

[github.com/yungbyun/dla](https://github.com/yungbyun/dla)

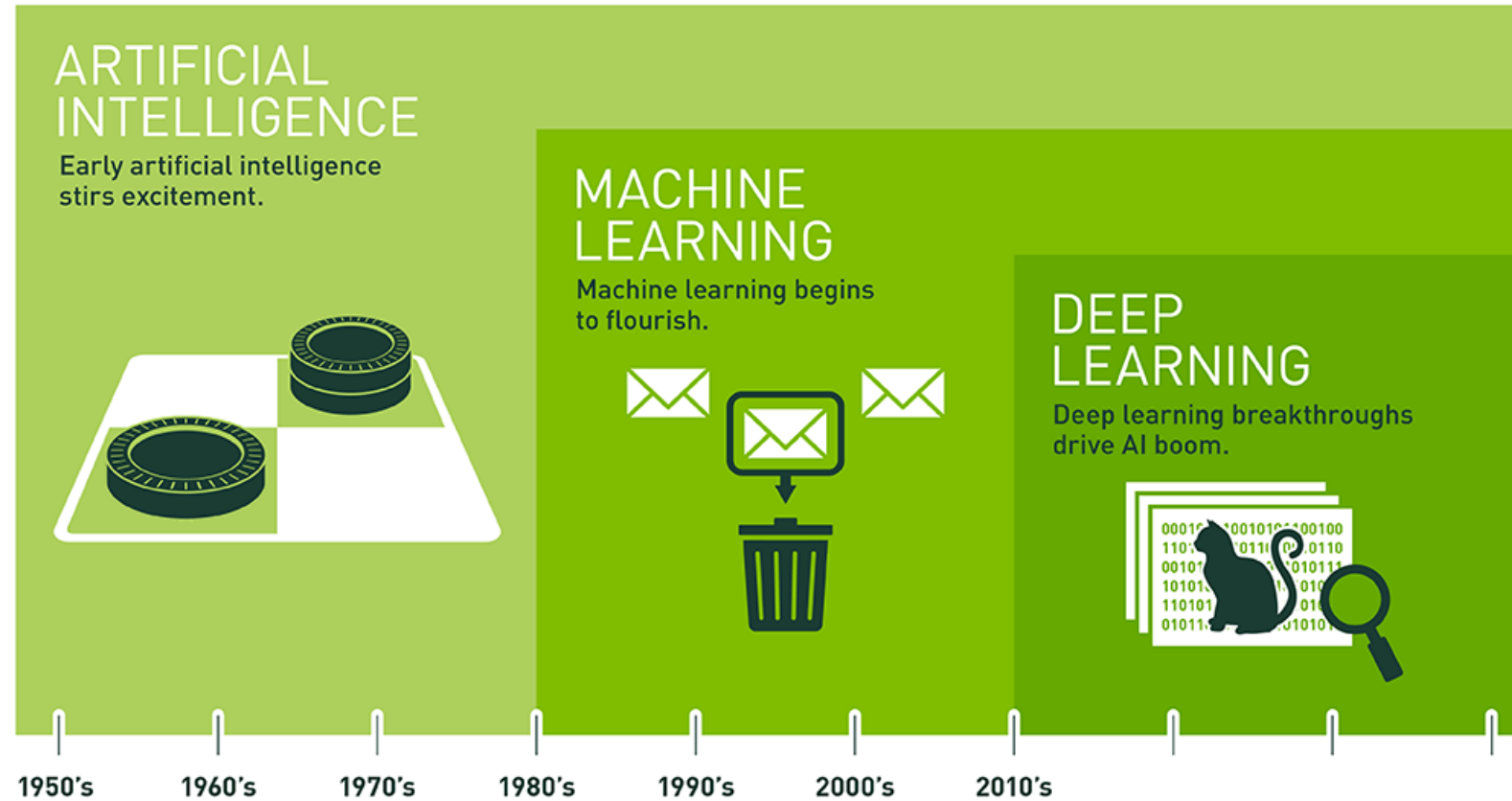
# Deep Learning Applications

PROF. YUNG CHEOL **BYUN**

# Learning, Deep

- **Learning** is the process of gaining **knowledge** from experience (data, csv).
- **Intelligence** is the ability to learn.
- [**Intelligence**] The ability to perceive or infer information, and to retain it as **knowledge** to be applied towards adaptive behaviors within an environment or context.
- **Deep** is the way to describe the representation of an **artificial neural network** to implement the **Intelligence**.

# **Artificial** Intelligence



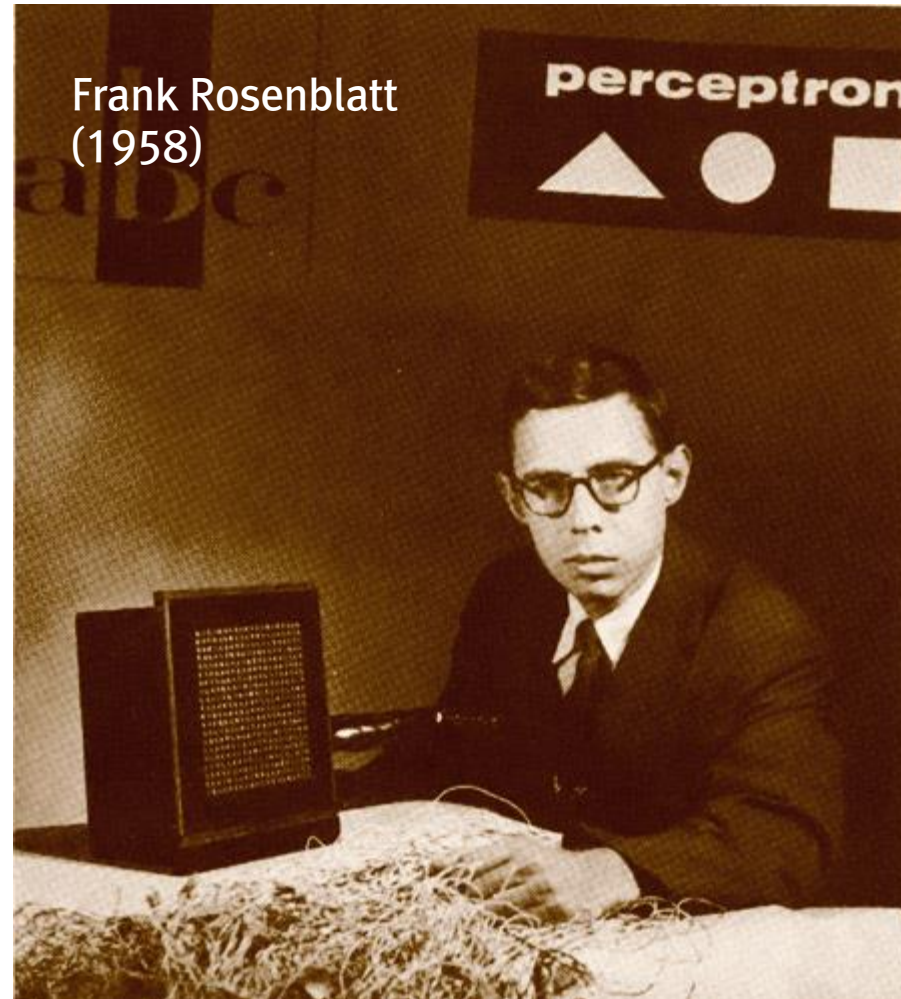
Since an early flush of optimism in the 1950s, smaller subsets of artificial intelligence – first machine learning, then deep learning, a subset of machine learning – have created ever larger disruptions.

# Artificial Neural Networks

made by people, 사람이 만든

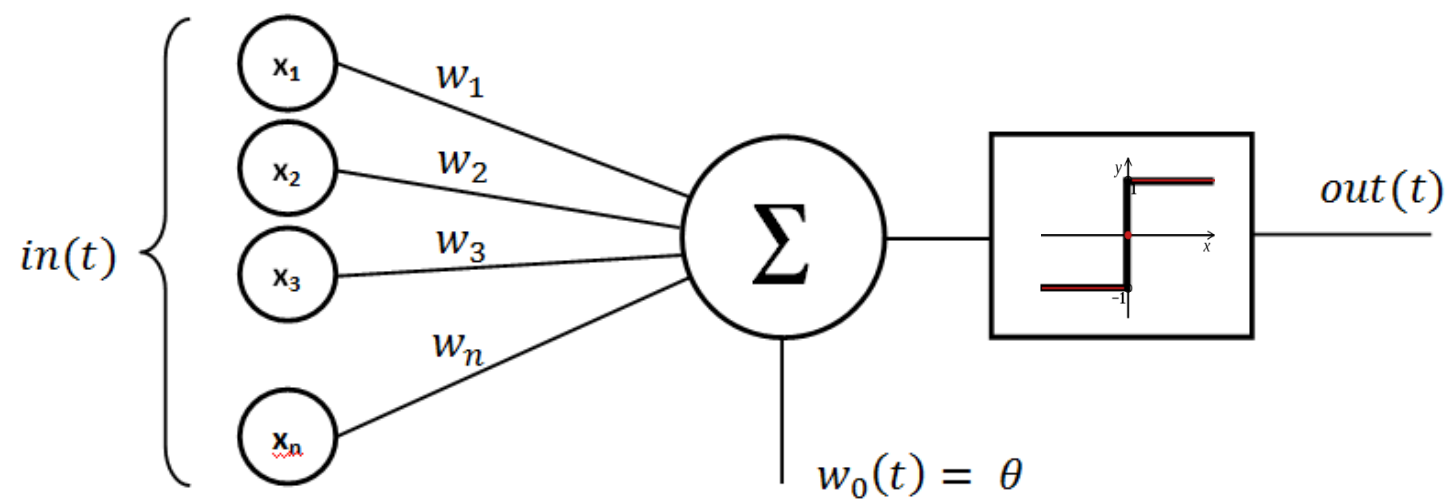
"...a computing system made up of a number of simple, highly interconnected processing elements, which process information by their dynamic state response to external inputs."

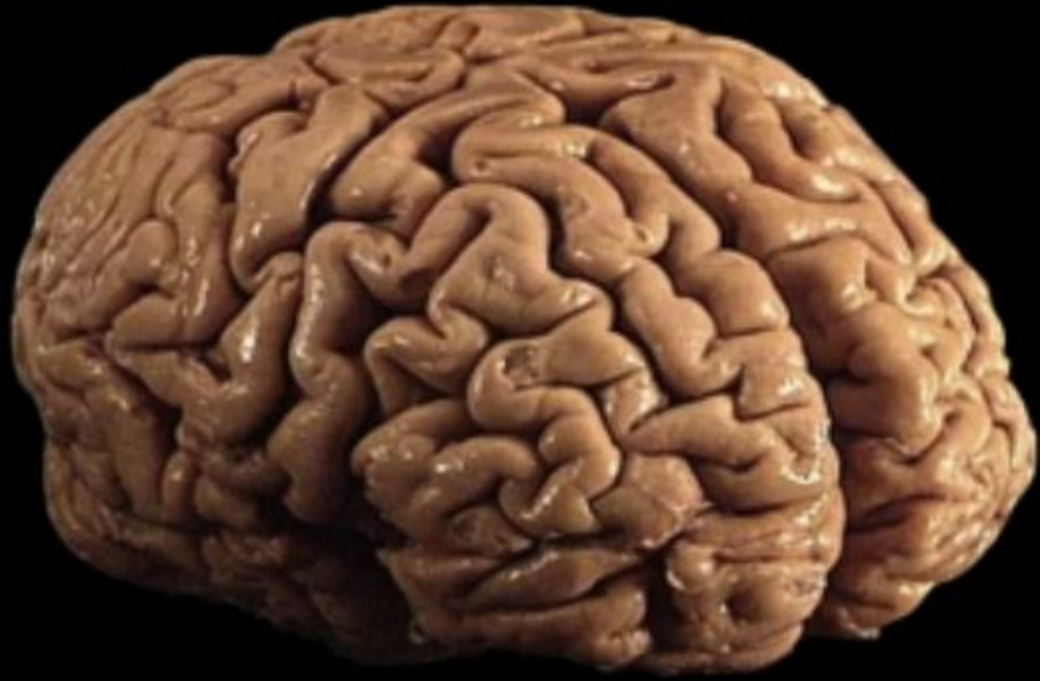
Frank Rosenblatt, Cornell Aeronautical Lab  
(1957)



Rosenblatt, F. (1958). The perceptron: A probabilistic model for information storage and organization in the brain. *Psychological Review*, 65(6), 386–408. <https://doi.org/10.1037/h0042519>

# Perceptron



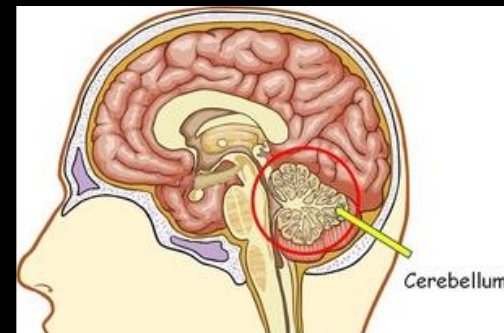
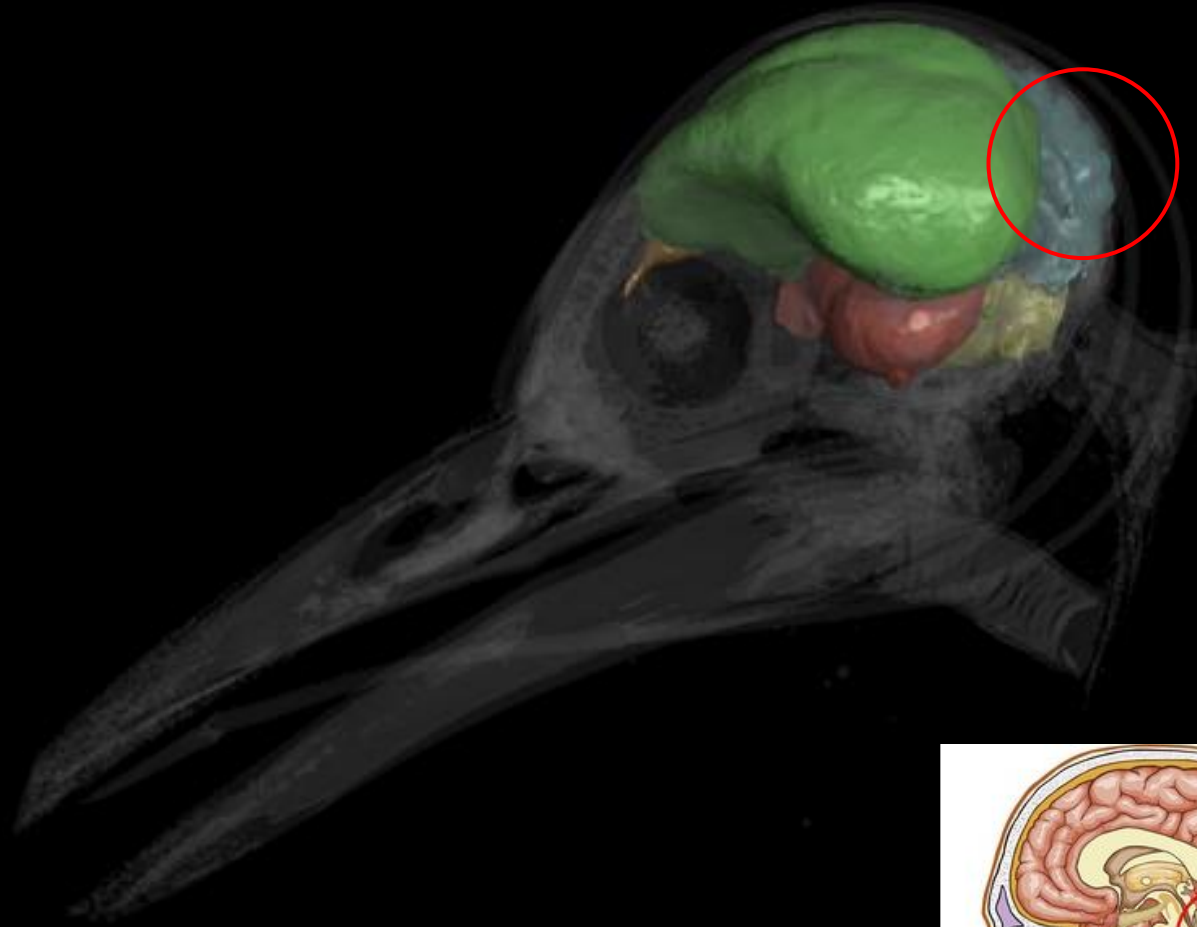


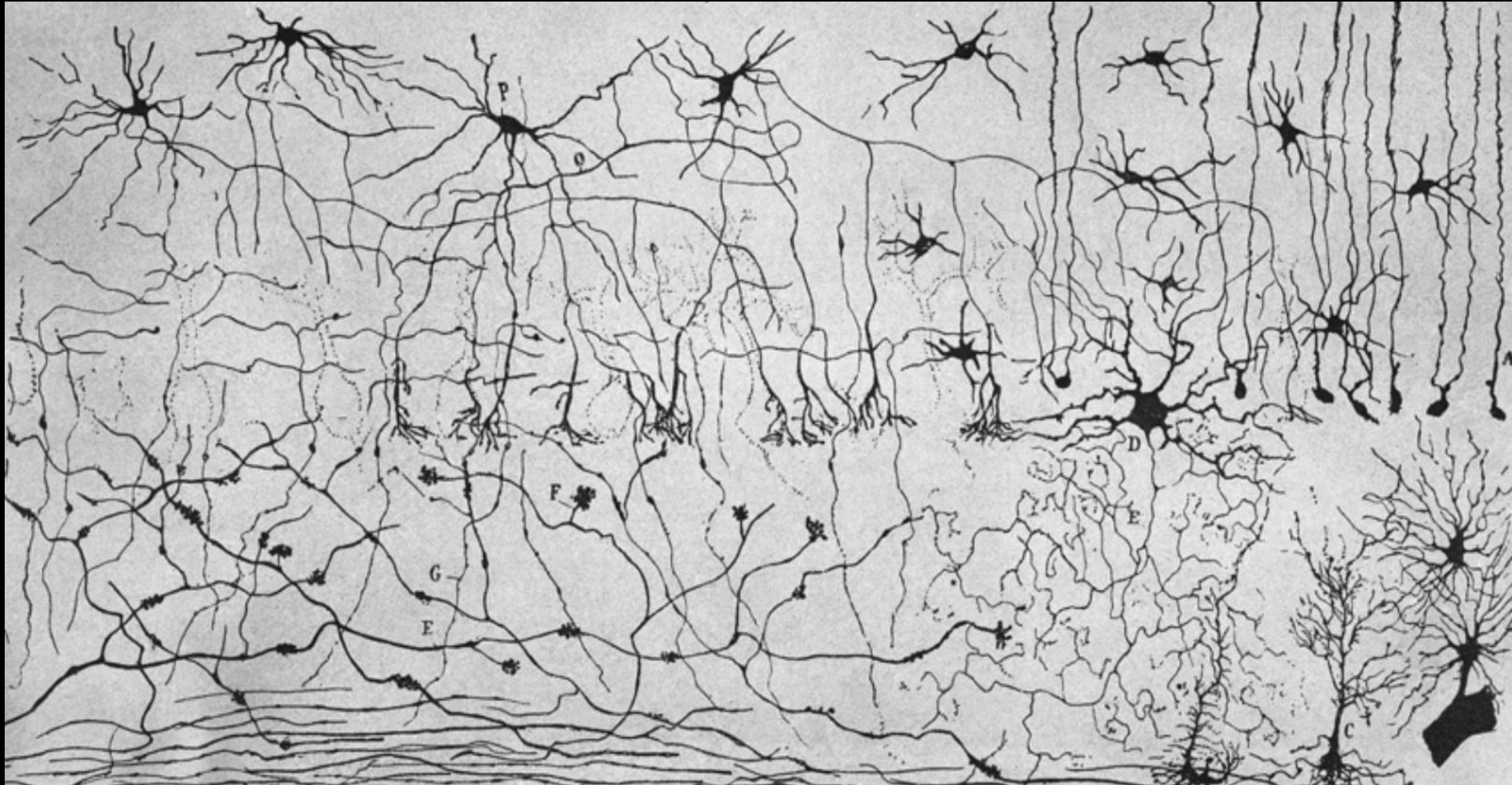




Santiago Ramón y Cajal, 1852-1934

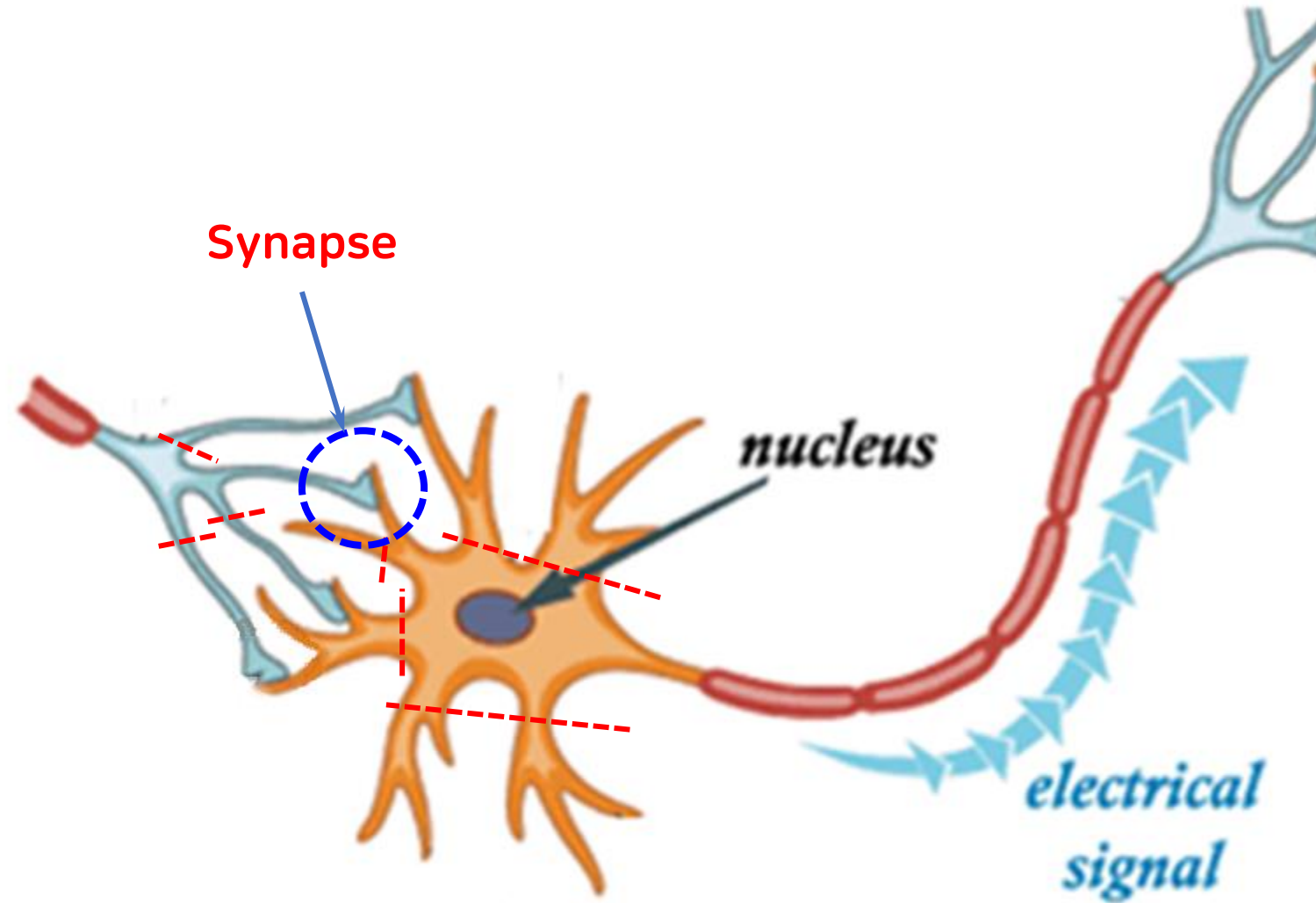
산티아고 라모 니 카할, 스페인

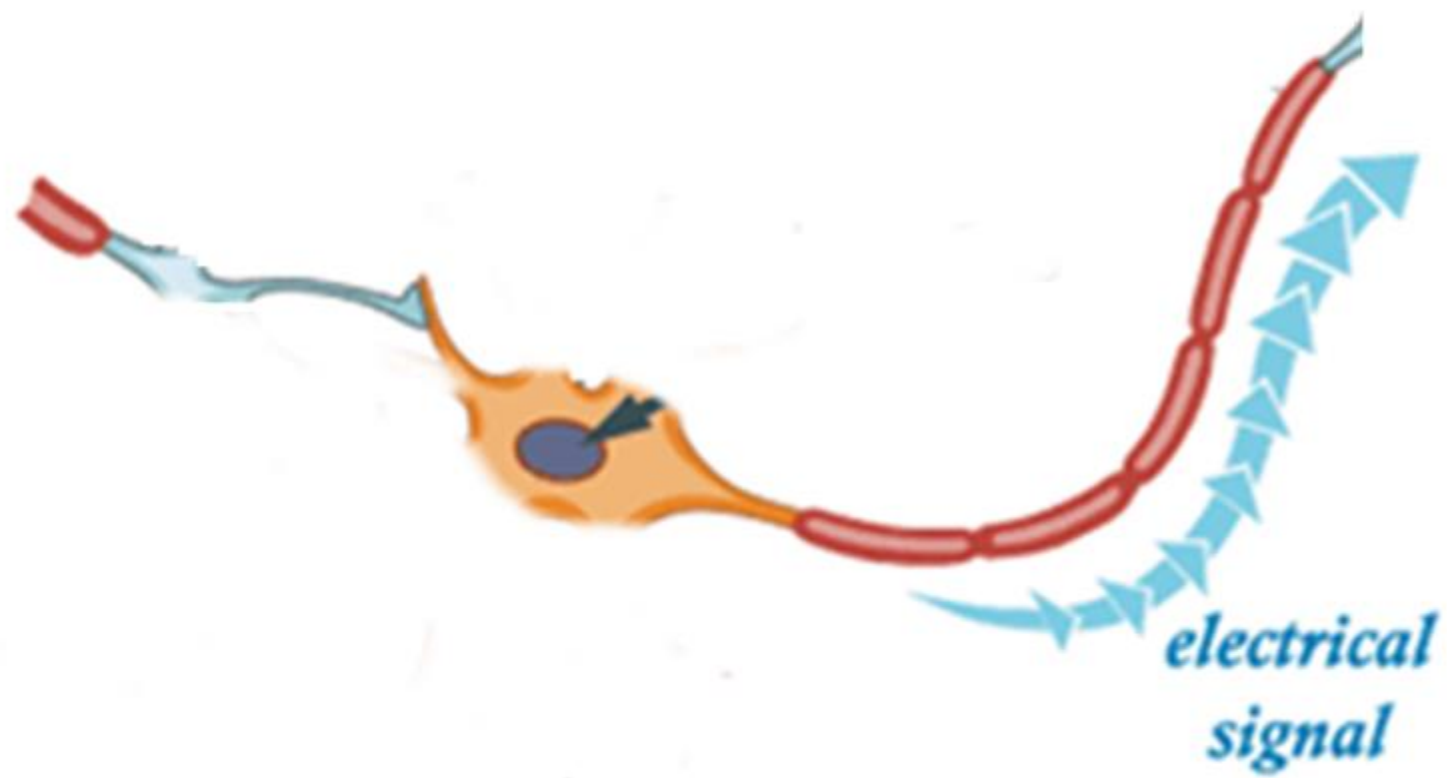


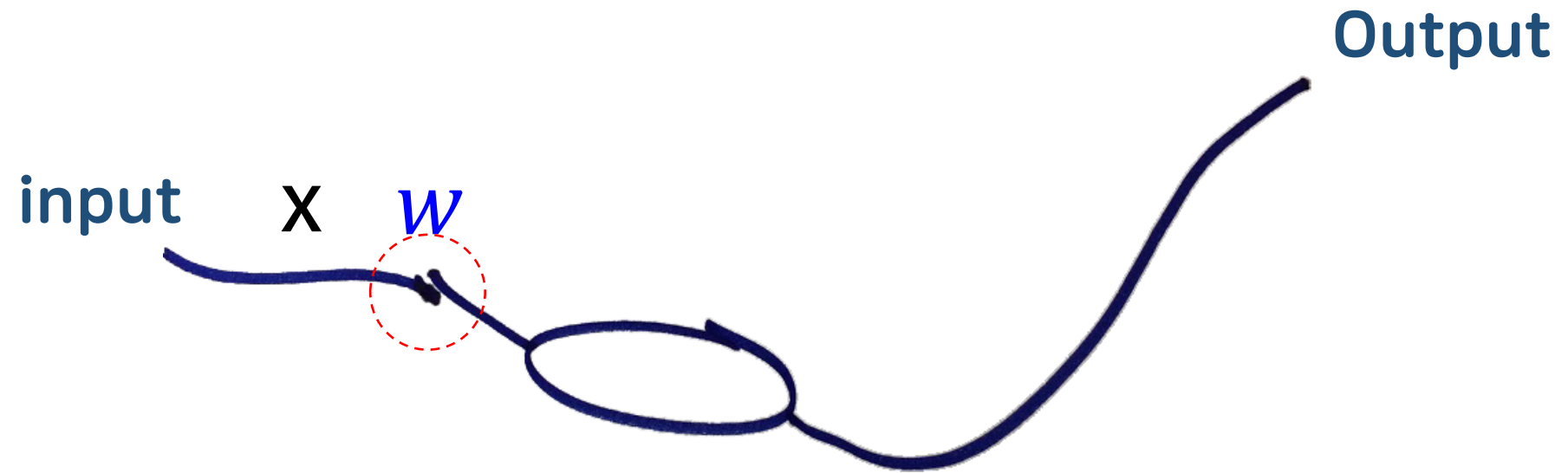


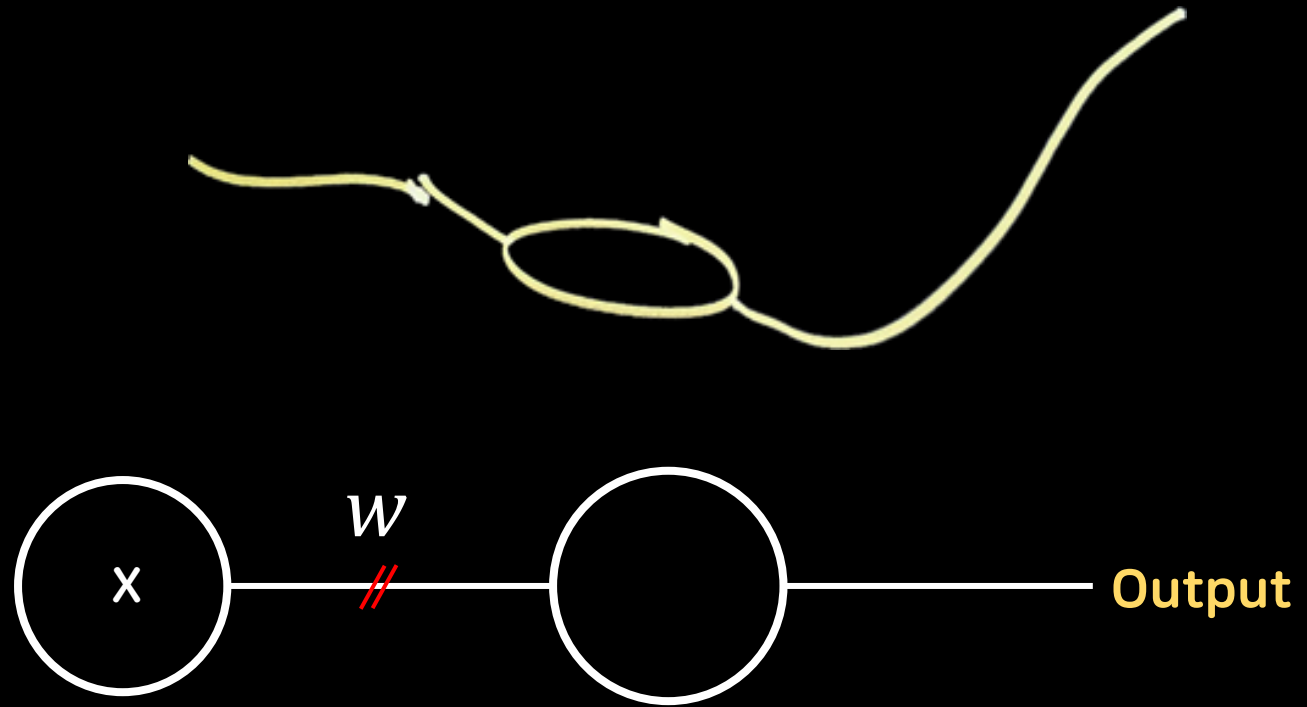
Ramón y Cajal's drawing of **the neurons in a bird's cerebellum** with a microscope – a part of the brain.

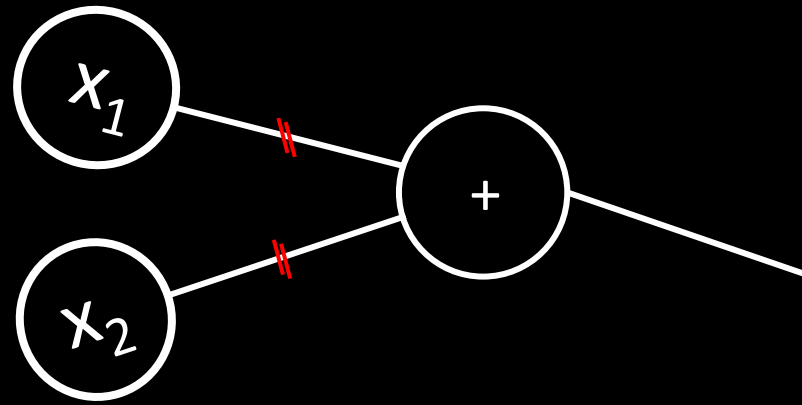




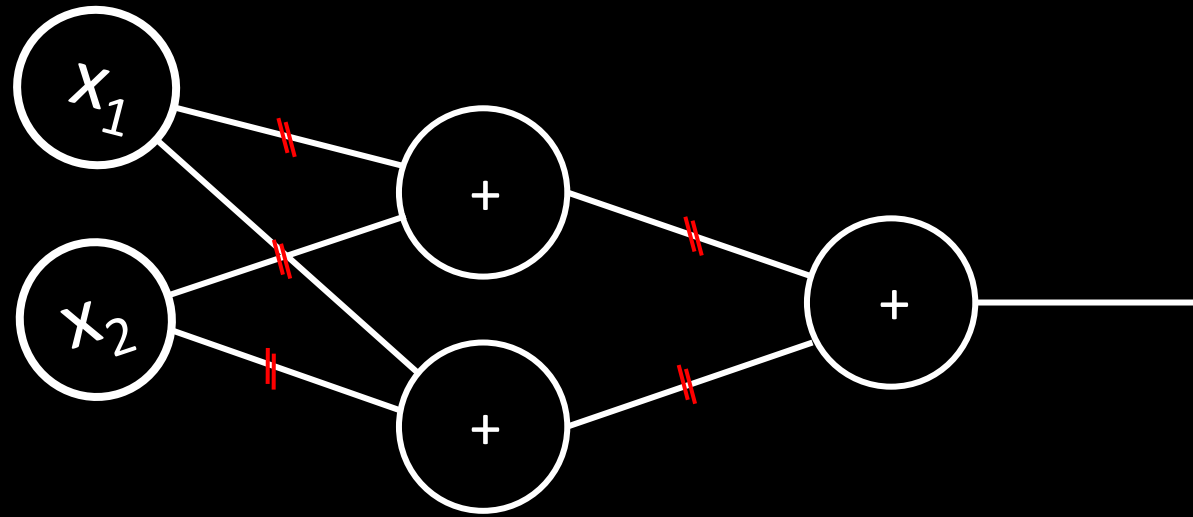




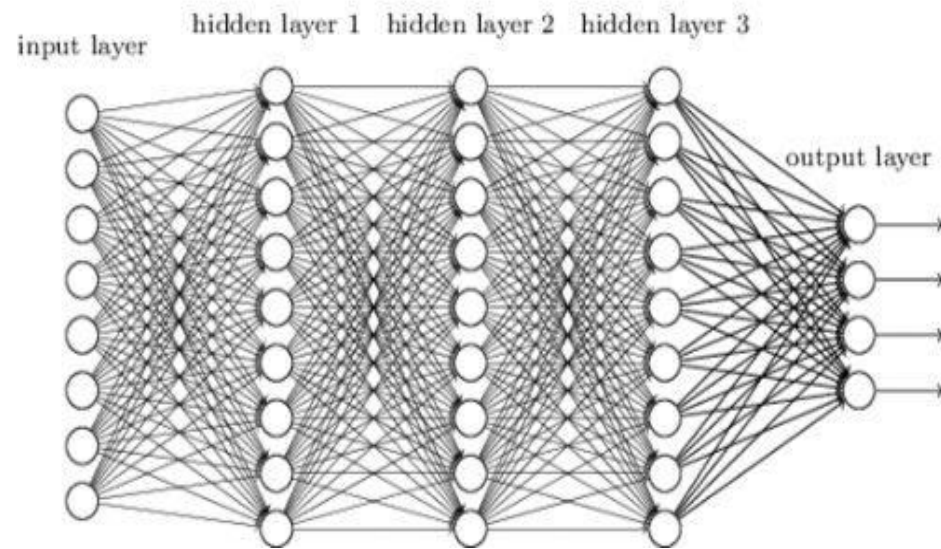




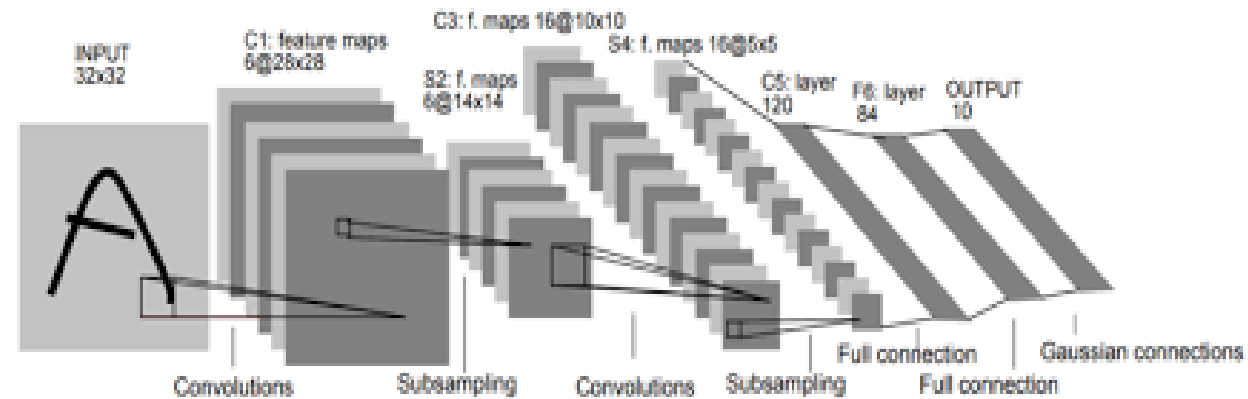
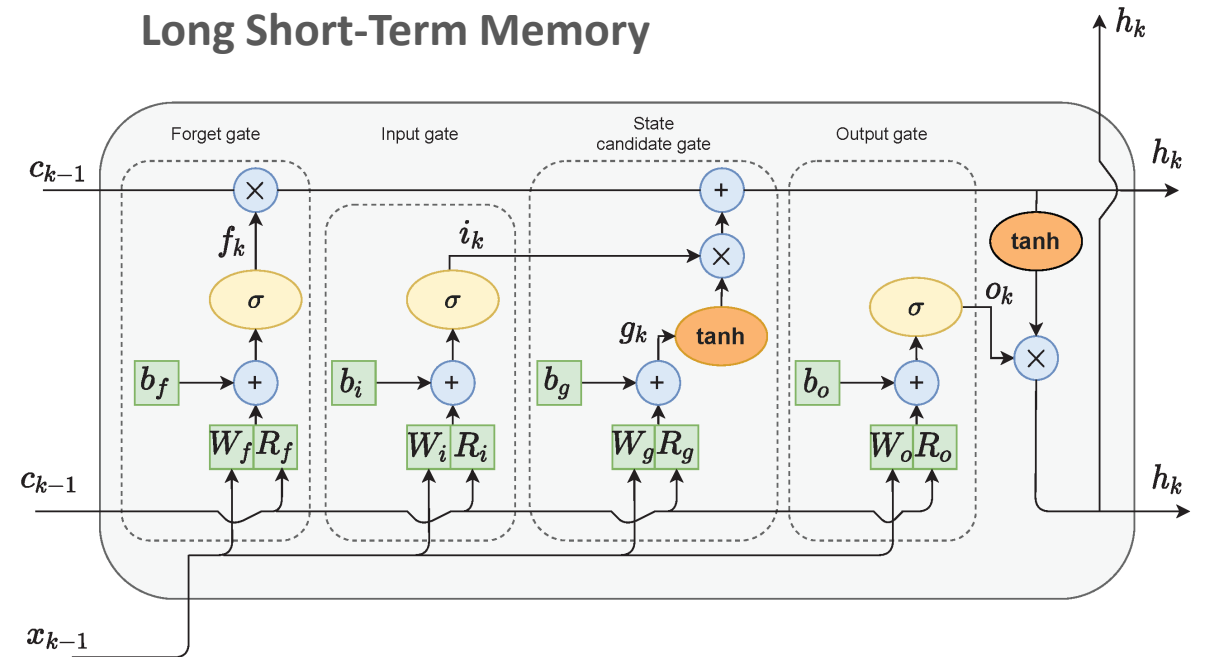




## Deep neural network

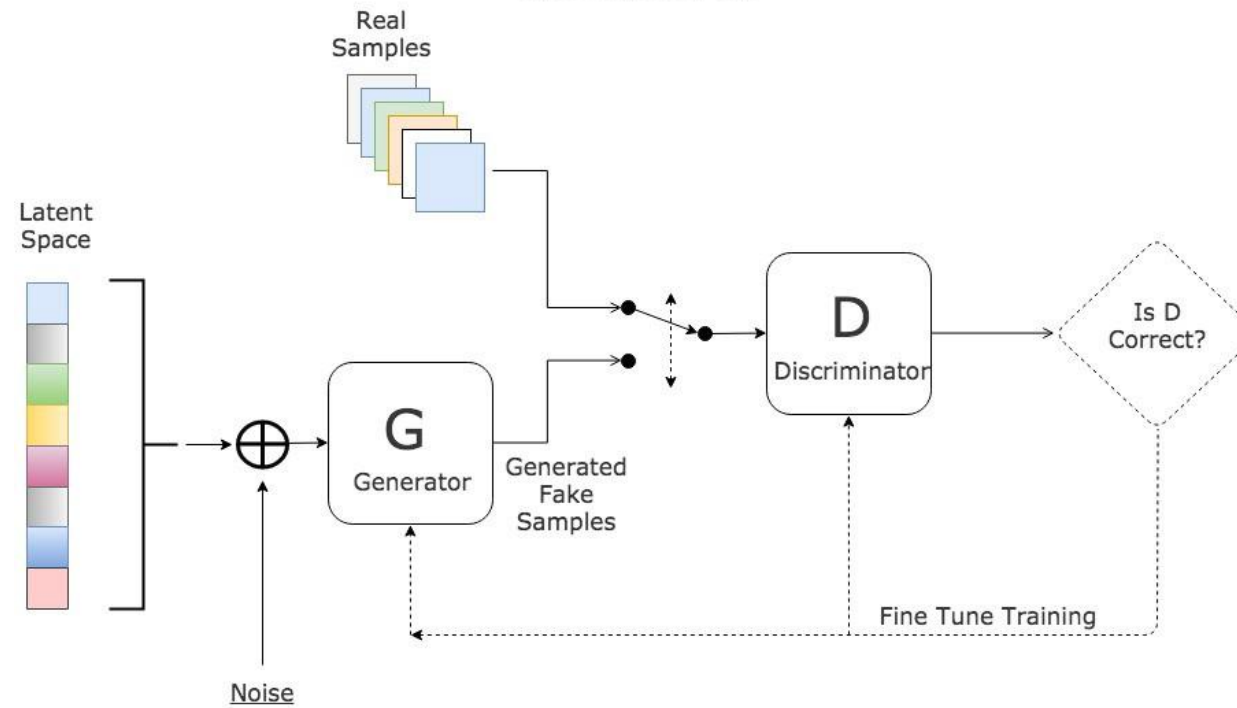


## Long Short-Term Memory



## Convolutional Neural Network

# Generative Adversarial Network



구글 어시스턴트

미용실 직원





# Real-time event detection for video surveillance applications

powered by













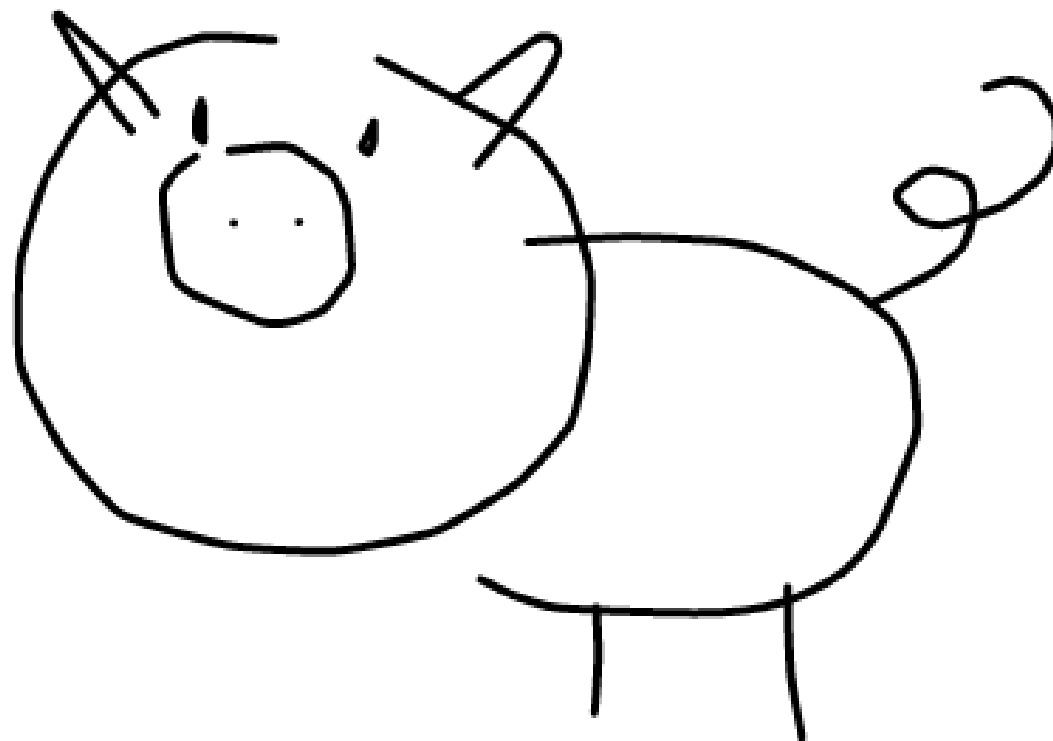
A steam locomotive is shown traveling along a railway track that winds through a dense forest. The trees are in autumn, with leaves in shades of yellow, orange, and red. The locomotive is dark and emits a small amount of smoke from its chimney. The scene is captured in a cinematic style with soft lighting.

# Artificial Intelligence



Given an initial still frame,



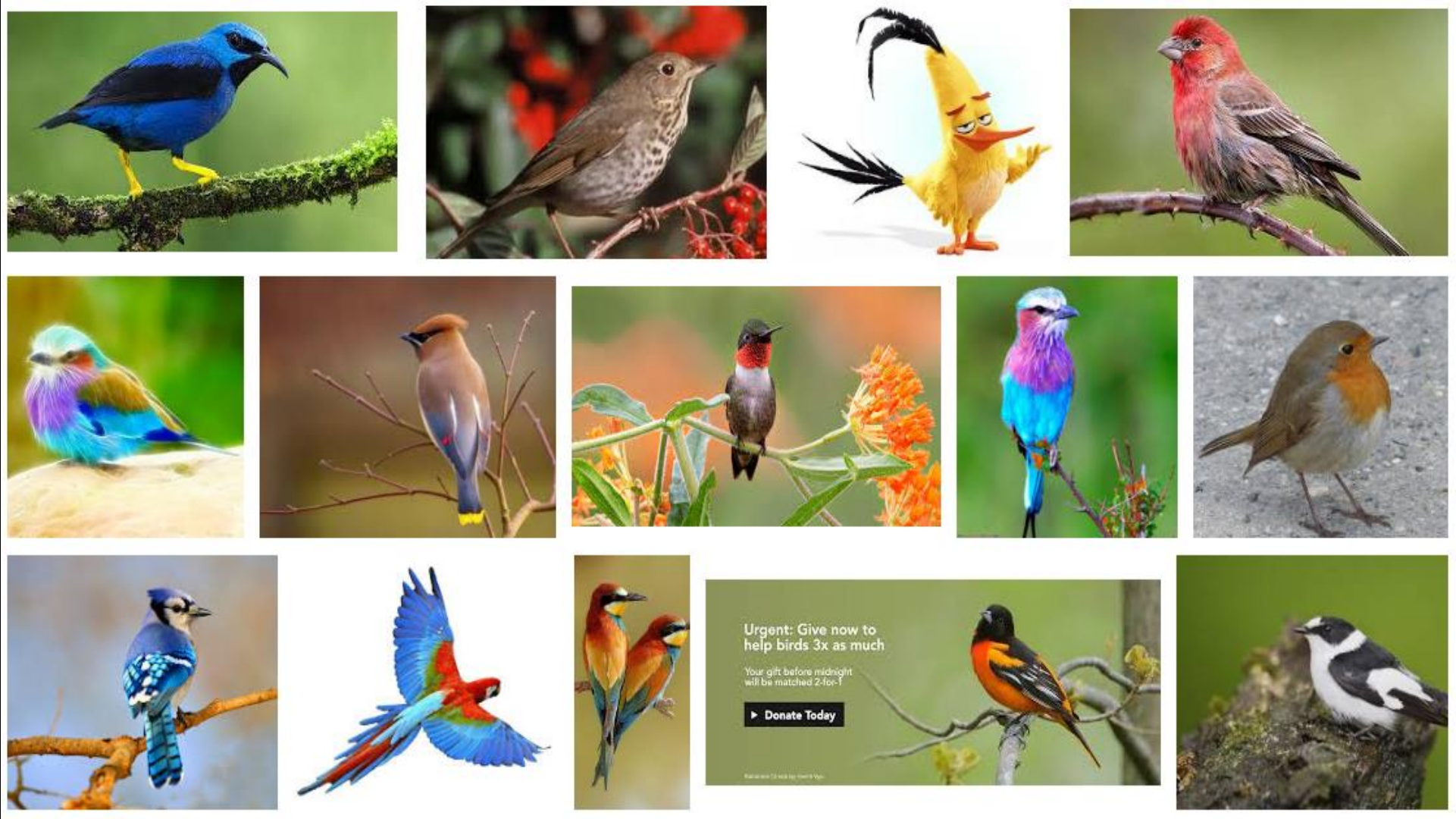


[https://magenta.tensorflow.org/assets/sketch\\_rnn\\_demo/index.html](https://magenta.tensorflow.org/assets/sketch_rnn_demo/index.html)









<https://aiexperiments.withgoogle.com/bird-sounds/view/>





# Study Topics for DLA

- Monitoring and Pattern Recognition/Detection from sensor signal, voice, or any kinds of time-series data
- Using Deep Learning Models including ANN, CNN, LSTM, GRU, GAN, and etc.
- Keywords: **Anomaly Detection**(이상감지), **Intrusion Detection**(침입탐지), **Fault Detection**(오류감지) with signal/time-series data

# Seminar Schedule

Week	Presenter
1 (Mar. 03)	
2 (Mar. 10)	Introduction (Y. Byun)
3 (Mar. 17)	Self-Introduction including <b>personal information, hobby, nationality, attraction in your home town/country, research interests, and/or any kinds of stuff.</b>
4 (Mar. 24)	Prince Wakas(ML Lab.), 차트라지 수바지
5 (Mar. 31)	김용준, 콰움 파이자, 자파리 사디카
6 (April 07)	오지훈, 임규영, 김재민
7 (April 14)	(Exam)
8 (April 21)	장철희, 허윤경

# Seminar Schedule

Week	Subject
9 (May 12)	고지영, 응웬 안 뚜안, 사 짐 소 모
10 (May 19)	짤 다이 드엉, 부선아
11 (May 26)	바틀 암린, 아딜 노르샤완
12 (June 02)	Round #2-1
13 (June 09)	Round #2-2
14	Round #2-3
15	Round #2-4

번호	학부(과)	학번	학년	성명
1	전자공학전공	AI202216001	1	짠 다이 드영
2	전자공학전공	AM202216002	1	부선아
3	전자공학전공	AD20216006	3	자파리 사디카
4	컴퓨터공학과	AI202216701	1	응웬 안 뚜안
5	컴퓨터공학과	AM202216701	1	고지영
6	컴퓨터공학과	AM202216702	1	사 짐 소 모
7	컴퓨터공학과	AD202126801	2	임규영
8	컴퓨터공학과	AM202126802	2	오지훈
9	컴퓨터공학과	AD20216801	3	김재민
10	컴퓨터공학과	AD20216803	3	차트라지 수바지
11	컴퓨터공학과	AI20216801	3	김용준
12	컴퓨터공학과	AM20216801	3	장철희
13	컴퓨터공학과	AM20216804	3	허윤경
14	컴퓨터공학과	AD20206810	4	콰옴 파이자