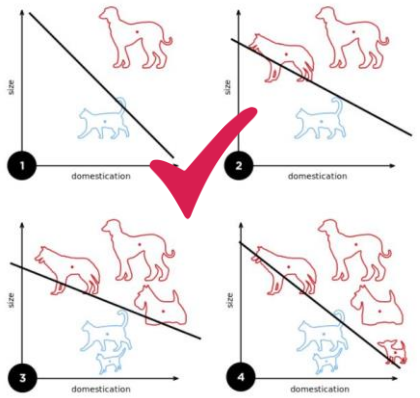
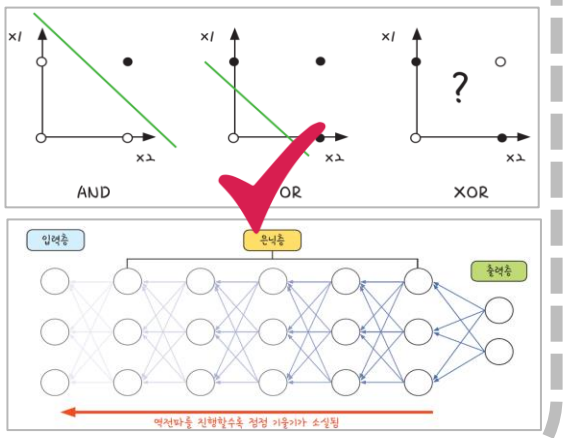
4교시: 제대로 도전하는 딥러닝

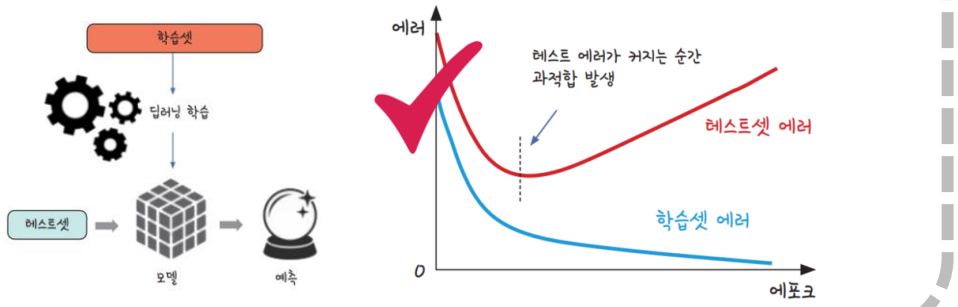
머신러닝 개념이해



다층 퍼셉트론, 신경망

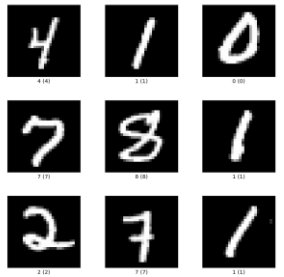


모델링의 기초



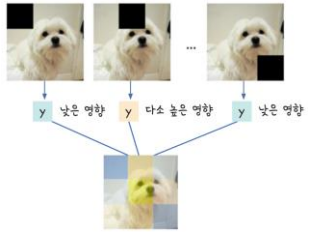
딥러닝

CNN / 전이학습

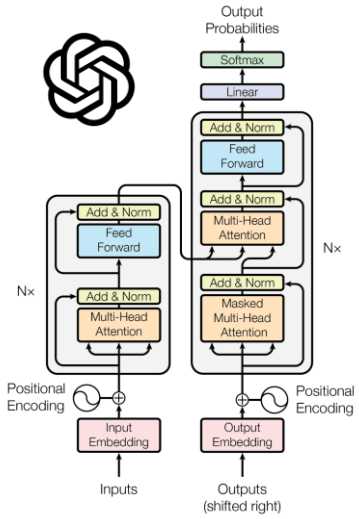


GAN/AE

XAI



Transformer



4교시: 제대로 도전하는 딥러닝

01 이미지를 인식하는 원리

02 컨볼루션 신경망(CNN)

<실습> 컨볼루션 신경망 실행하기

03 소규모 데이터셋으로 만드는 강력한 학습 모델

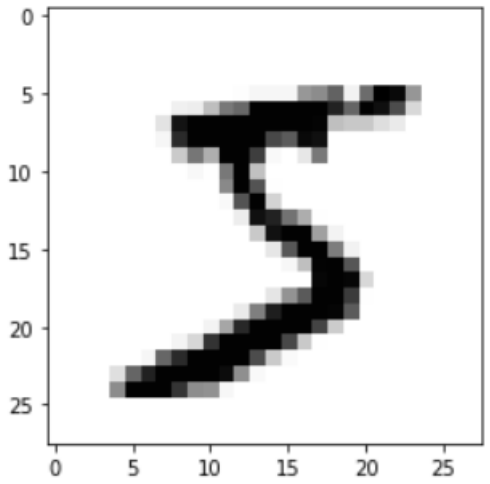
<실습> 실데이터 적용 사례

이미지를 인식하는 원리

MNIST

- 손으로 쓴 숫자(0-9) 이미지 데이터셋
- 숫자 인식 모델을 훈련하고 평가하기 위해 사용

MNIST

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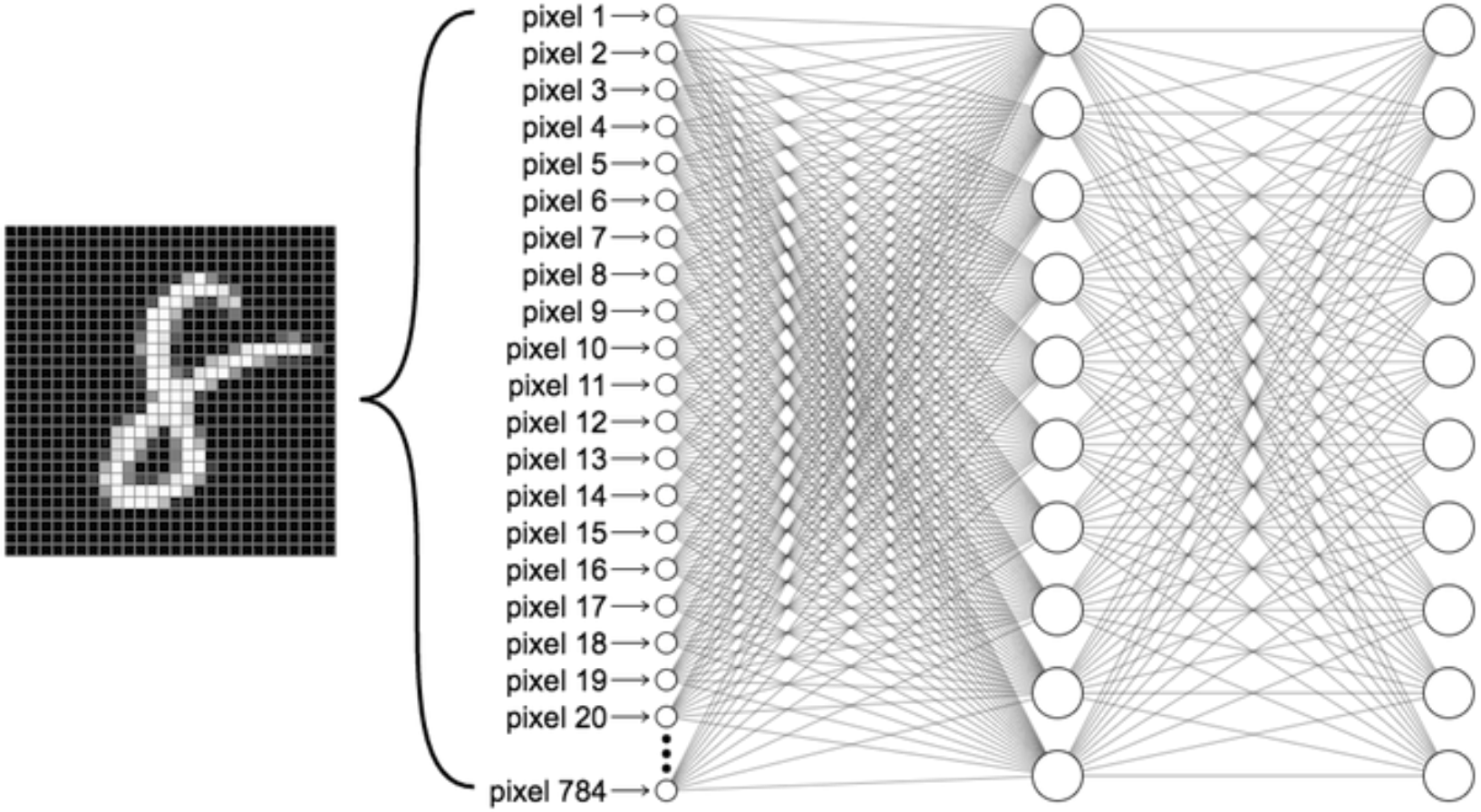
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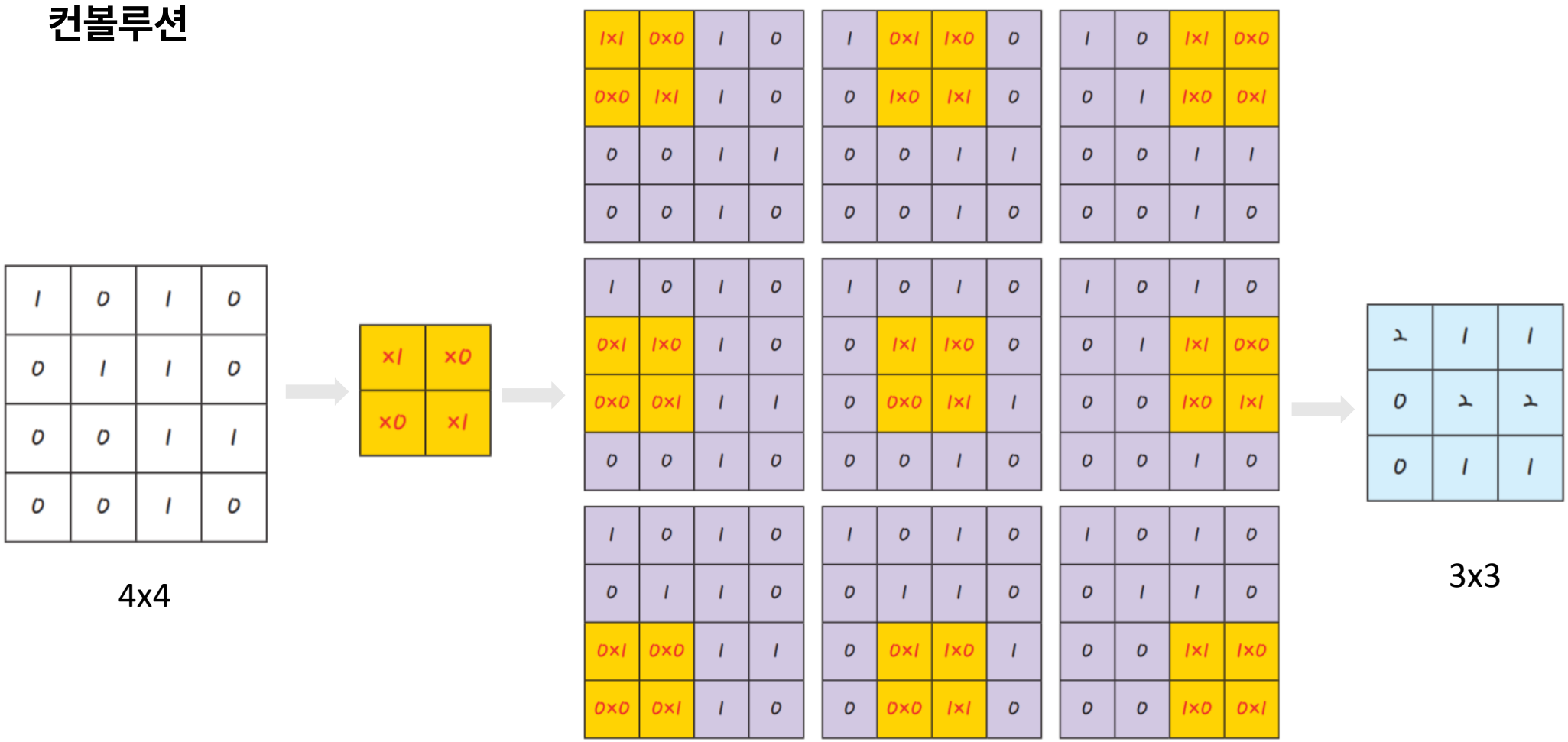
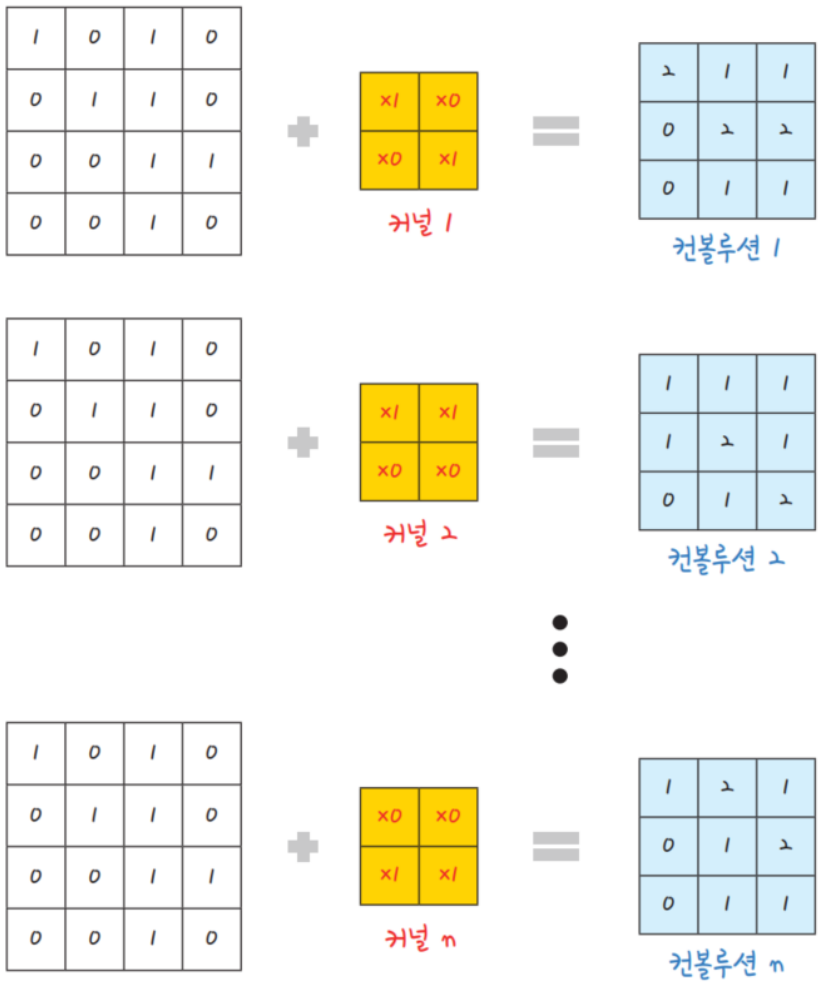
pixel 4
pixel 5
pixel 6
pixel 7
pixel 8
pixel 9
pixel 10
pixel 11
pixel 12
pixel 13
pixel 14
pixel 15
pixel 16
pixel 17
pixel 18
pixel 19
pixel 20
pixel 784

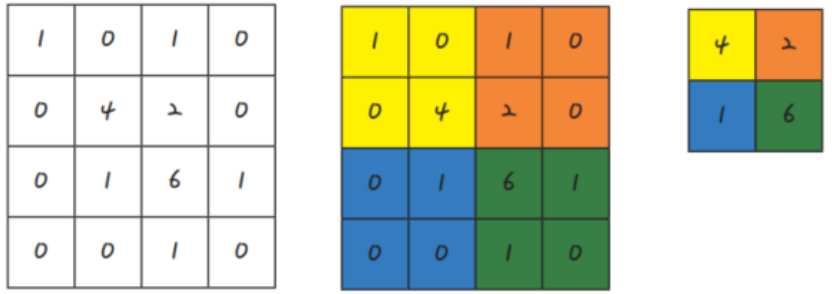
컨볼루션 신경망(CNN)

컨볼루션

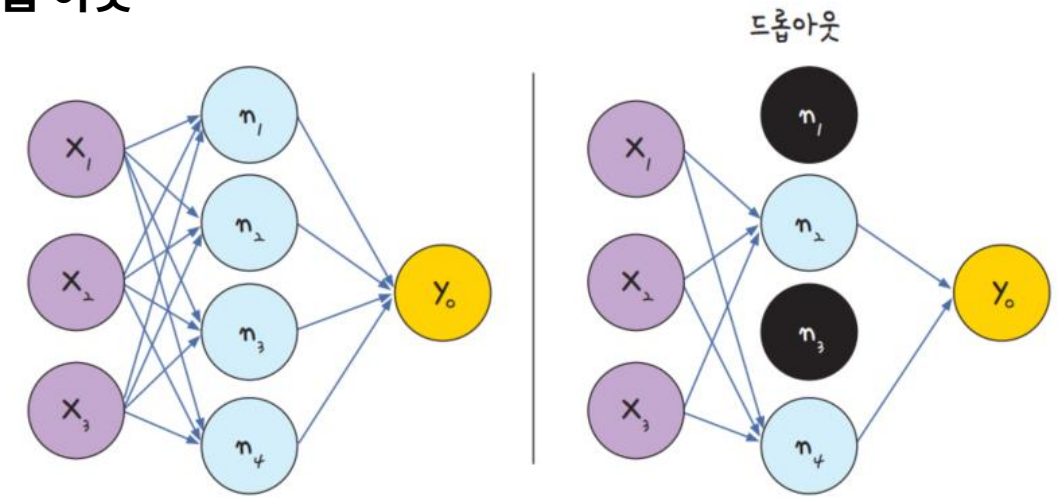




맥스 풀링



드롭 아웃



모두의 딥러닝(길벗, 2022), 조태호
모두의 딥러닝 (조태호, 길벗, 2022)

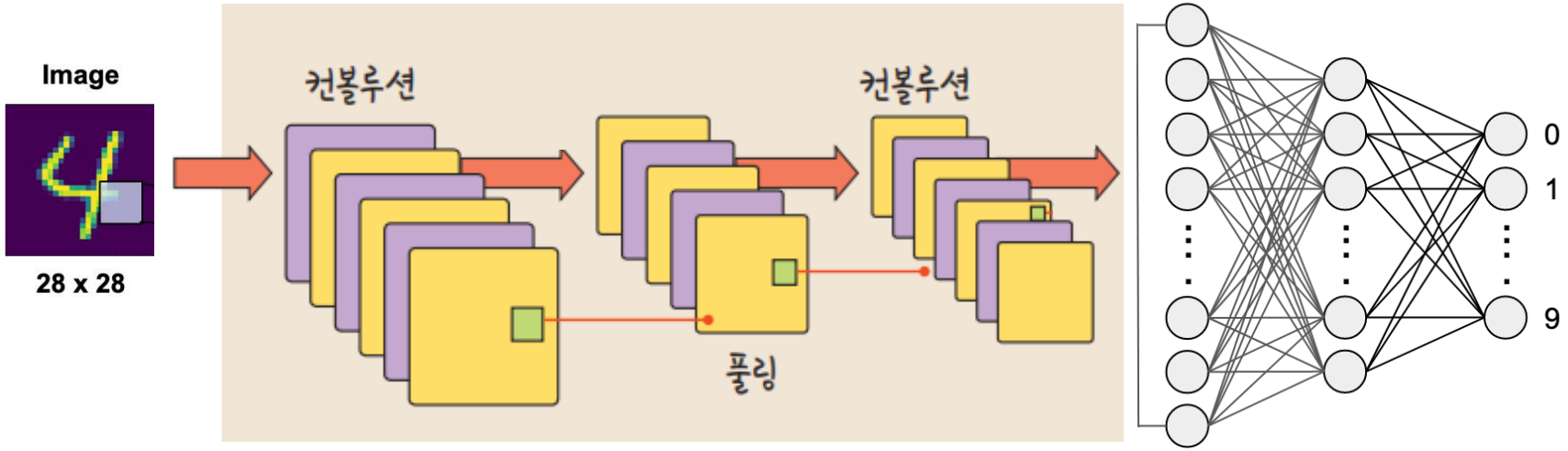


Image
28 x 28
컨볼루션
풀링
컨볼루션
0
1
9

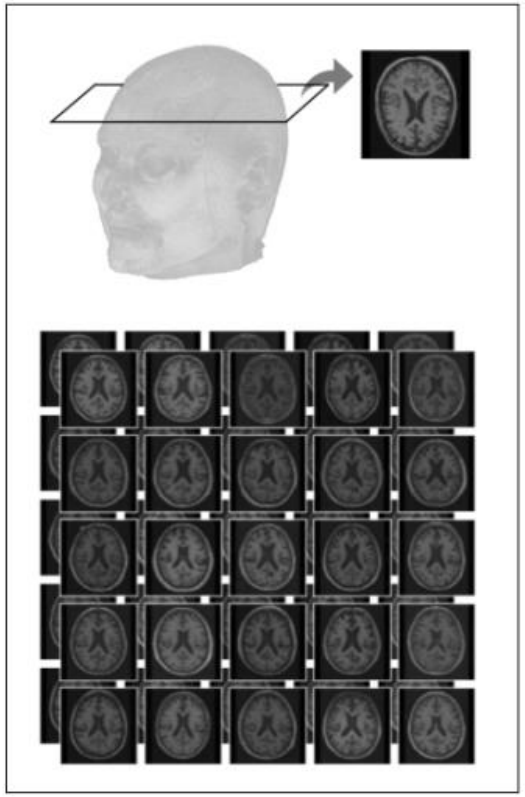
실습: 컨볼루션 신경망 실행하기

https://github.com/taehojo/fastcampus_ai

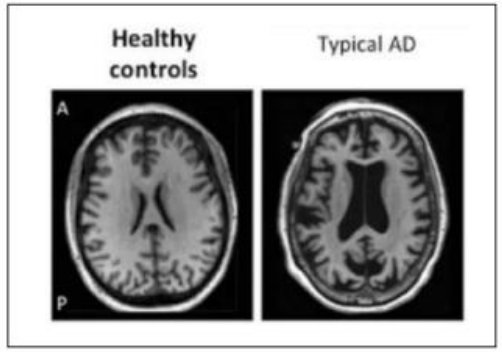
소규모 데이터셋으로 만드는 강력한 학습 모델

기본 실습

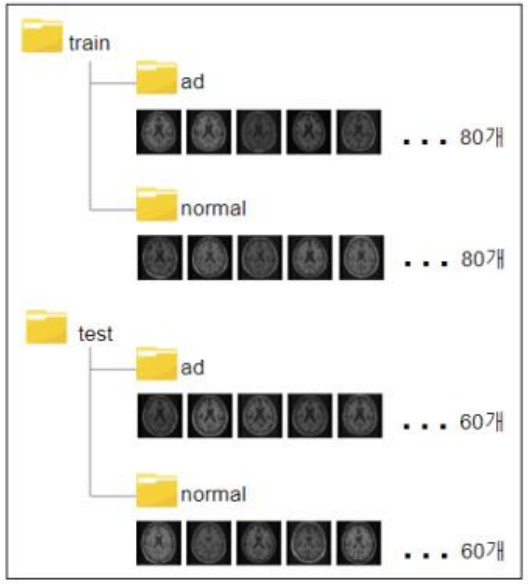
❶ MRI 단면 이미지 습득



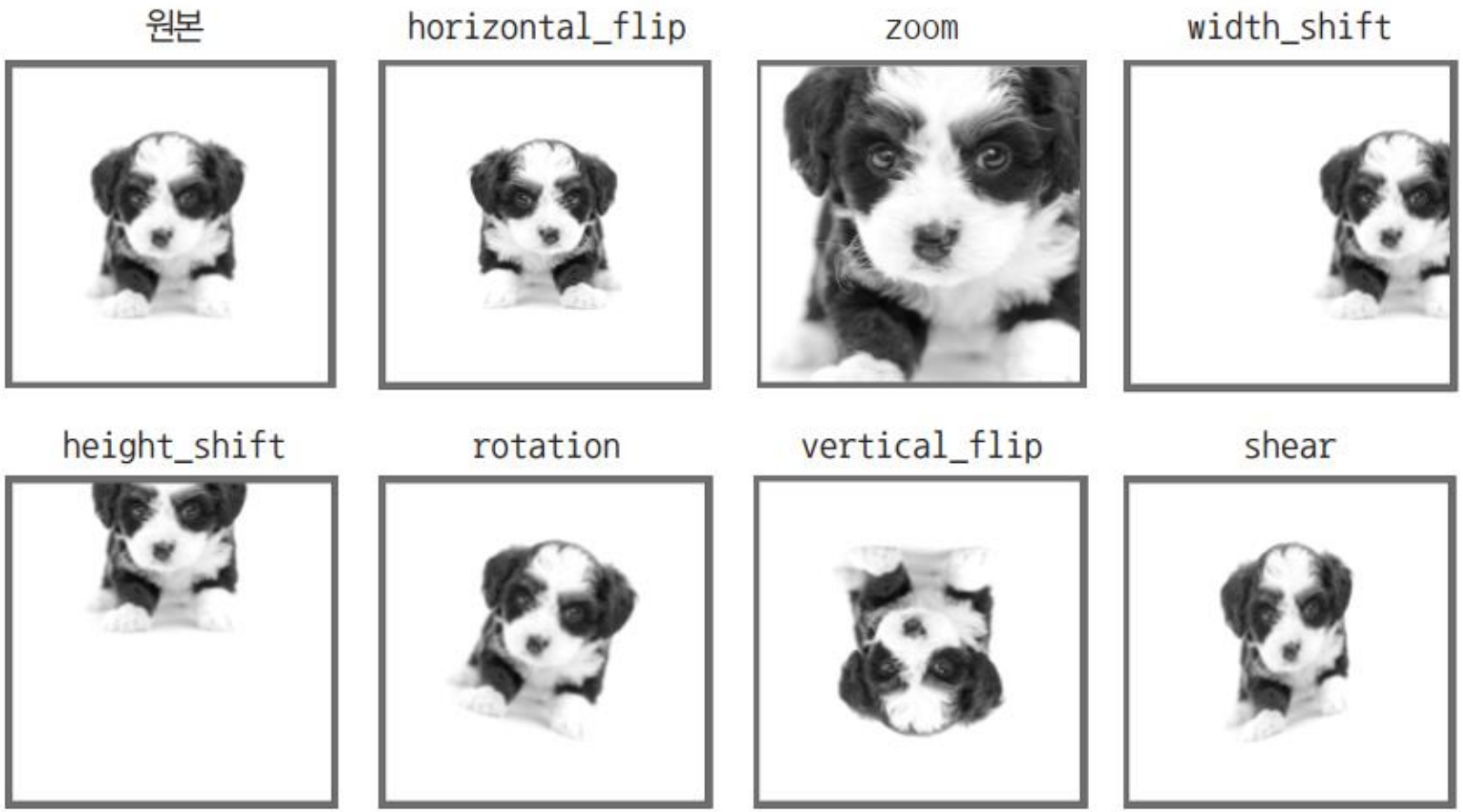
❷ 일반인인지 치매인지 유형 감별[1]



❸ 일반인 혹은 치매 클래스로 분류



학습셋 변형 설정 (Data Augmentation)

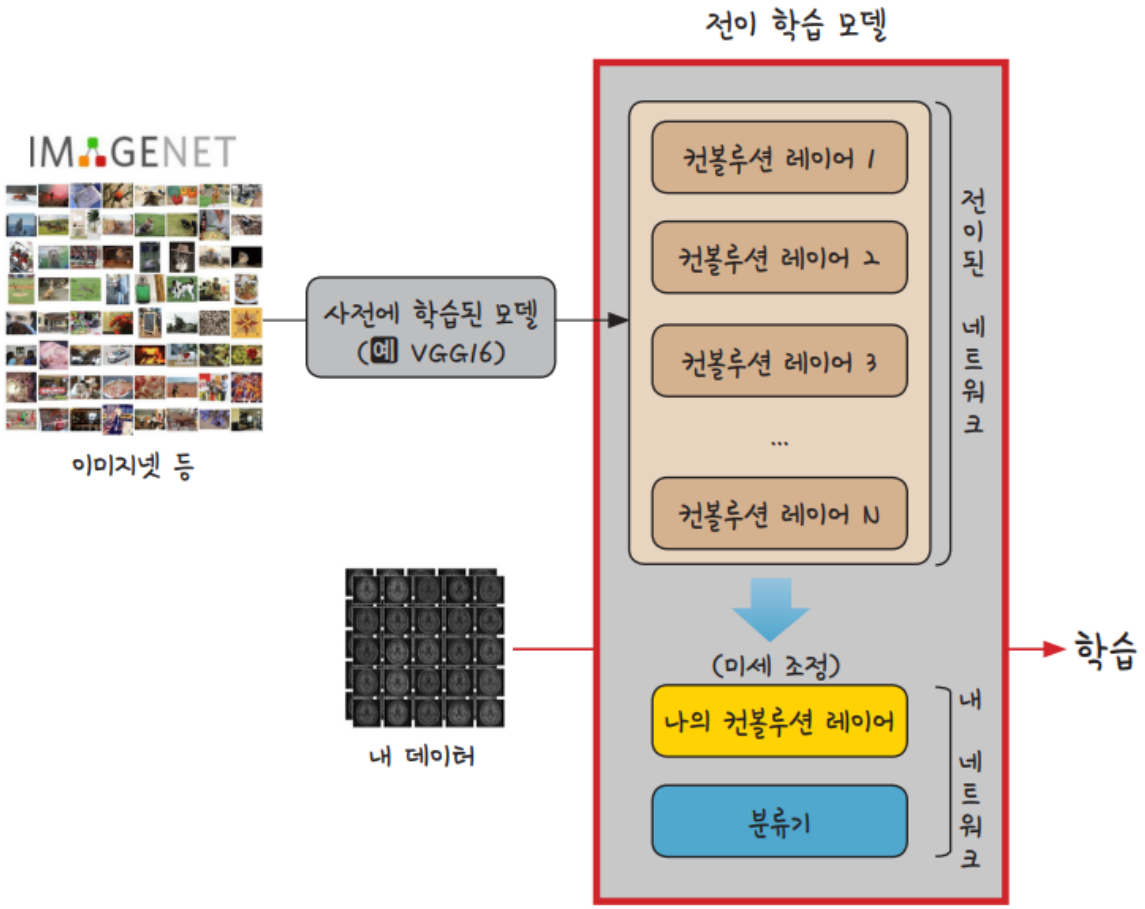


전이 학습 (Transfer Learning)

- 이미 학습된 모델을 기반으로 새로운 작업에 맞게 모델을 재학습시키는 방법
- 이미 학습된 모델을 활용하여 새로운 모델을 빠르게 학습
- 기존 모델의 지식을 활용하여 새로운 모델의 성능을 높임

전이 학습 과정

1. 기존 모델 준비: 이미지 분류, 자연어 처리 등 다양한 작업에서 이미 학습된 모델을 선택 (예: VGG, ResNet)
2. 기존 모델의 가중치 고정: 모델의 초기 레이어들은 고정하고, 마지막 레이어들만 재학습
3. 새 데이터로 미세 조정 (Fine-Tuning): 새로운 데이터로 모델을 재학습하여 최적의 성능 도출



실습: CNN과 전이학습

https://github.com/taehojo/fastcampus_ai