

Deep learning

A large, thin-lined hexagon contains the word "Deep learning" in a bold, white, sans-serif font. Two grey circular nodes are positioned outside the hexagon, one on each side. Lines connect each node to the corresponding opposite corners of the hexagon, forming an "X" shape below the text.

Speaker: Naphapa Panyanirun

Module: Deep learning



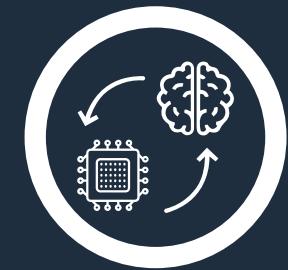
Naphapa Panyanirun (Prin)

Medical student

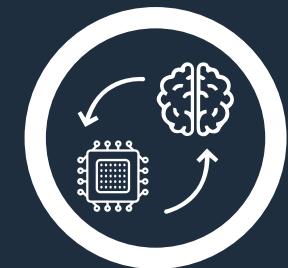
Faculty of Medicine, Chulalongkorn University

Clinical Computational Cognitive Neuroscience Lab
King Chulalongkorn Memorial Hospital

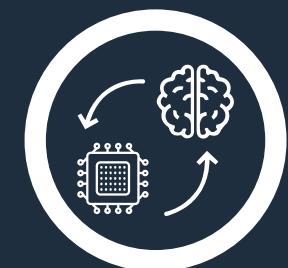
Outline



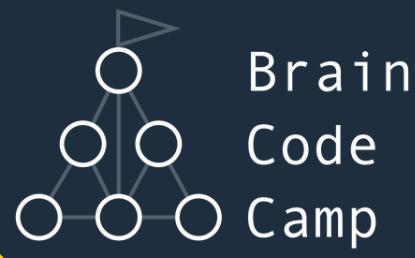
What is Deep Learning



Convolutional Neural Network (CNN)



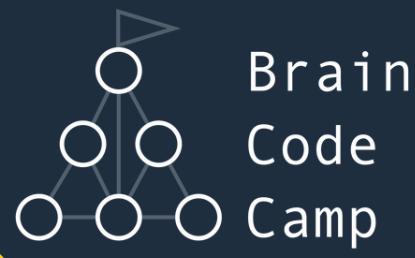
Applications



Artificial Intelligence

Machine Learning

Deep learning

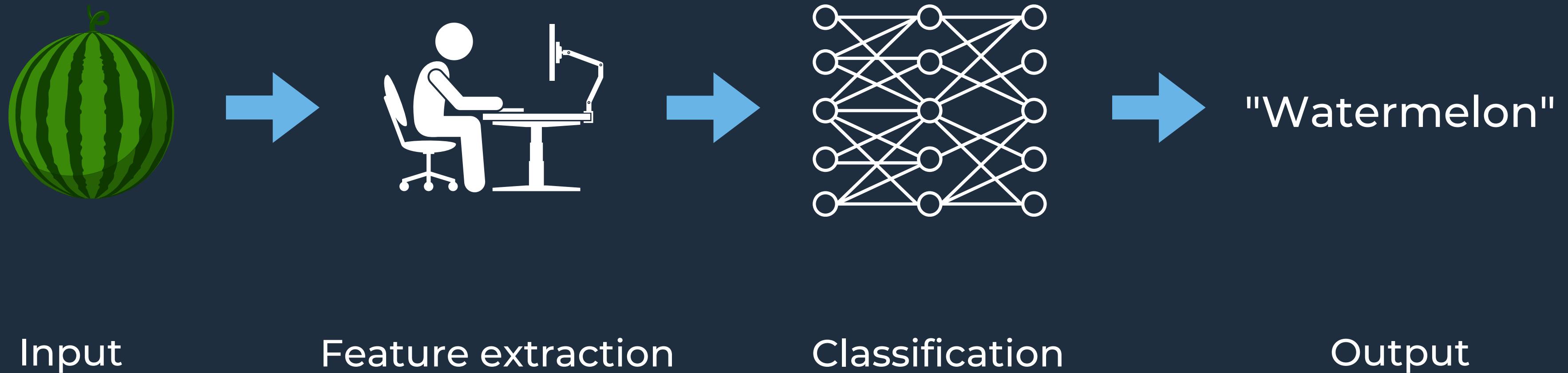


Artificial Intelligence

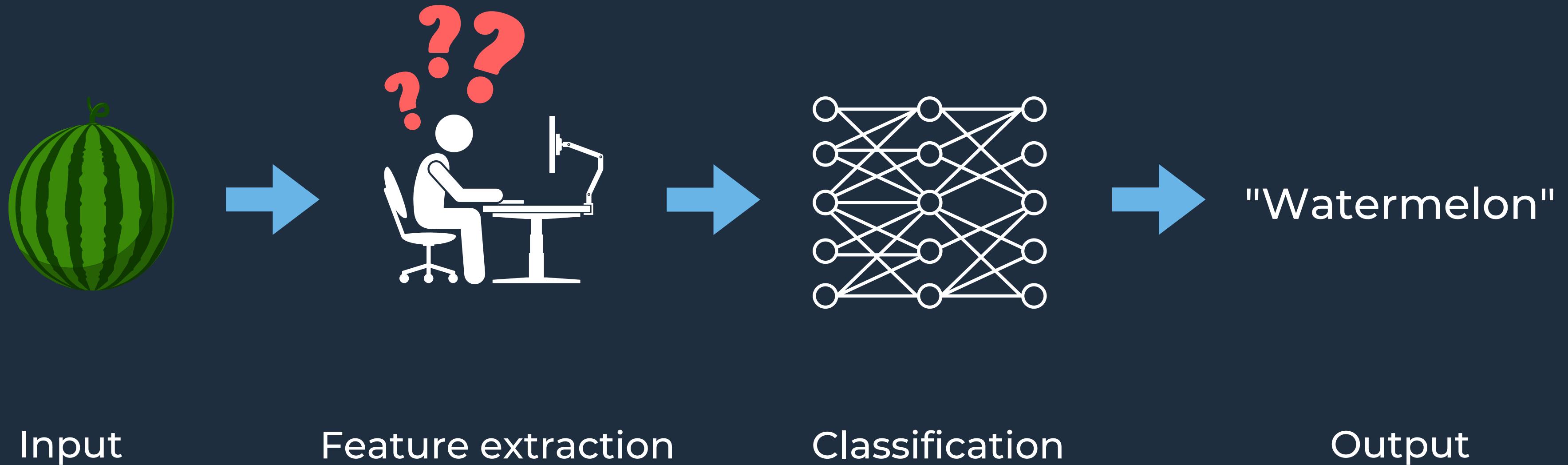
Machine Learning

Deep learning

Traditional Machine Learning



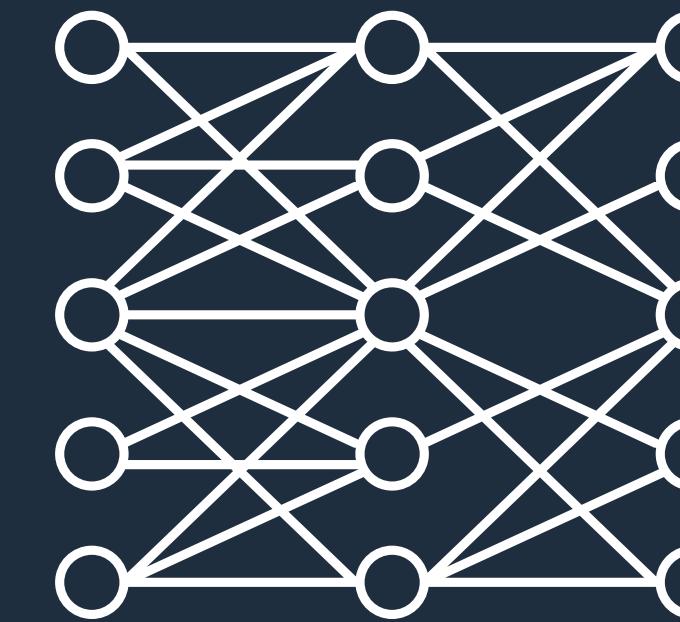
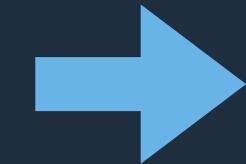
Traditional Machine Learning



Deep Learning



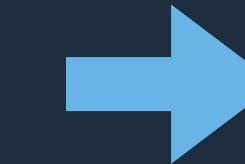
Input



Feature extraction

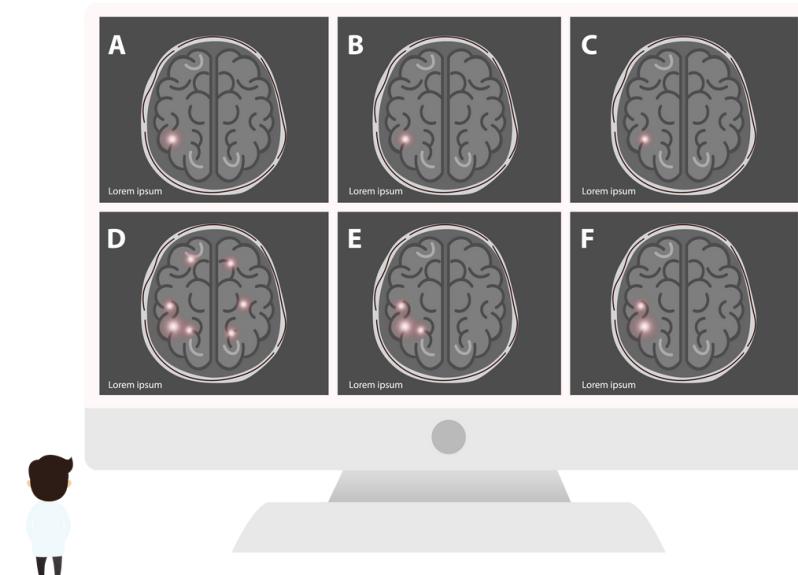
+

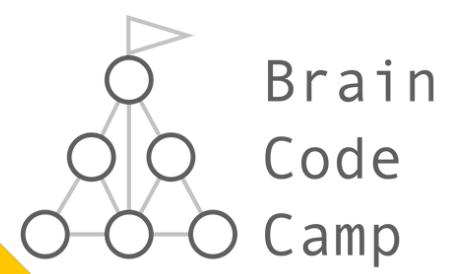
Classification



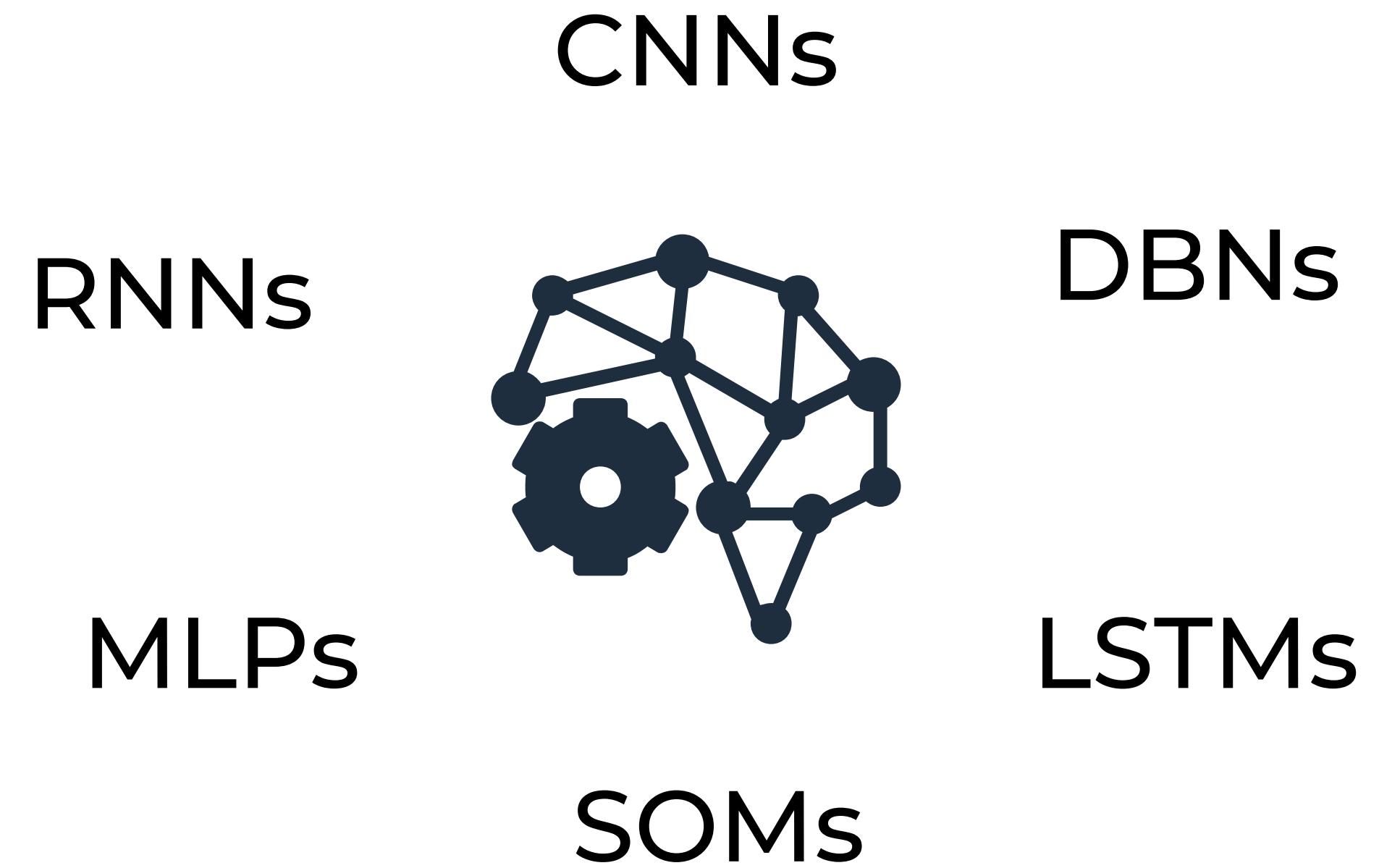
"Cat"

Output



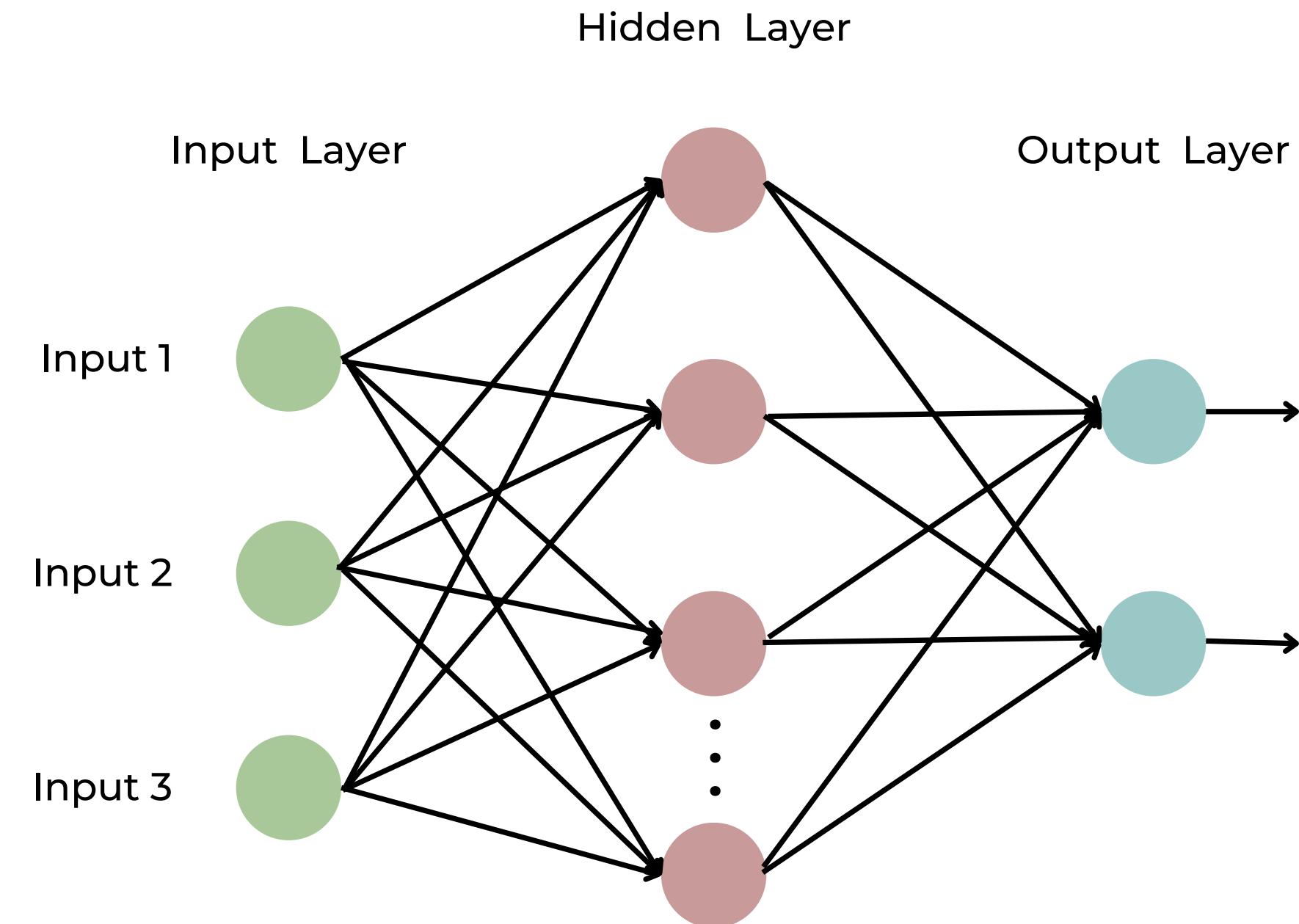


Deep Learning Algorithms



MLPs

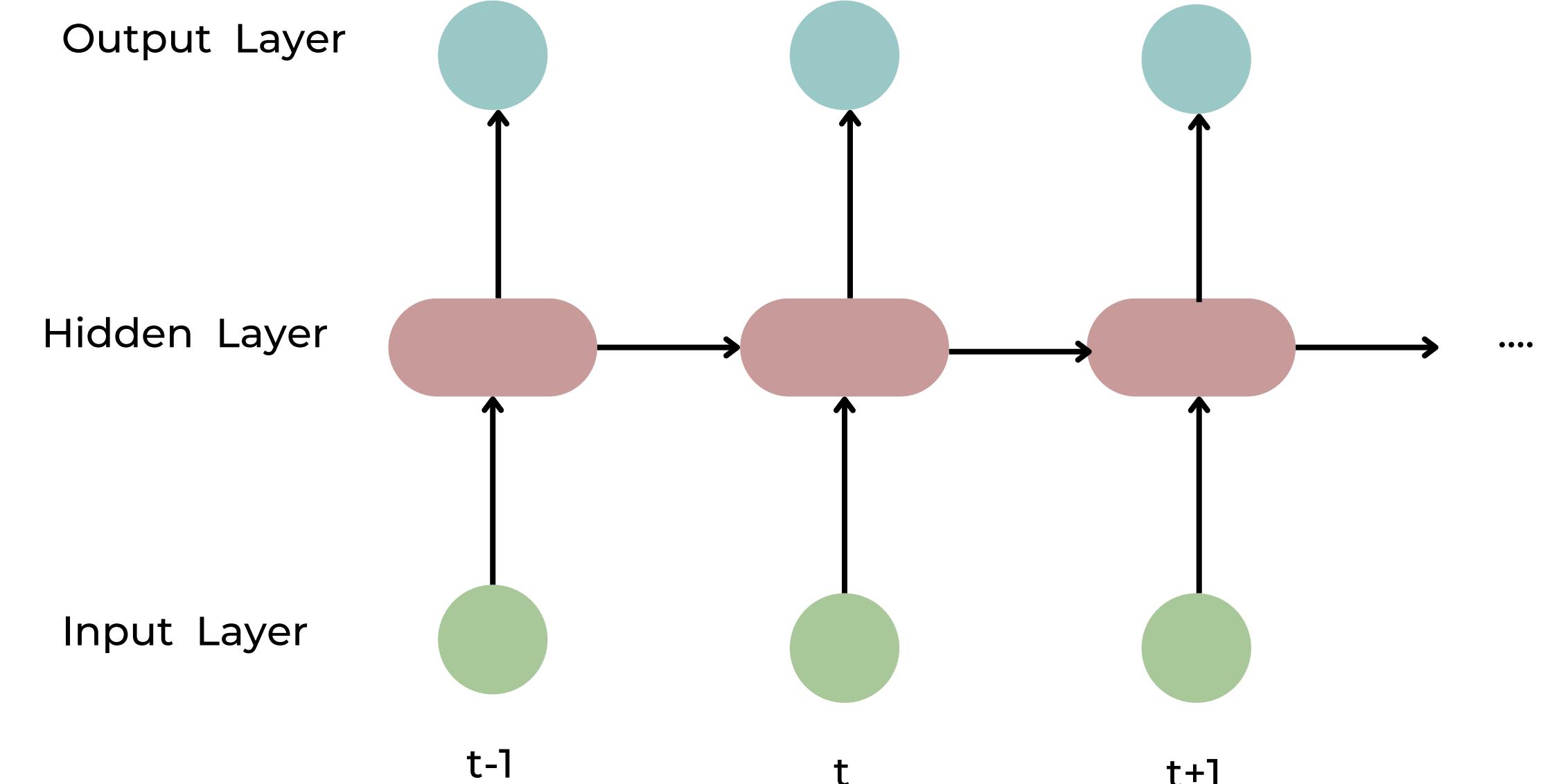
Multilayer Perceptrons



- Tabular dataset
- Simple Classification/Regression problem

RNNs

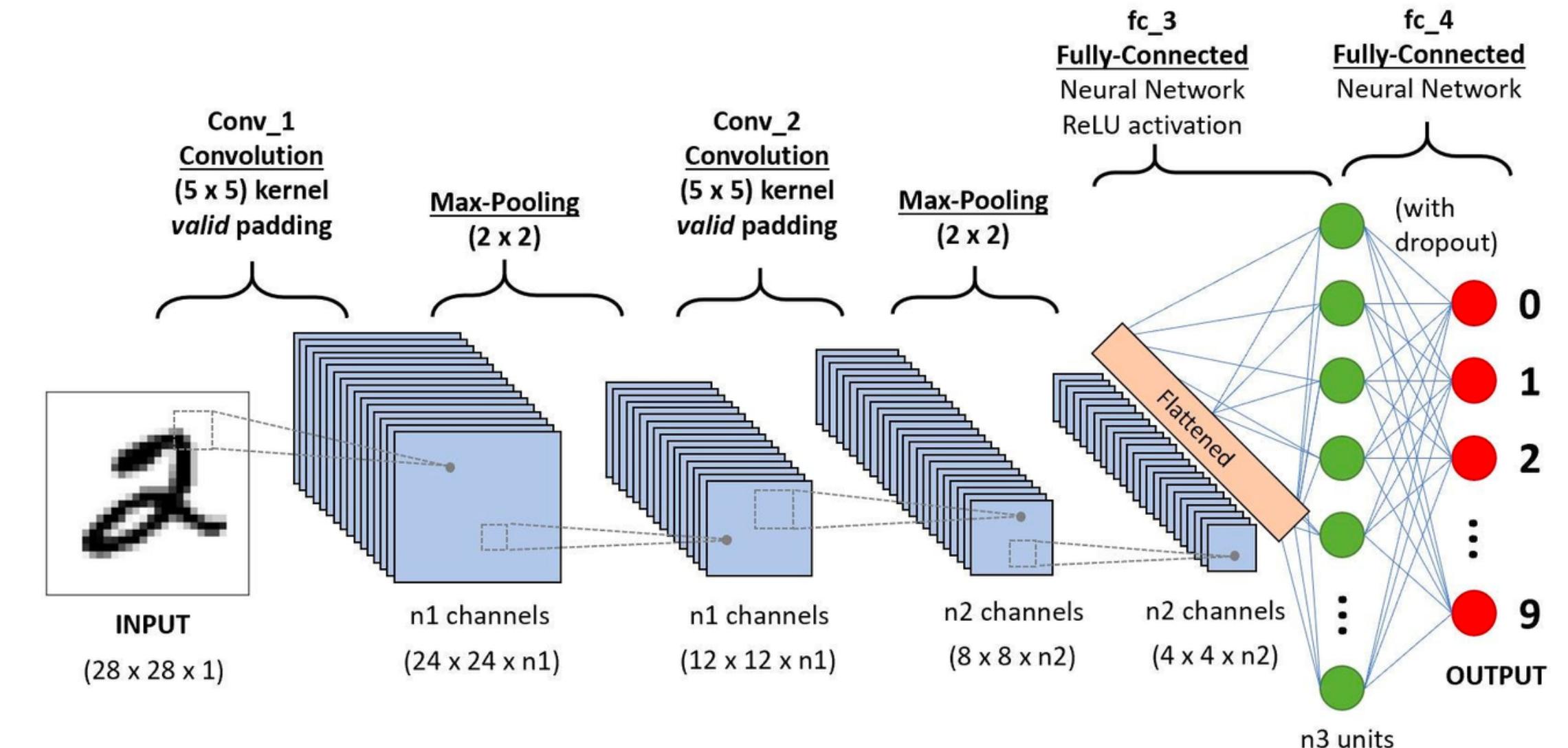
Recurrent Neural Networks



- Natural language processing
- Speech recognition
- Time series data

CNNs

Convolutional Neural Networks



- Image classification
- Object detection
- Computer vision task

The CIFAR-10 dataset

airplane



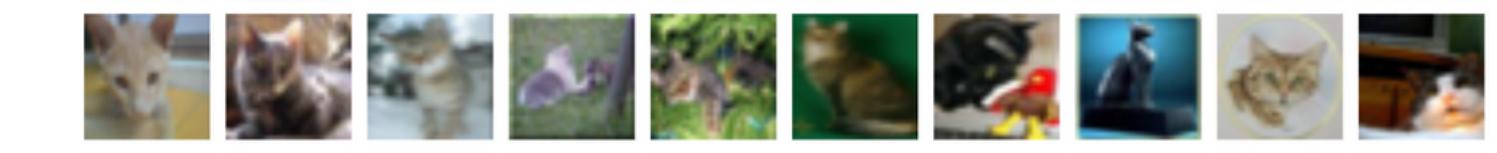
automobile



bird



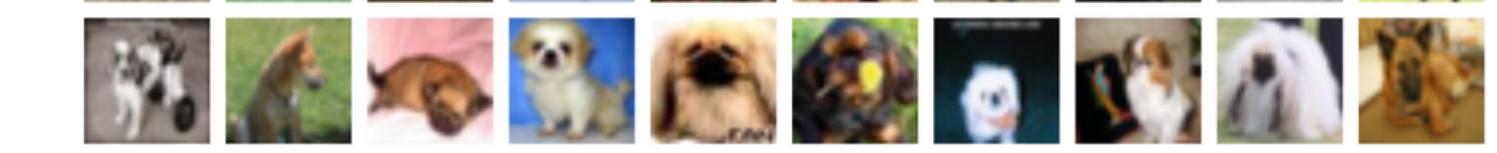
cat



deer



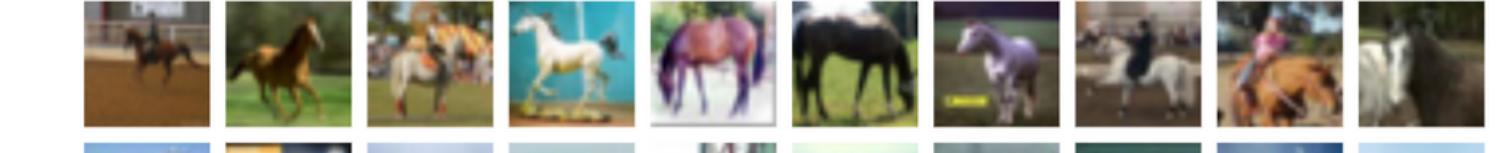
dog



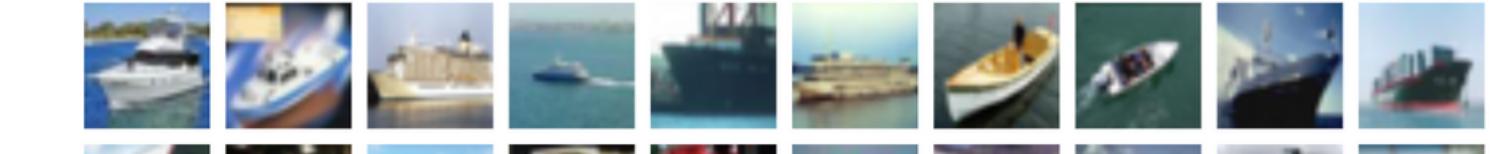
frog



horse



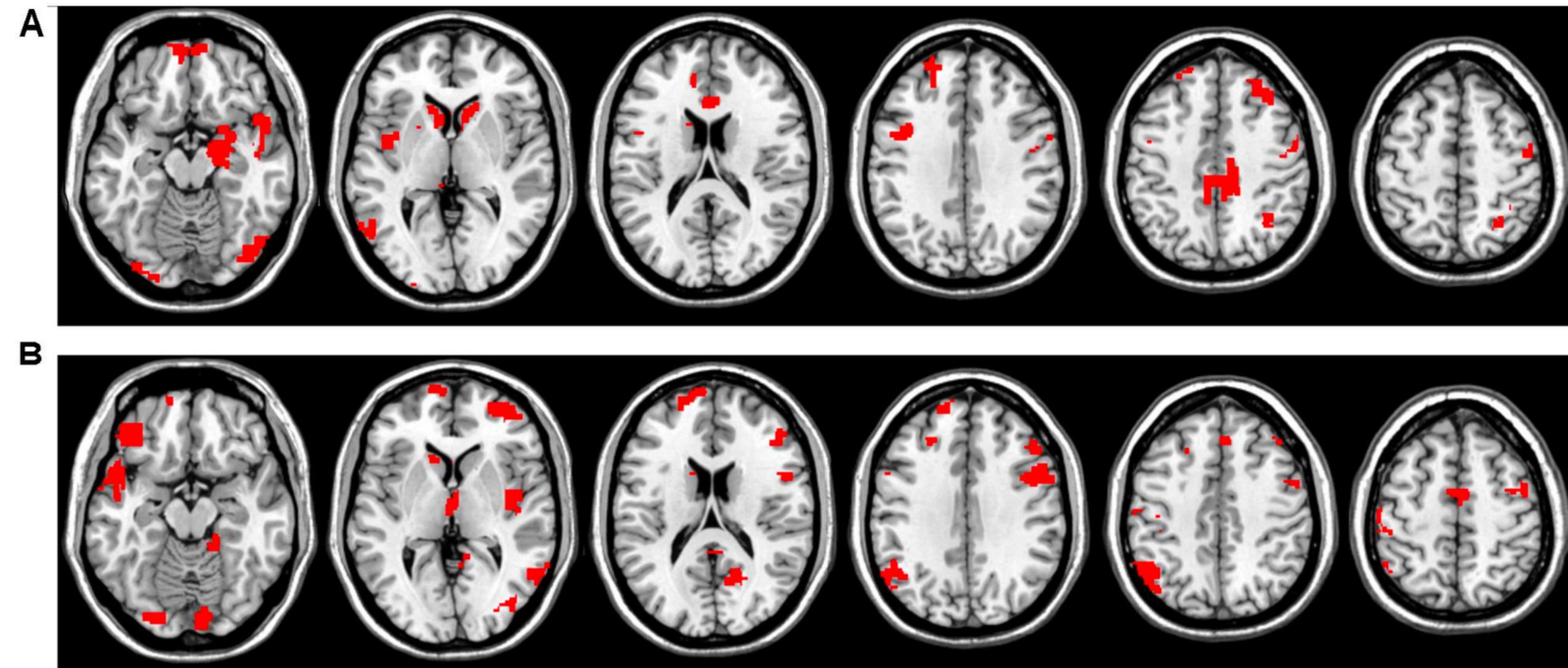
ship



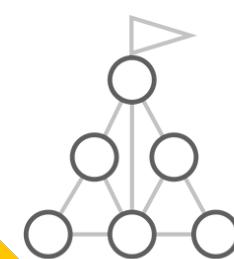
truck



<https://www.cs.toronto.edu/~kriz/cifar.html>

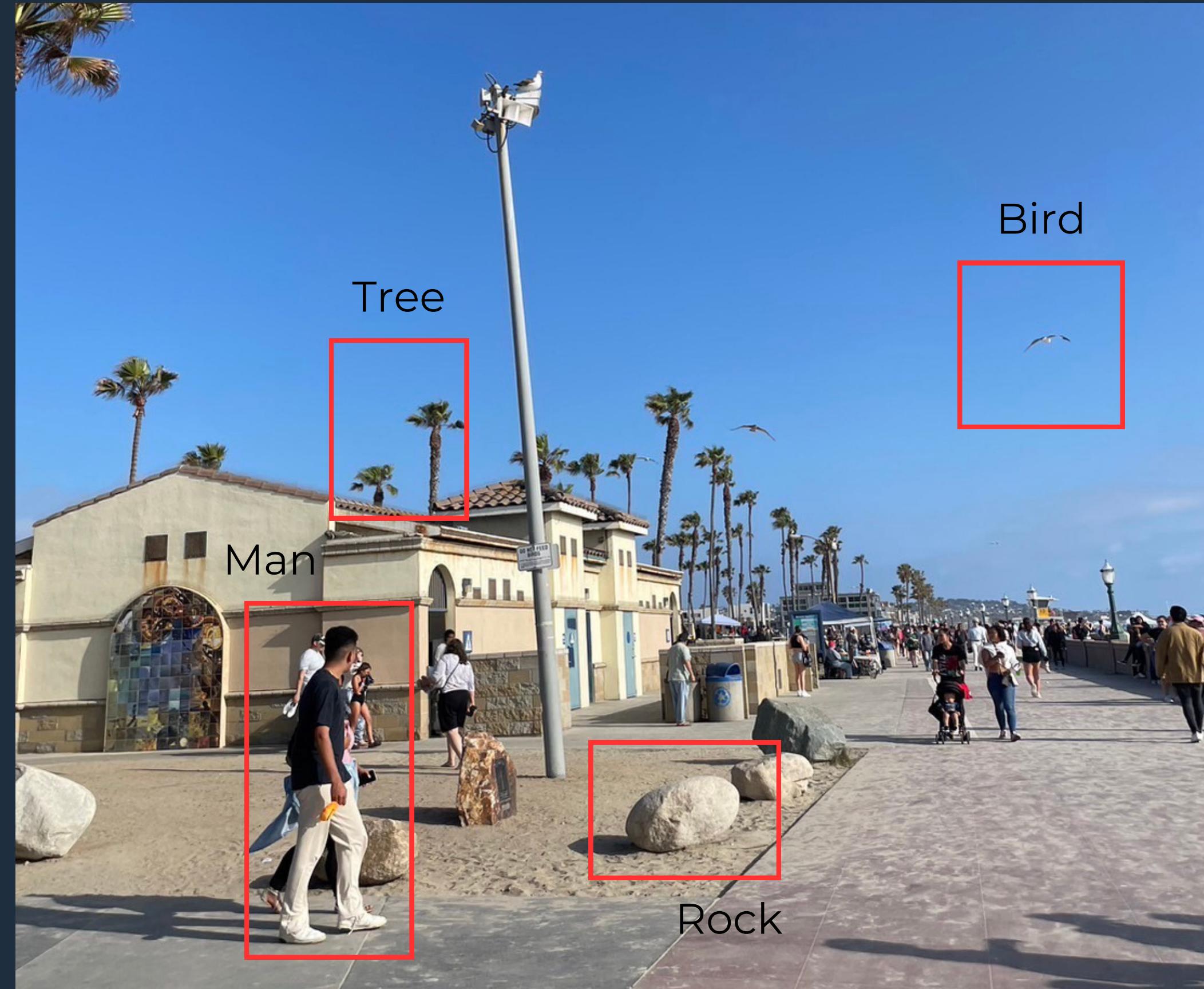


Meszlényi et al., 2017



Brain
Code
Camp

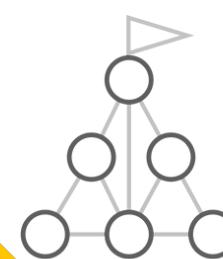
Object Recognition



Speaker: Naphapa Panyanirun

Session: Intro

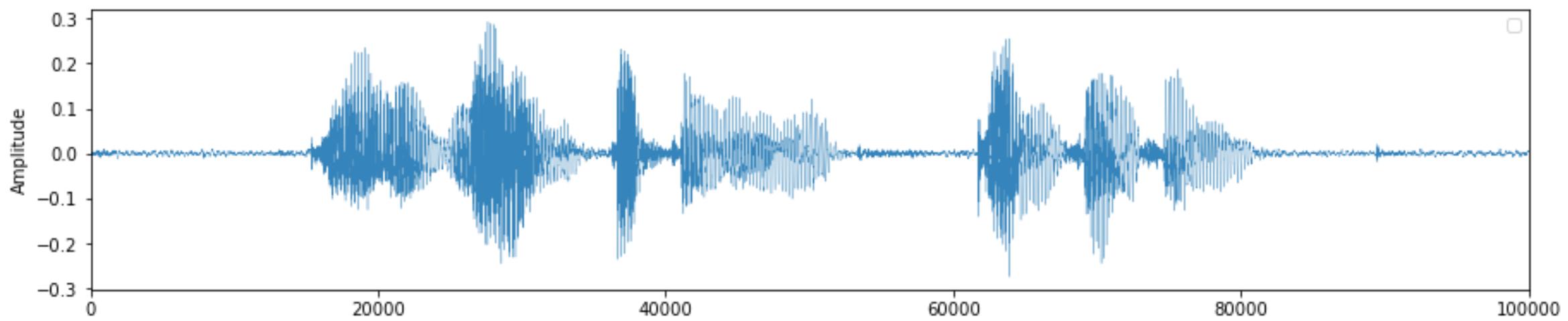
Module: Deep learning



Brain
Code
Camp



Speaker: Naphapa Panyanirun



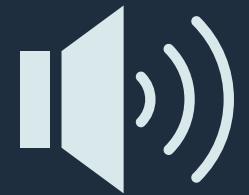
Session: Intro



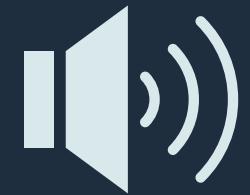
Module: Deep learning

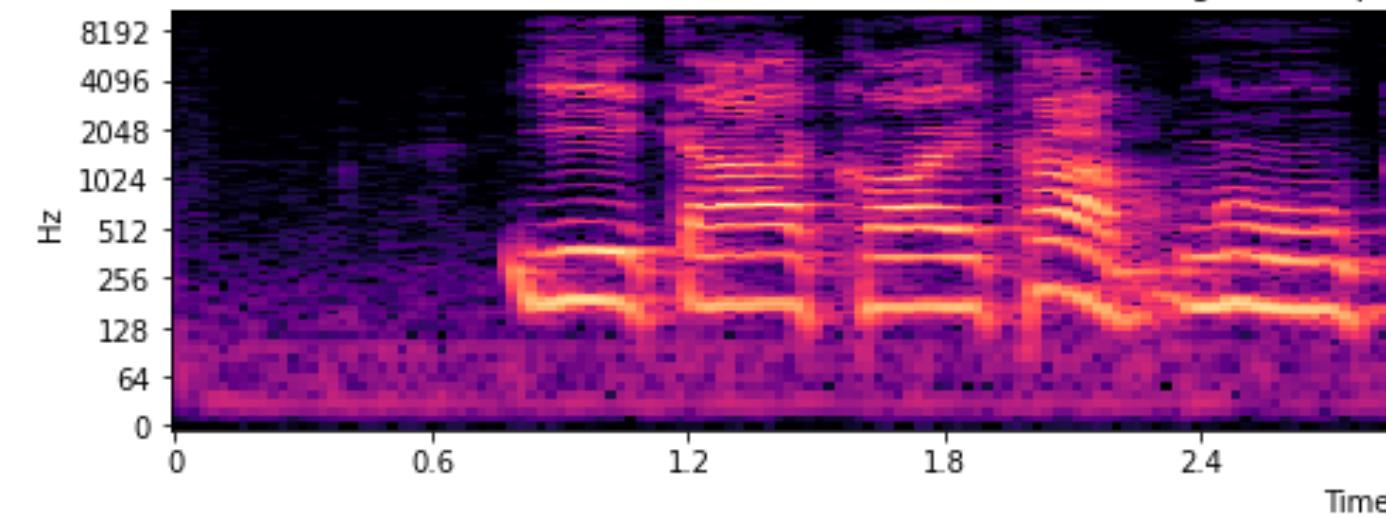


Normal speech

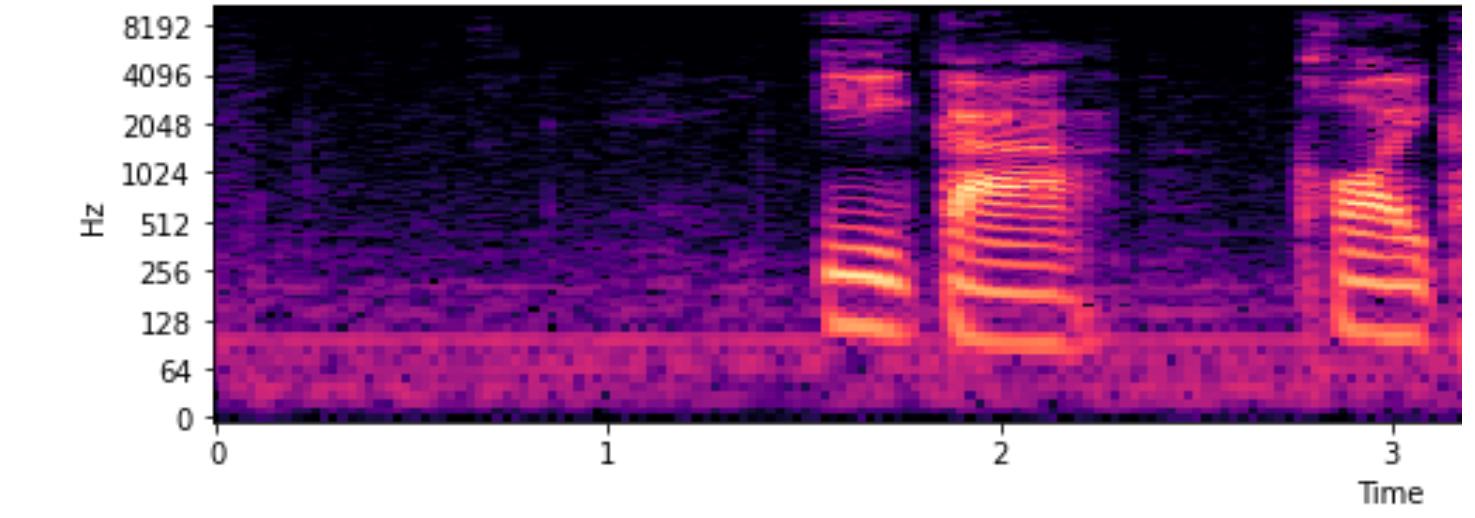


Dysarthria





Normal speech



Dysarthria