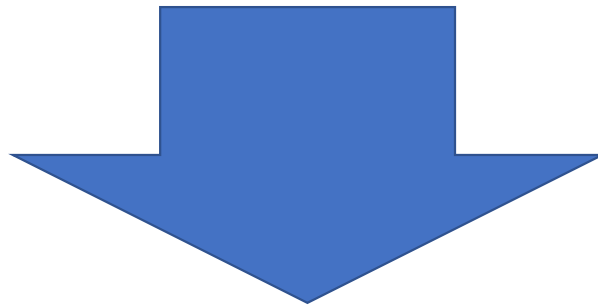


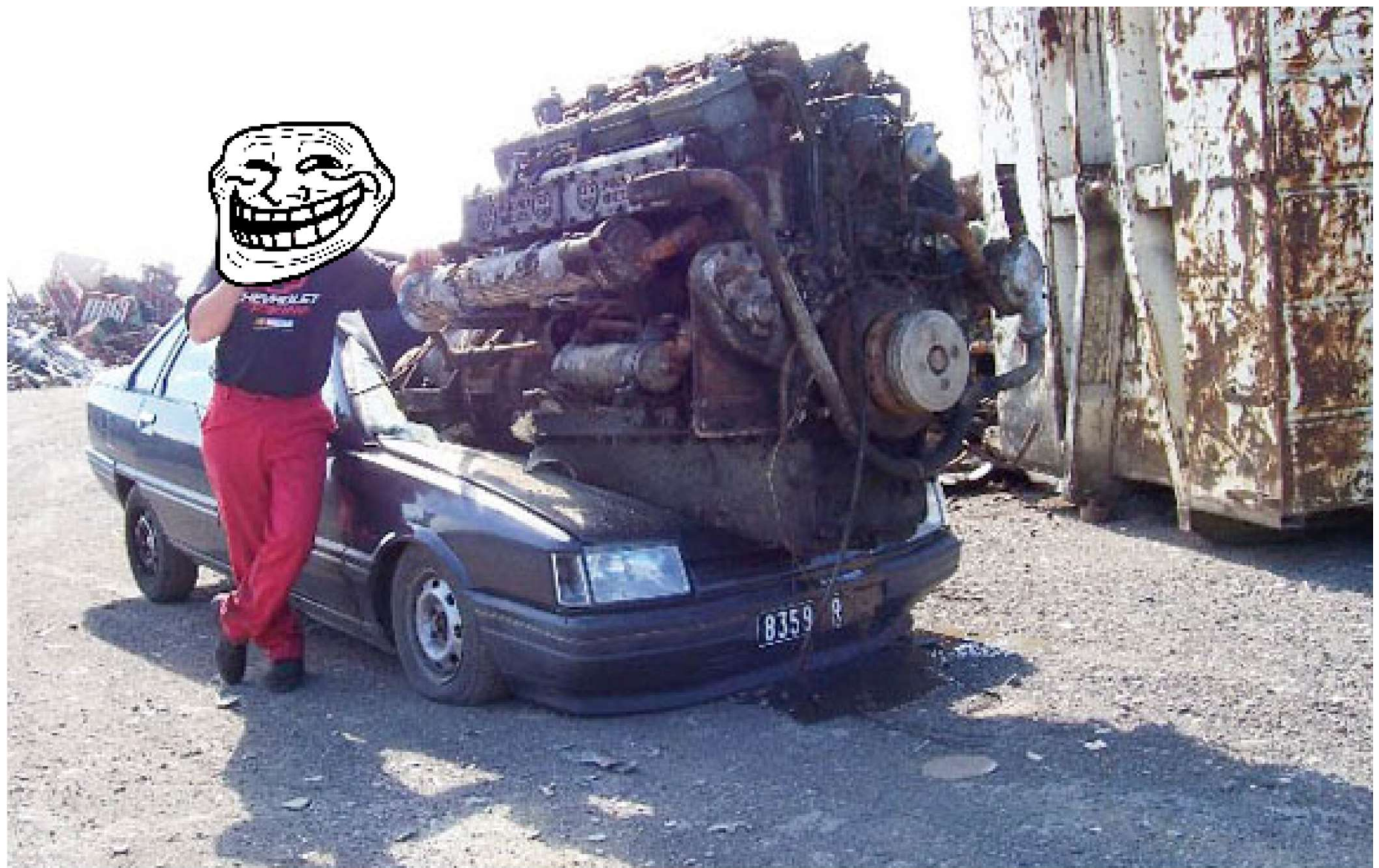
**ML infrastructure
could help.**

The GPU War



**WHAT DOES NEURAL
NETWORKS MEAN
TO ME?**





IO VEDO

IL DEEP LEARNING OVUNQUE

JM Fan



DEEP LEARNING

OGNI SERVIZIO DI GOOGLE

A meme featuring Woody and Buzz Lightyear from the movie Toy Story. Woody is on the left, looking concerned. Buzz is on the right, looking excited and holding up his hand with fingers spread. The background is a simple indoor setting.

NEURAL NETWORKS

**NEURAL NETWORKS
EVERYWHERE**

makeameme.org

My Answer.....

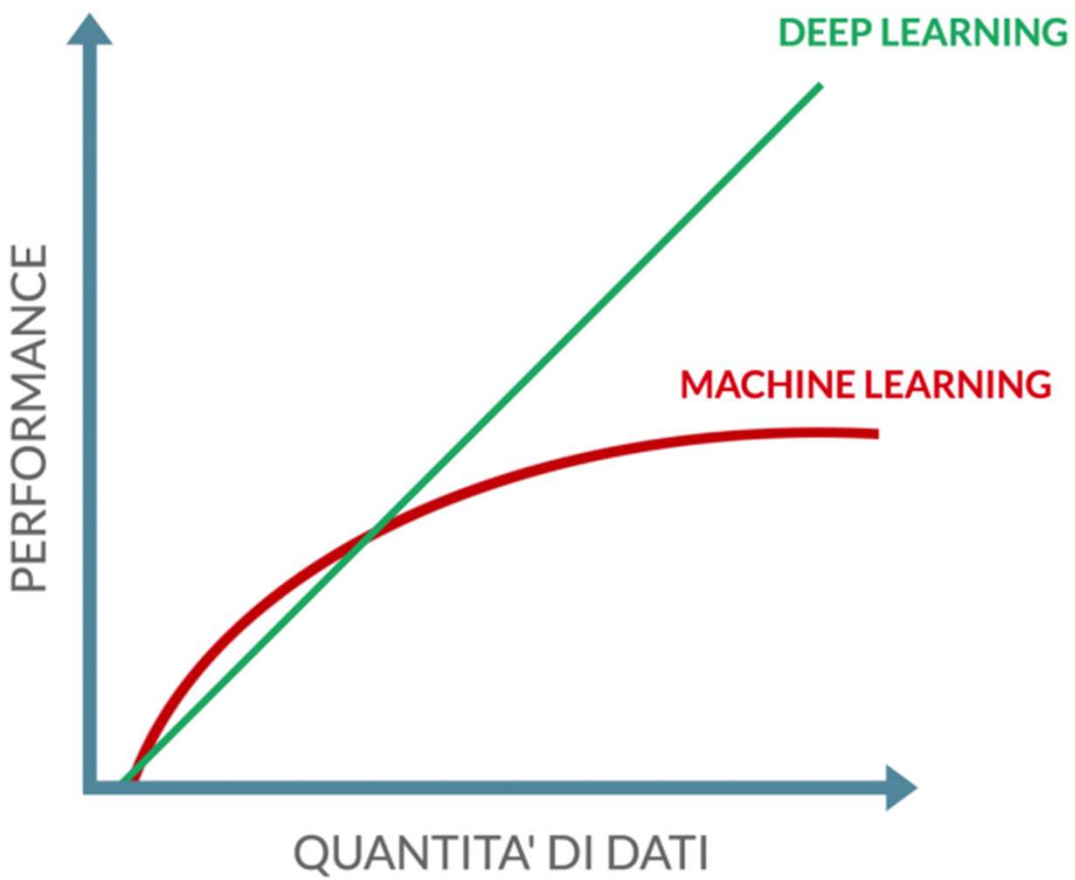
A meme featuring Woody and Buzz Lightyear from the movie Toy Story. Woody is on the left, looking concerned. Buzz is on the right, looking excited and holding up his hand with fingers spread. The background is a simple room with a door and a window.

BAD DATA

BAD DATA EVERYWHERE

makeameme.org

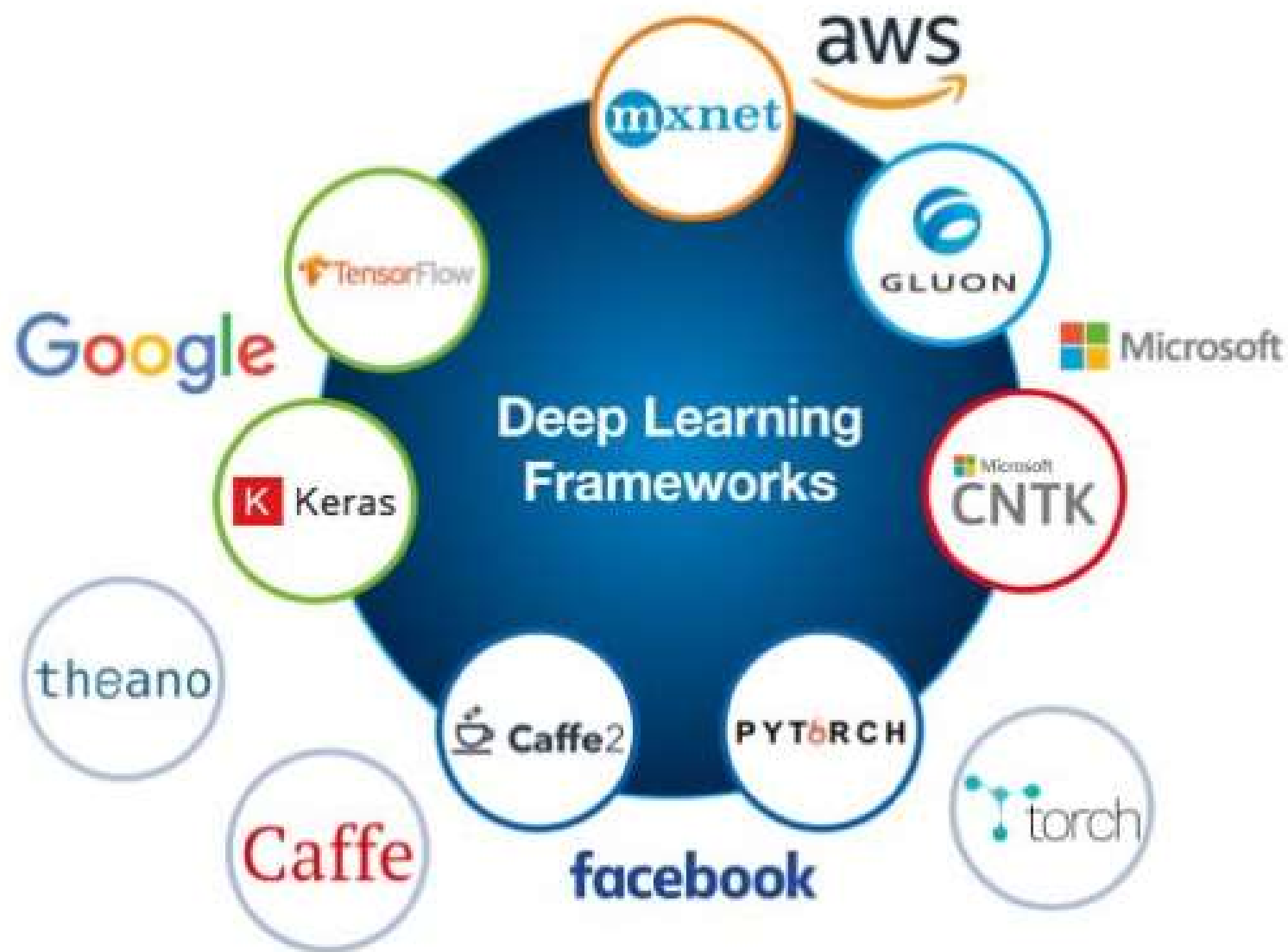
SIMPLE PROBLEM WITH NEURAL NETWORKS



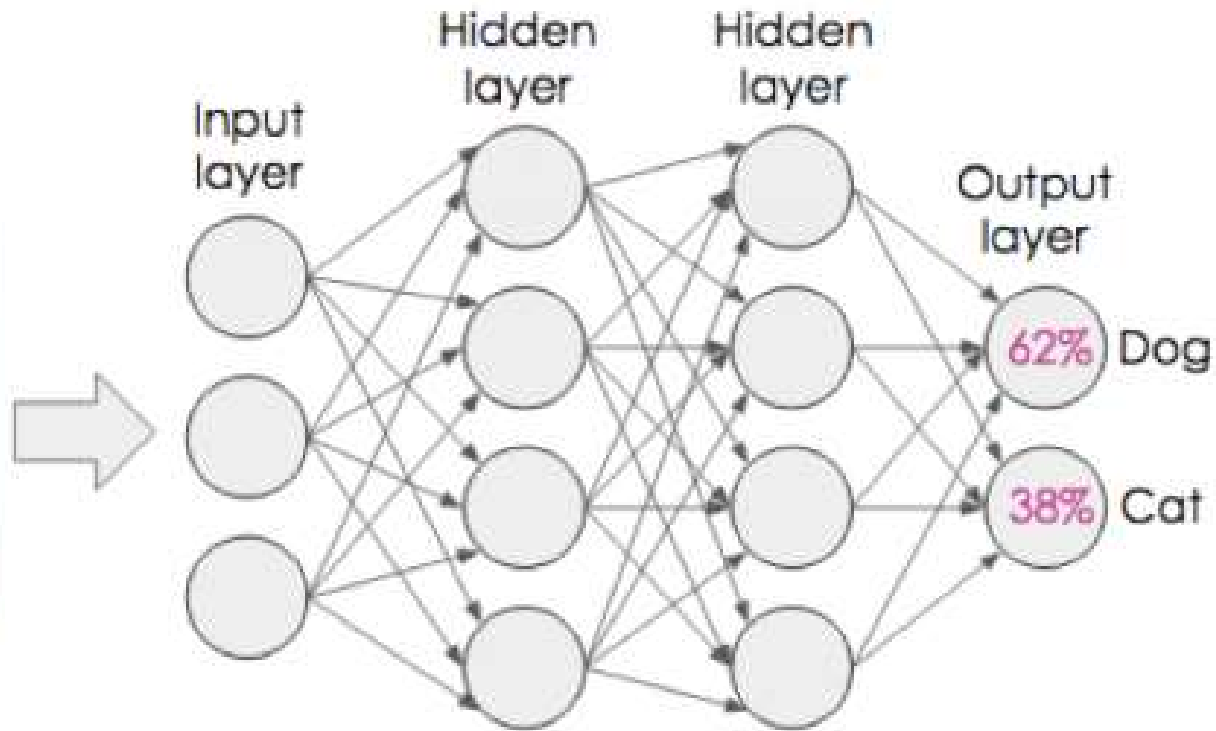
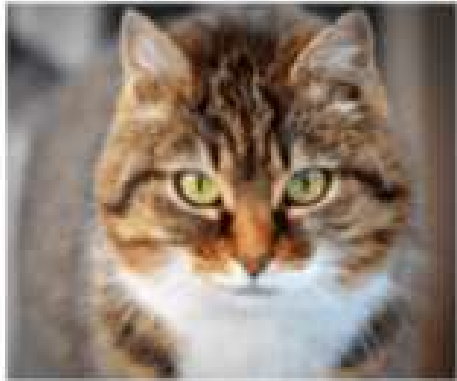
SAY DEEP LEARNING



ONE MORE TIME

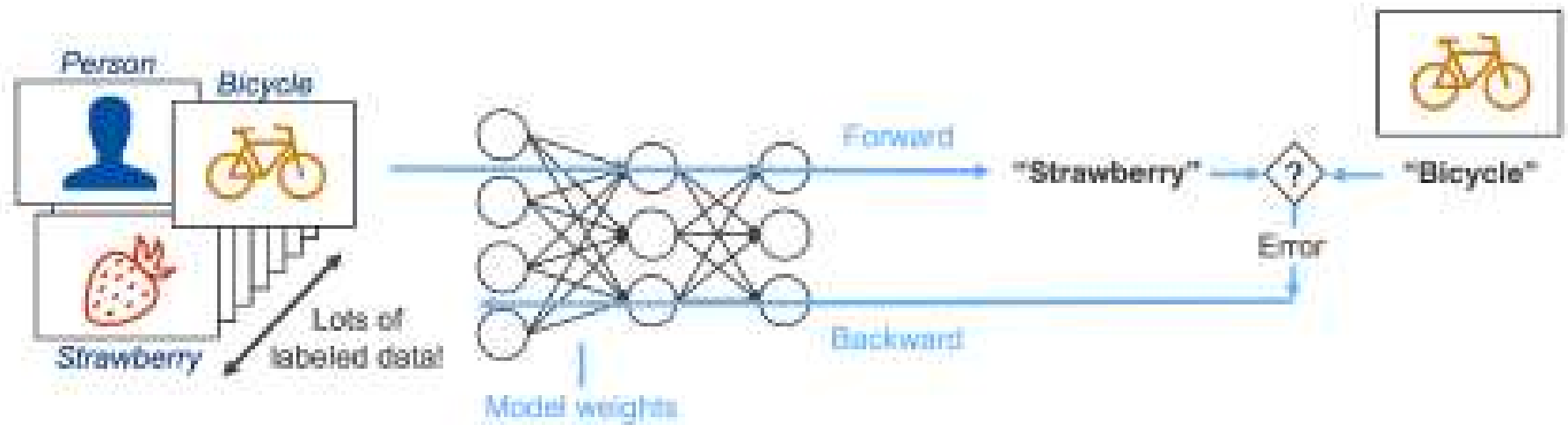




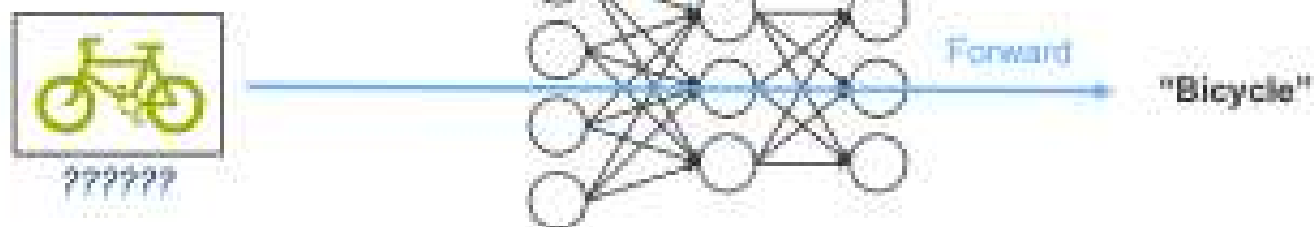


It should be
100% Cat :(

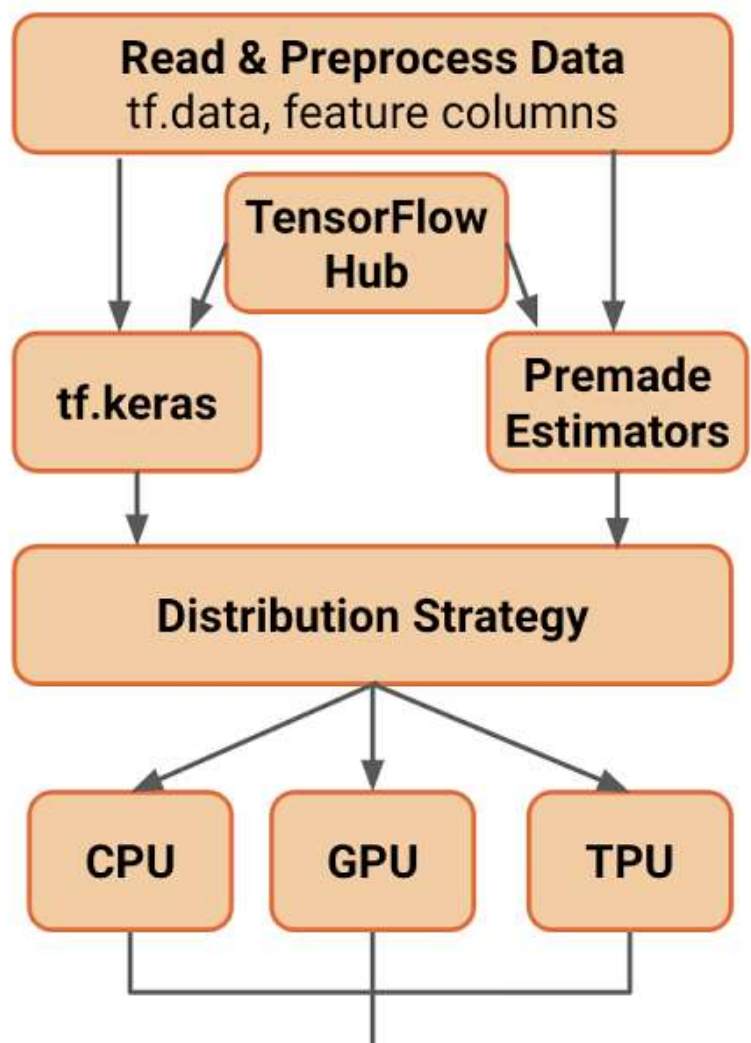
Training



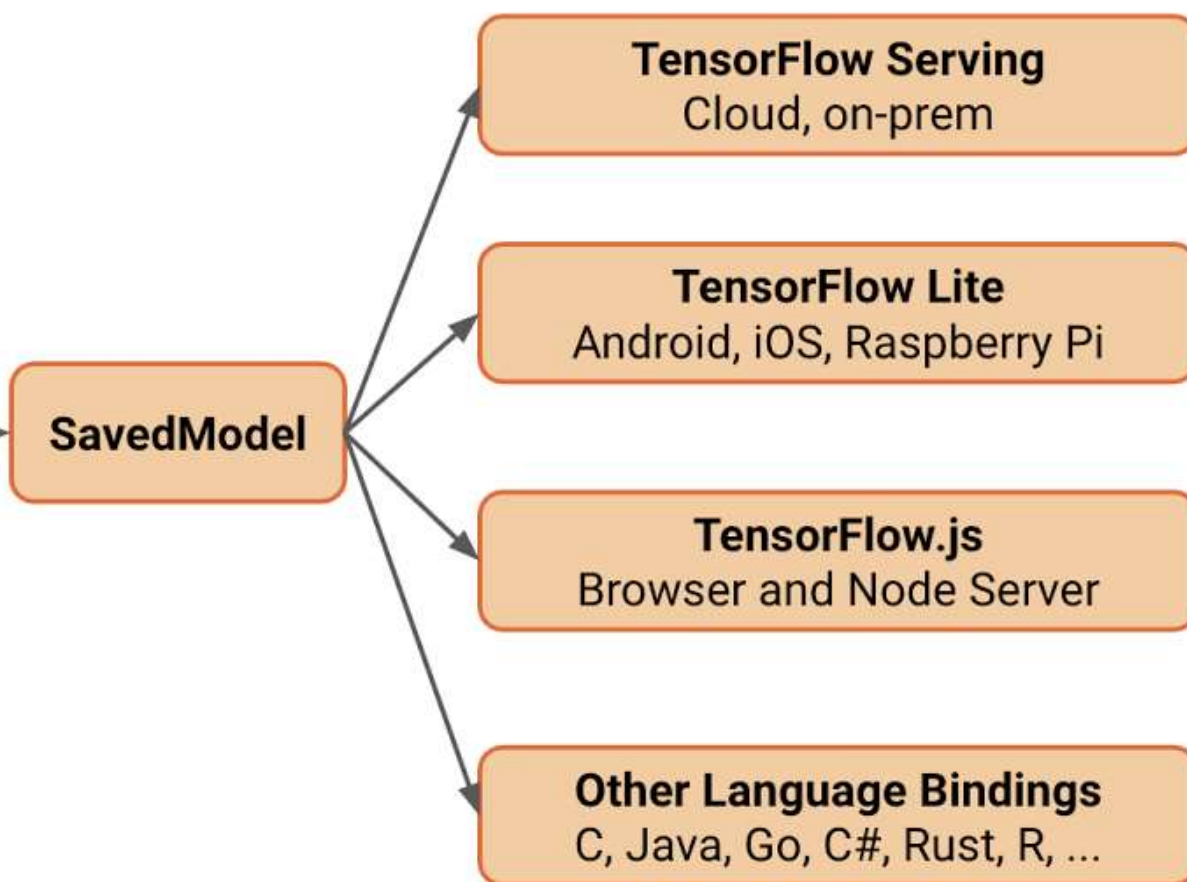
Inference

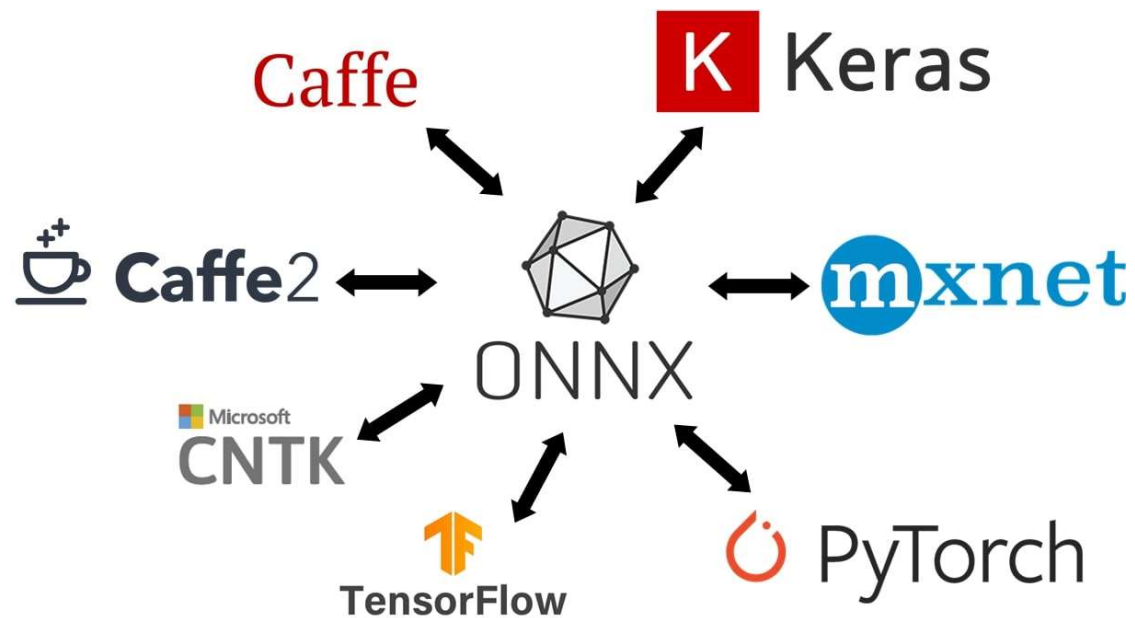


TRAINING



DEPLOYMENT

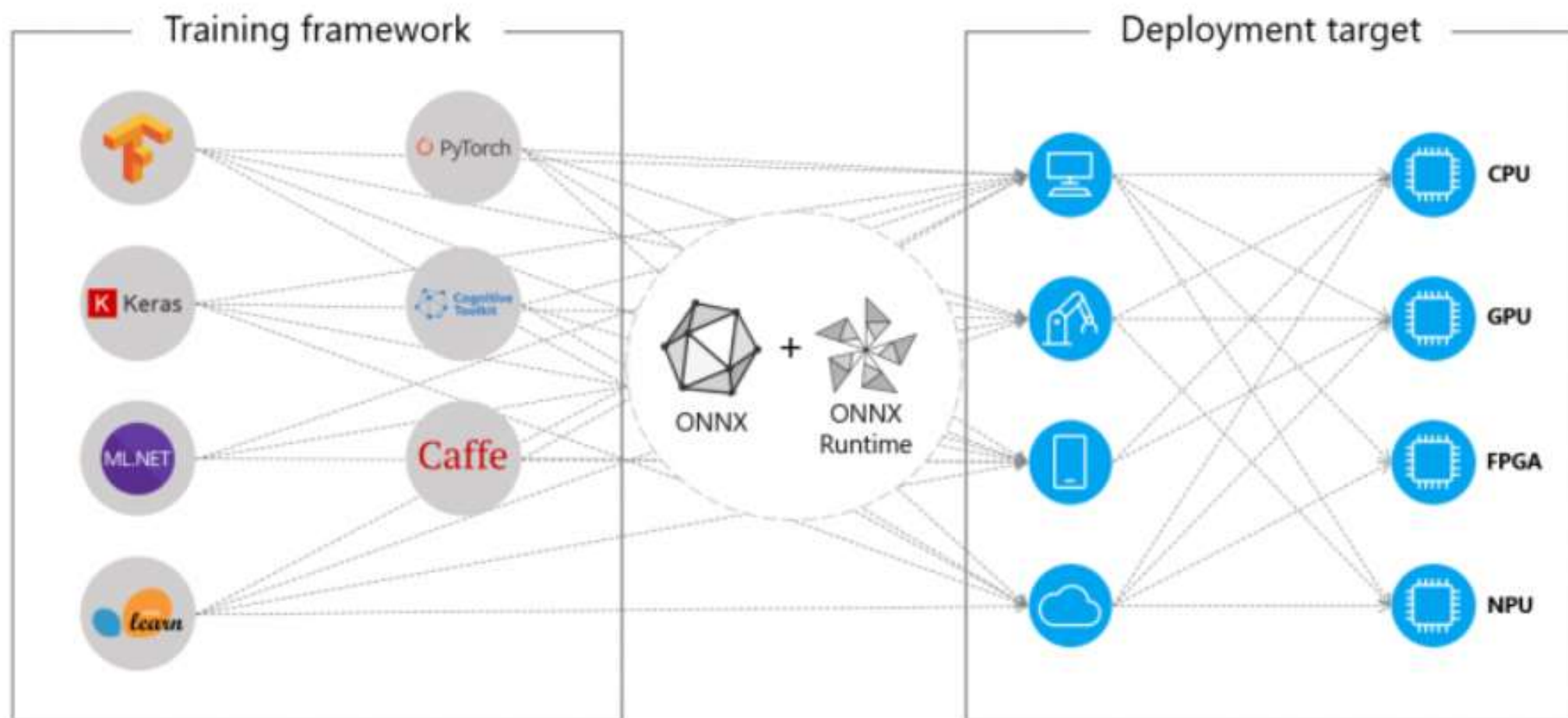


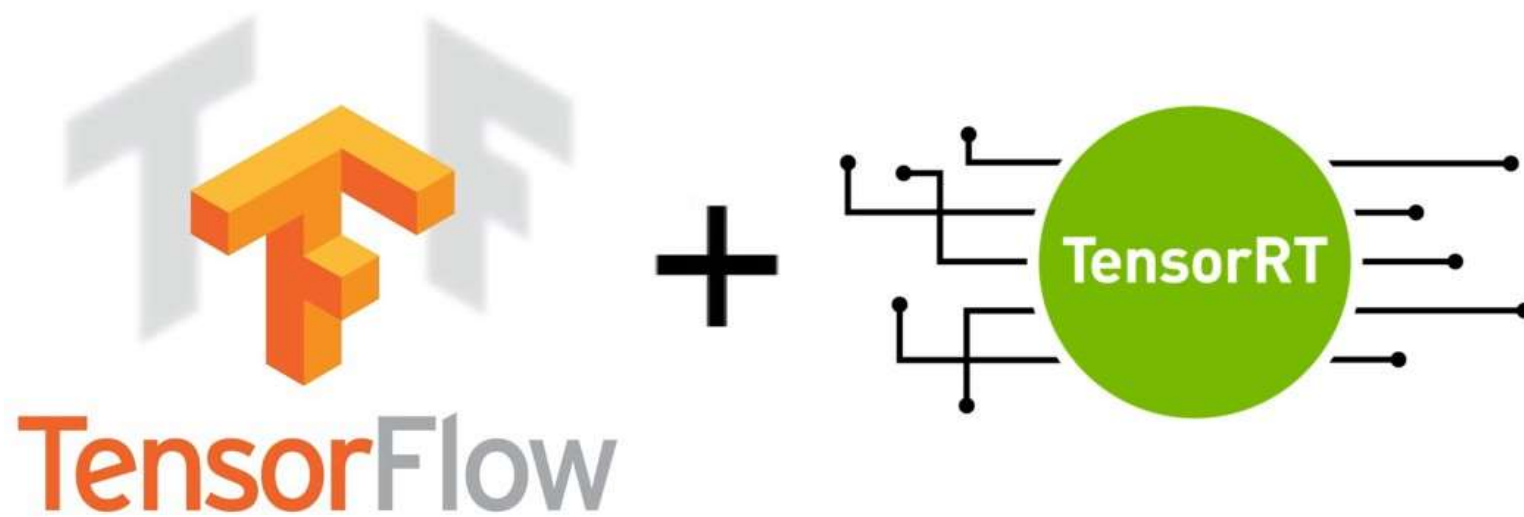


ONNX converters for popular frameworks

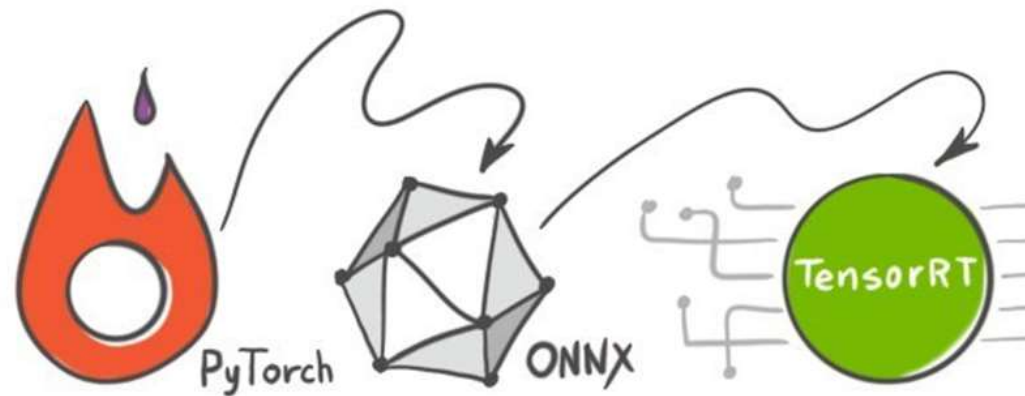
- Native Support
 - Pytorch
 - CNTK
- Open sourced Converter Tools
 - Tensorflow: [onnx/tensorflow-onnx](#)
 - Keras: [onnx/keras-onnx](#)
 - Scikit-learn: [onnx/sklearn-onnx](#)
 - CoreML: [onnx/onnxmltools](#)
 - LightGBM: [onnx/onnxmltools](#)
 - LibSVM: [onnx/onnxmltools](#)
 - XGBoost: [onnx/onnxmltools](#)







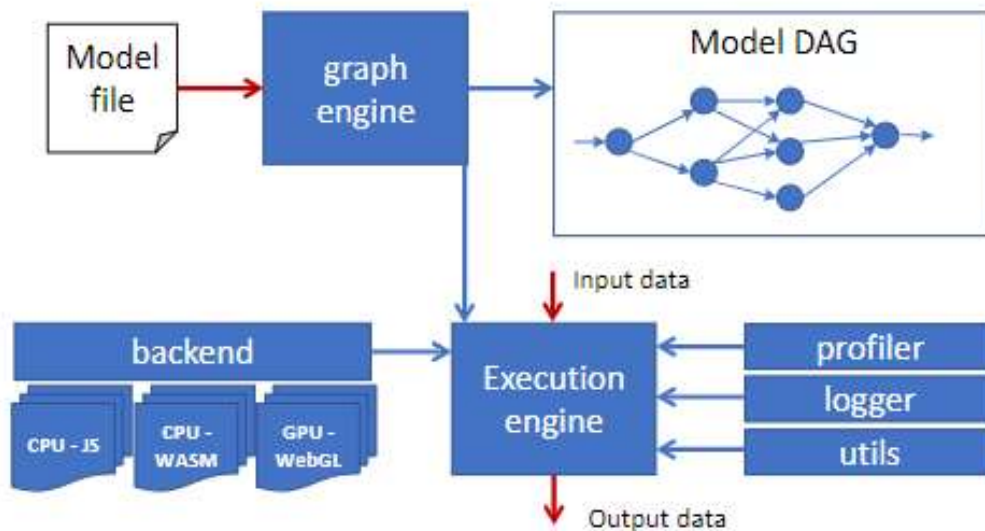
LEARNOPENCV.COM



**How To Run Inference Using
TensorRT C++ API**

ONNX.JS

- A pure JavaScript implementation of ONNX framework
- Optimize ONNX model inference on both CPUs and GPUs
- Support a variety of browsers on major OSes



Desktop Platforms

OS/Browser	Chrome	Edge	FireFox	Safari	Opera	Electron	Node.js
Windows 10	✓	✓	✓	-	✓	✓	✓
macOS	✓		✓	✓	✓	✓	✓
Ubuntu LTS 18.04	✓	-	✓	-	✓	✓	✓

Mobile Platforms

OS/Browser	Chrome	Edge	FireFox	Safari	Opera
iOS	✓	✓	✓	✓	✓
Android	✓	✓	Coming soon	-	✓

HTML example to use ONNX.js

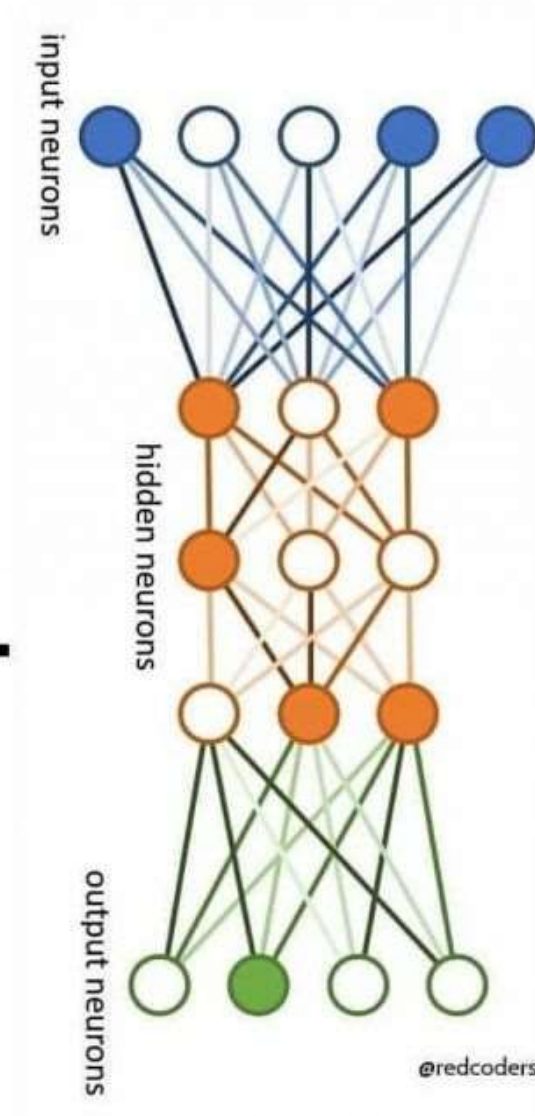
```
<html>
  <head>
  </head>

  <body>
    <!-- Load ONNX.js -->
    <script src="https://cdn.jsdelivr.net/npm/onnxjs/dist/onnx.min.js"></script>
    <!-- Code that consume ONNX.js -->
    <script>
      // create a session
      const myOnnxSession = new onnx.InferenceSession();
      // load the ONNX model file
      myOnnxSession.loadModel("./my-model.onnx").then(()=>{
        // generate model input
        const inferenceInputs = getInputs();
        // execute the model
        session.run(inferenceInputs).then(output=>{
          // consume the output
          const outputTensor = output.values().next().value;
          console.log(`model output tensor: ${outputTensor.data}`);
        });
      })
    </script>
  </body>
</html>
```

**THIS IS A NEURAL
NETWORK.**

**IT MAKES MISTAKES.
IT LEARNS FROM THEM.**

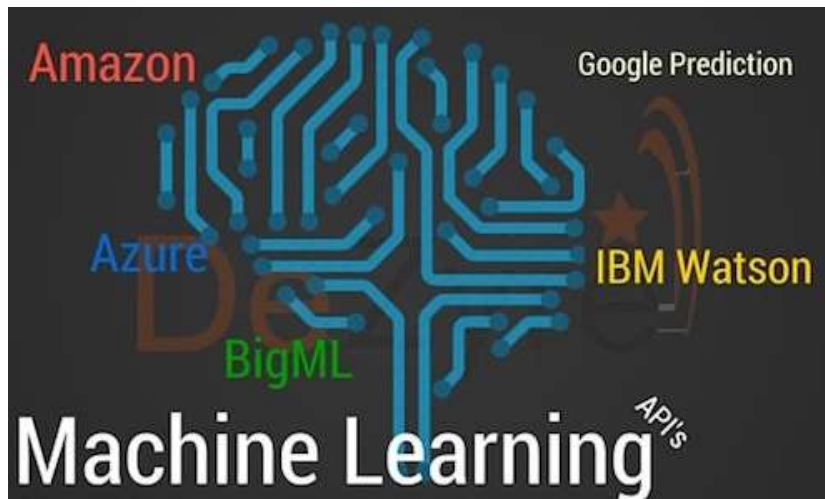
**BE LIKE A NEURAL
NETWORK.**





API





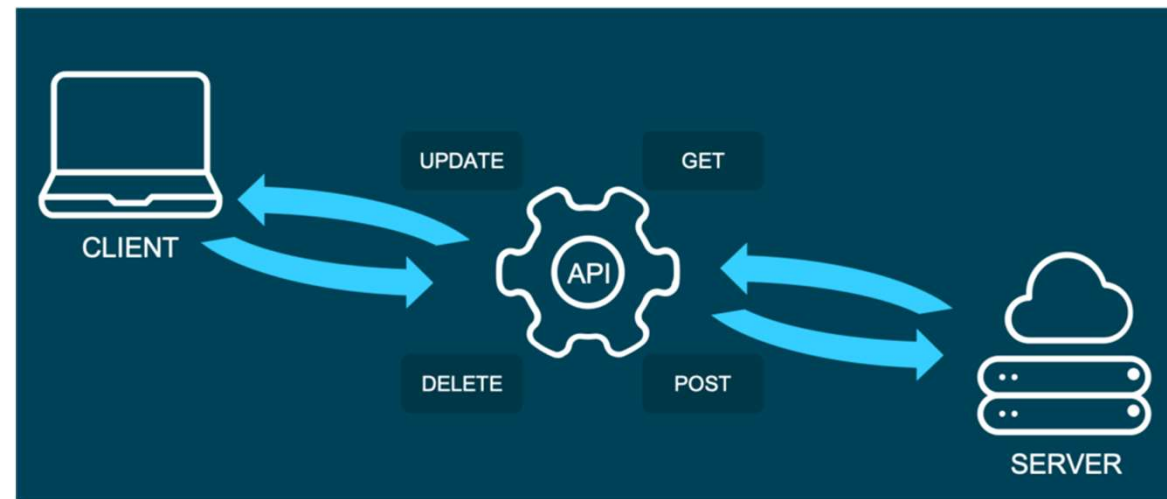
Custom ML models



TensorFlow



Machine Learning
Engine



Pre-trained ML models



Vision API



Speech API



Jobs API



Natural
Language API



Translation
API



Video
Intelligence API



That's all Folks!

It's Just
The Beginning

