

# What is **Machine Learning (self-training)**?

- 기계학습 이란?

25초~1분 57초



- “경험적으로 문제를 해결하는 방법(학습)”을 컴퓨터에 적용한 것
- 입력과 출력 사이의 관계식 (함수)를 찾아라!!

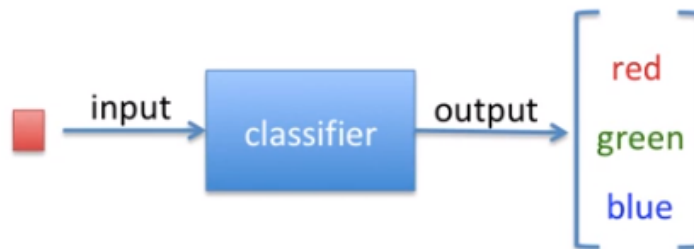
# What is **Machine Learning (self-training)**?

감잡기

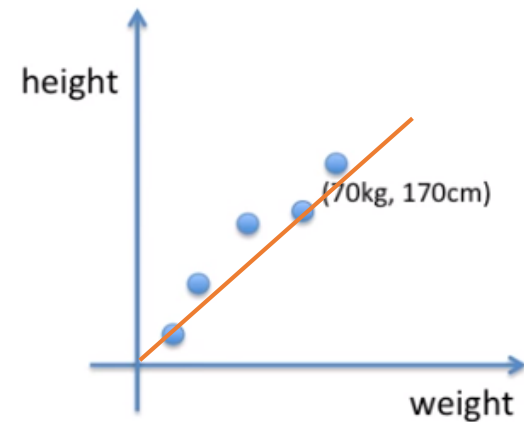
## Classification vs Regression

분류문제

회귀문제



classify input into categorical output



how tall is he if his weight is 80kg?

# What is **Machine Learning (self-training)**?

Classification: Image based Classification

**Cat & Dog Problem**



# What is **Machine Learning (self-training)**?

- 기계학습이란
  - “경험적으로 문제를 해결하는 방법(학습)”을 컴퓨터에 적용한 것
  - 기계를 학습시켜 과제(T) 수행에 대한 측정(P)이 개선되도록 지속적 경험(E)을 수행하는 구조
- 기계학습 **3가지 학습 방법**
  - 지도학습
  - 비지도학습
  - 강화학습
- 특징설계 (Feature Design)
  - 기계학습을 위한 특징설계는 필수

# What is **Machine Learning**?

Supervised Learning vs Unsupervised Learning

# What is **Machine Learning**?

**"Learner"**  
AI Machine



**"Teacher"**  
AI Engineer

# What is **Machine Learning**?

## Supervised Learning

**Training**

This is a dog.



**Testing**

What is this?



# What is **Machine Learning**?

## Unsupervised Learning

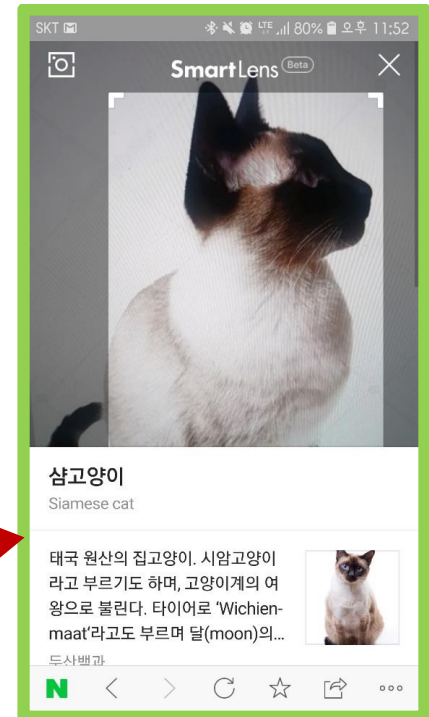
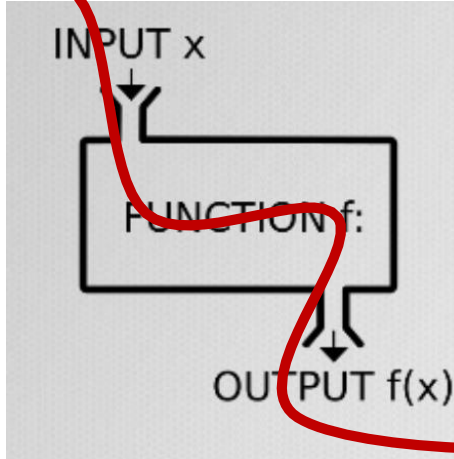
Let's find the same animals.



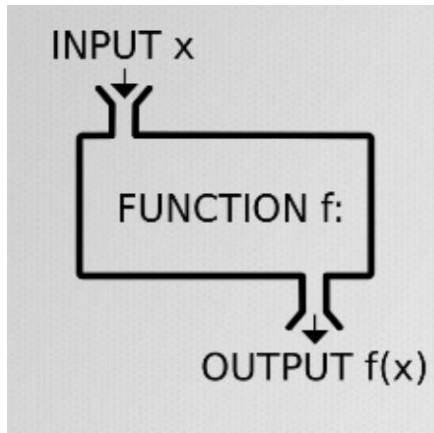


# What is Machine Learning?

## Classification



# What is **Machine Learning**?

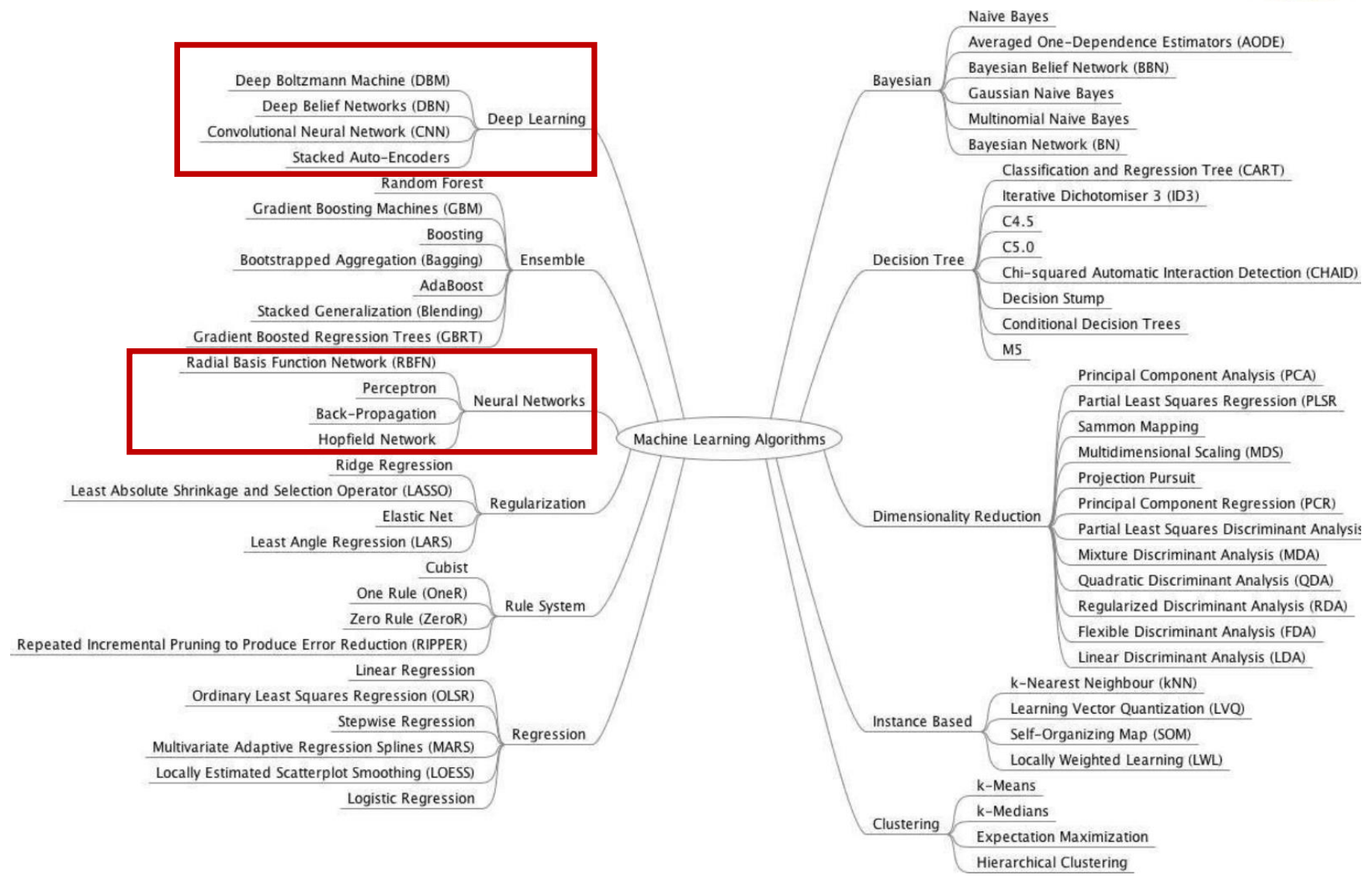
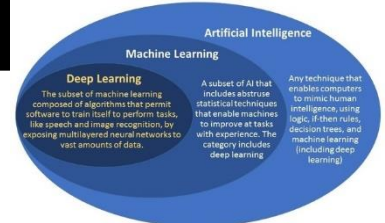


**#Supervised Learning**

**#Unsupervised Learning**

**#Train      #Inference**

# ML vs DL



# Deep Learning ?

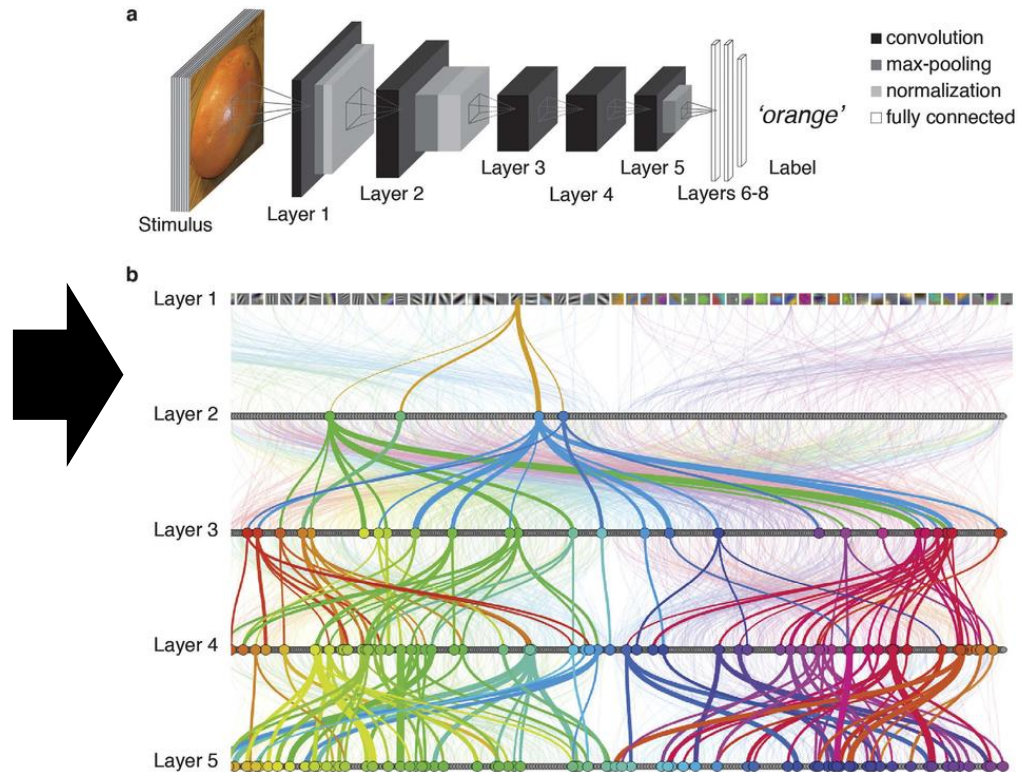




# What is **Deep Learning**?

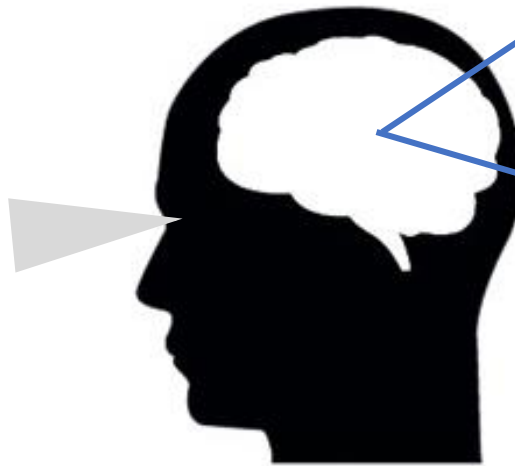


인간의 뇌! 신경망

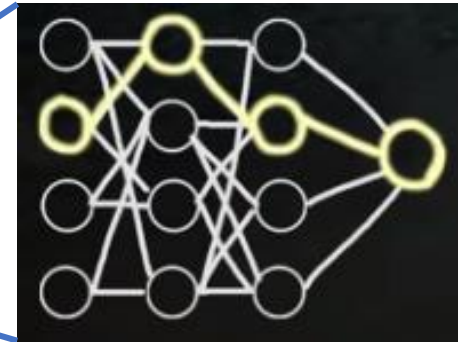


모사된 인공 신경망

# What is **Deep Learning**?

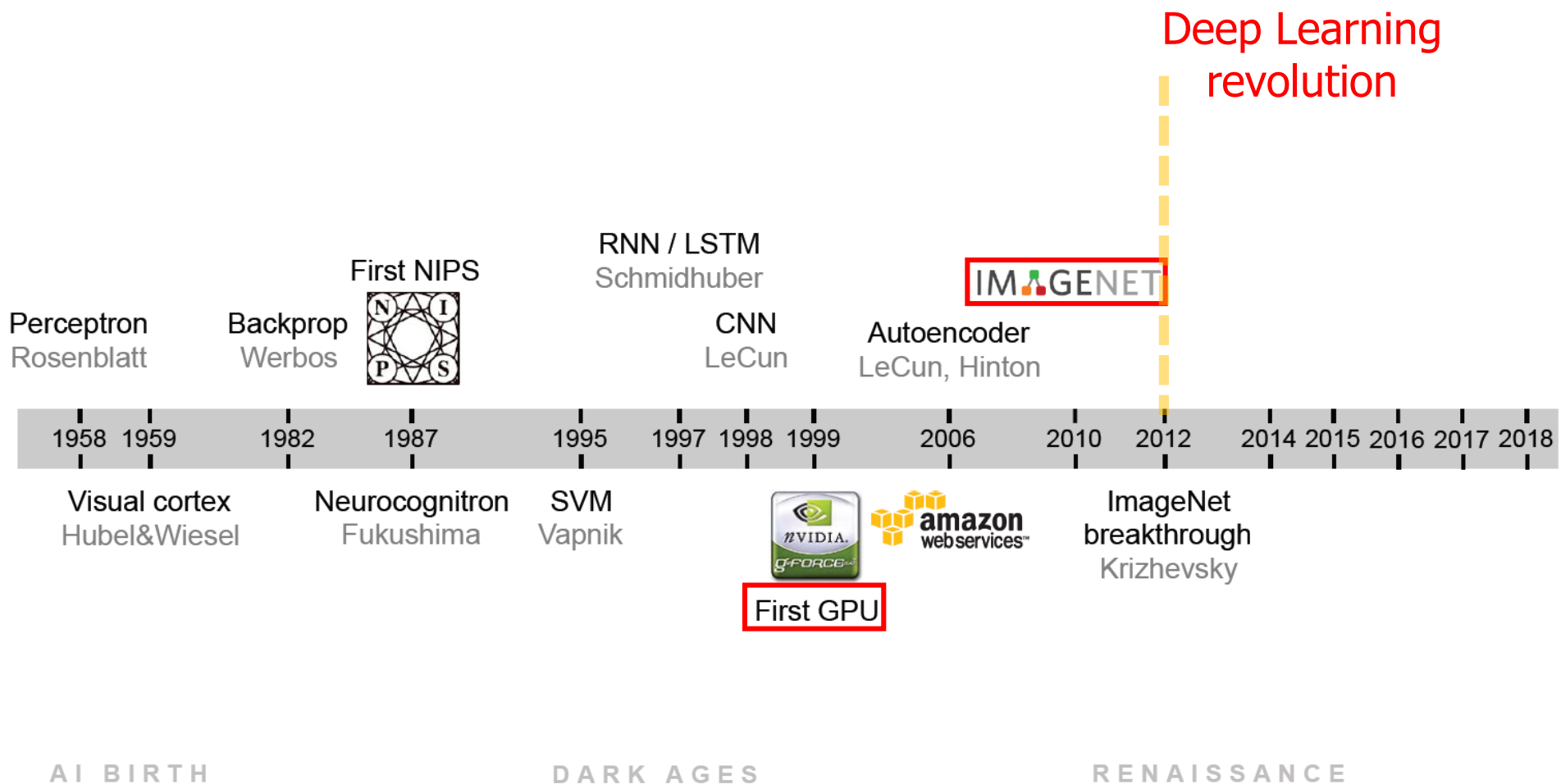


뇌의 활성화 된 신경망



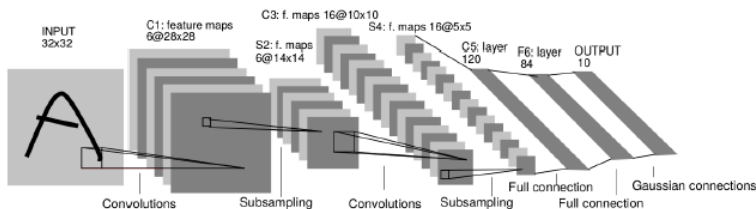
강아지

인공 신경망 판단 회로

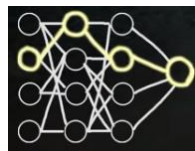


# 신경망의 예) Convolutional Neural Network

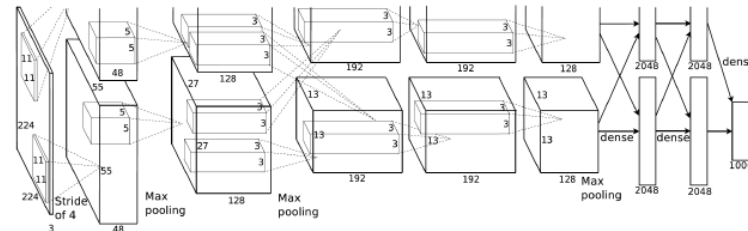
1989



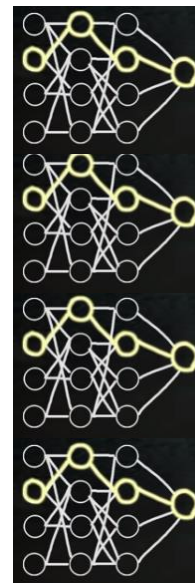
- 3 convolutional + 1 fully connected layer
- 1M parameters
- Trained on MNIST 70K
- CPU-based
- tanh non-linearity



2012



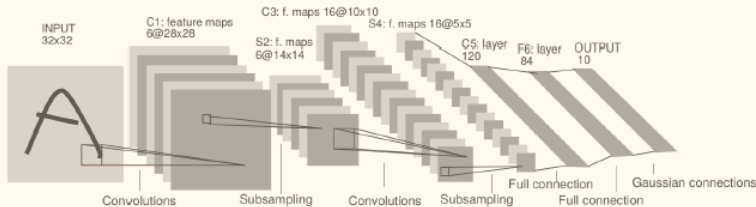
- 5 convolutional + 3 fully connected layers
- 60M parameters
- Trained on ImageNet 1.5M
- GPU-based
- ReLU, Dropout





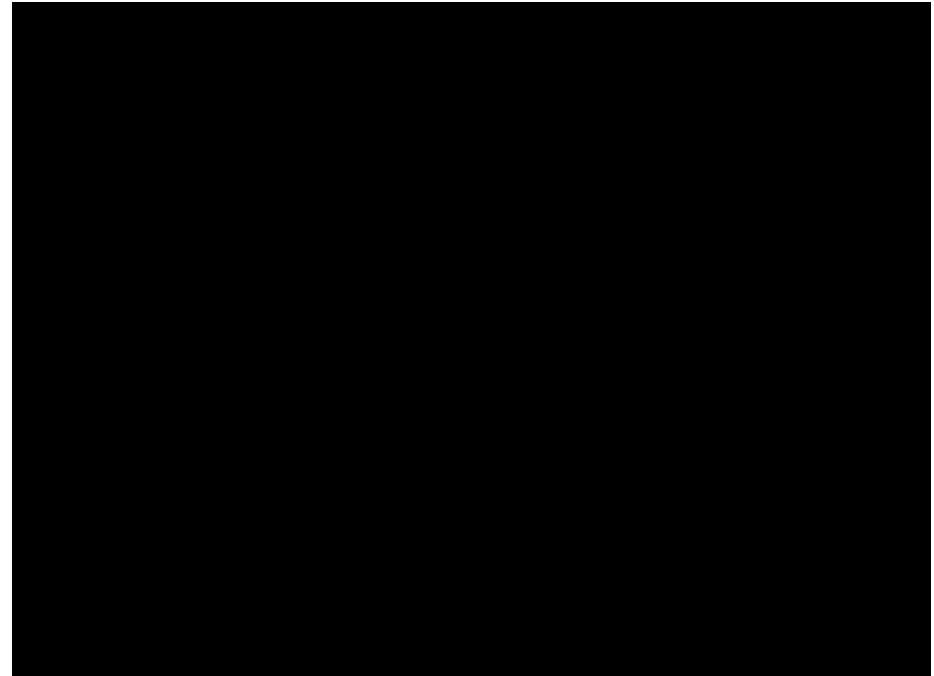
# 신경망의 예) Convolutional Neural Network

1989



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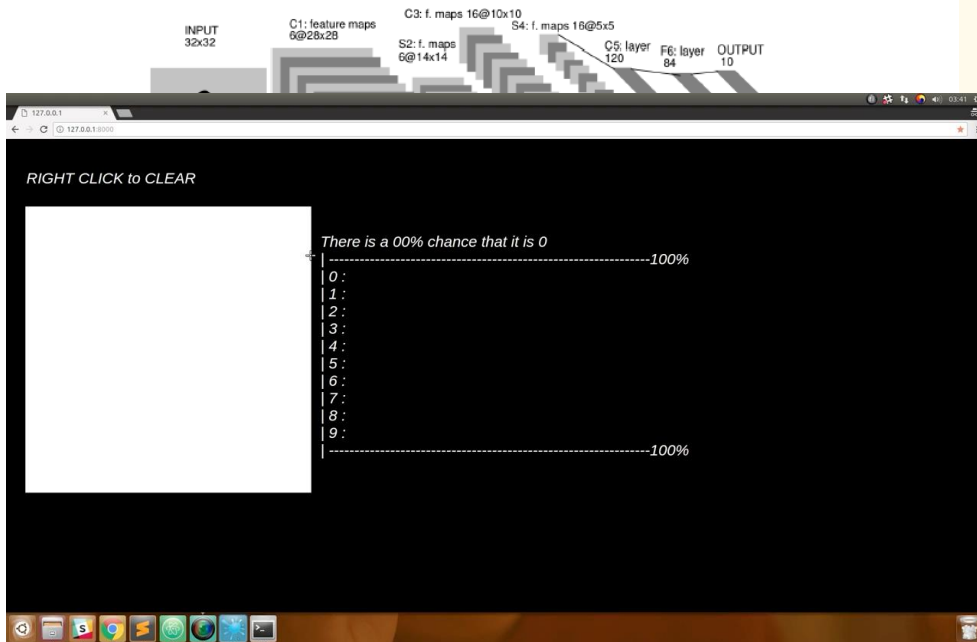
2012



- GPU-based
- ReLU, Dropout

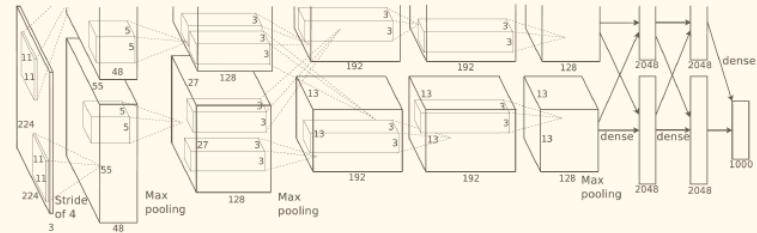
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1989



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2012



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