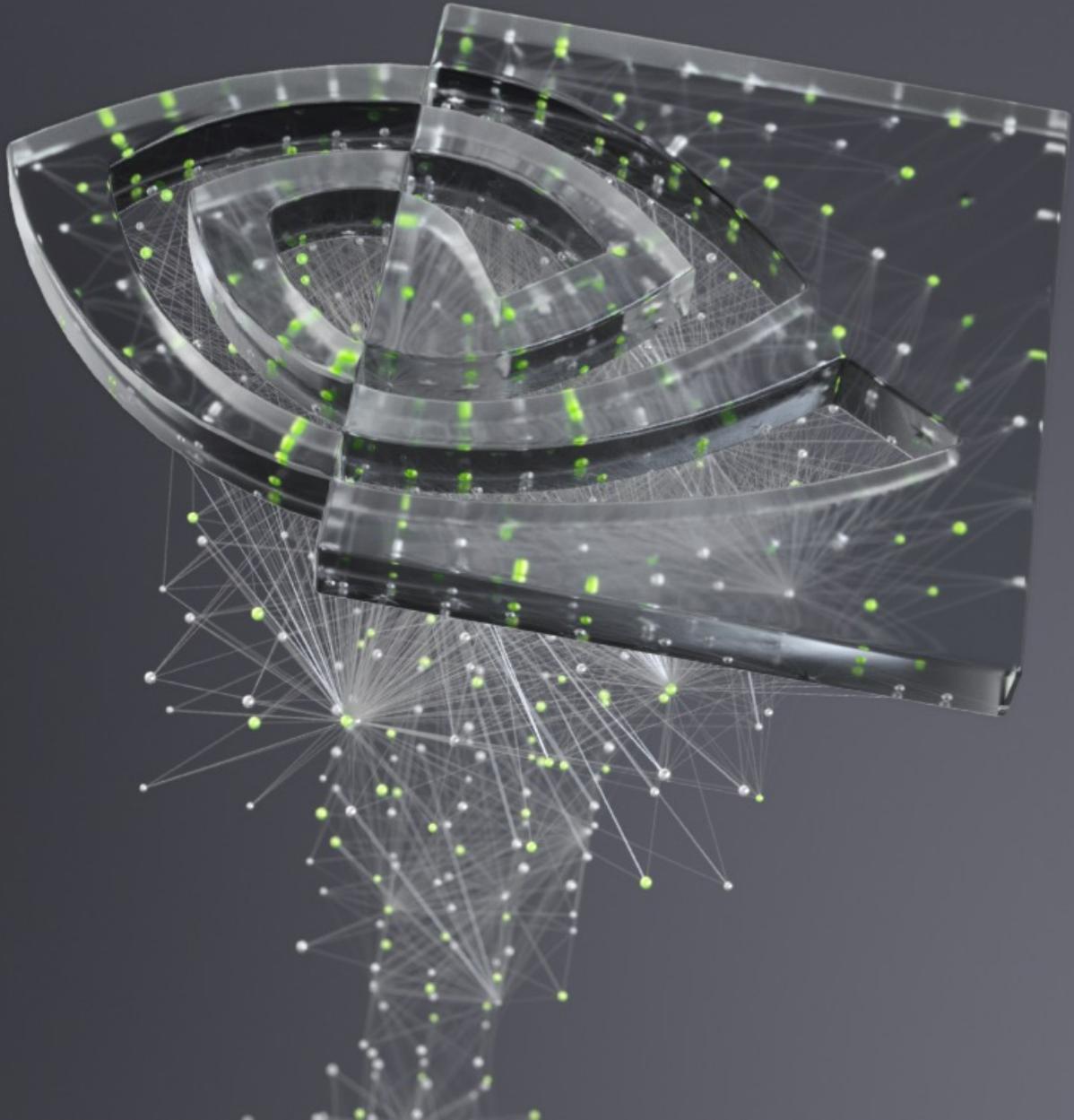




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딥러닝의 기초

5부: 사전 트레이닝된 모델



목차

1부: 딥러닝 소개

2부: 뉴럴 네트워크의 트레이닝 방식

3부: CNN(Convolutional Neural Network)

4부: 데이터 증강 및 배포

5부: 사전 트레이닝된 모델

6부: 고급 아키텍처

목차 – 5부

- 복습
- 사전 트레이닝된 모델
- 전이 학습(Transfer Learning)

A complex network graph is displayed against a dark gray background. The graph consists of numerous small, semi-transparent white and light green circular nodes, connected by thin, light gray lines representing edges. The nodes are distributed across the frame, with a higher density in the upper left and lower right areas, creating a sense of organic connectivity.

복습

복습



- Learning Rate
- Number of Layers
- Neurons per Layer
- Activation Functions
- Dropout
- Data



사전 트레이닝된 모델 PRE-TRAINED MODELS

사전 트레이닝된 모델 (PRE-TRAINED MODELS)

TensorFlow Hub

K Keras



<https://www.tensorflow.org/hub?hl=ko>

사전 트레이닝된 모델 (PRE-TRAINED MODELS)

VERY DEEP CONVOLUTIONAL NETWORKS FOR LARGE-SCALE IMAGE RECOGNITION

Karen Simonyan* & Andrew Zisserman⁺

Visual Geometry Group, Department of Engineering Science, University of Oxford
`{karen,az}@robots.ox.ac.uk`



<https://keras.io/api/applications/vgg/>

<https://keras.io/api/applications/#available-models>

<https://gist.github.com/yrevar/942d3a0ac09ec9e5eb3a>

다음 과제

강아지 분류



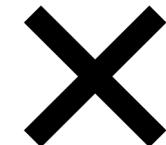


전이 학습

TRANSFER LEARNING

후속 과제

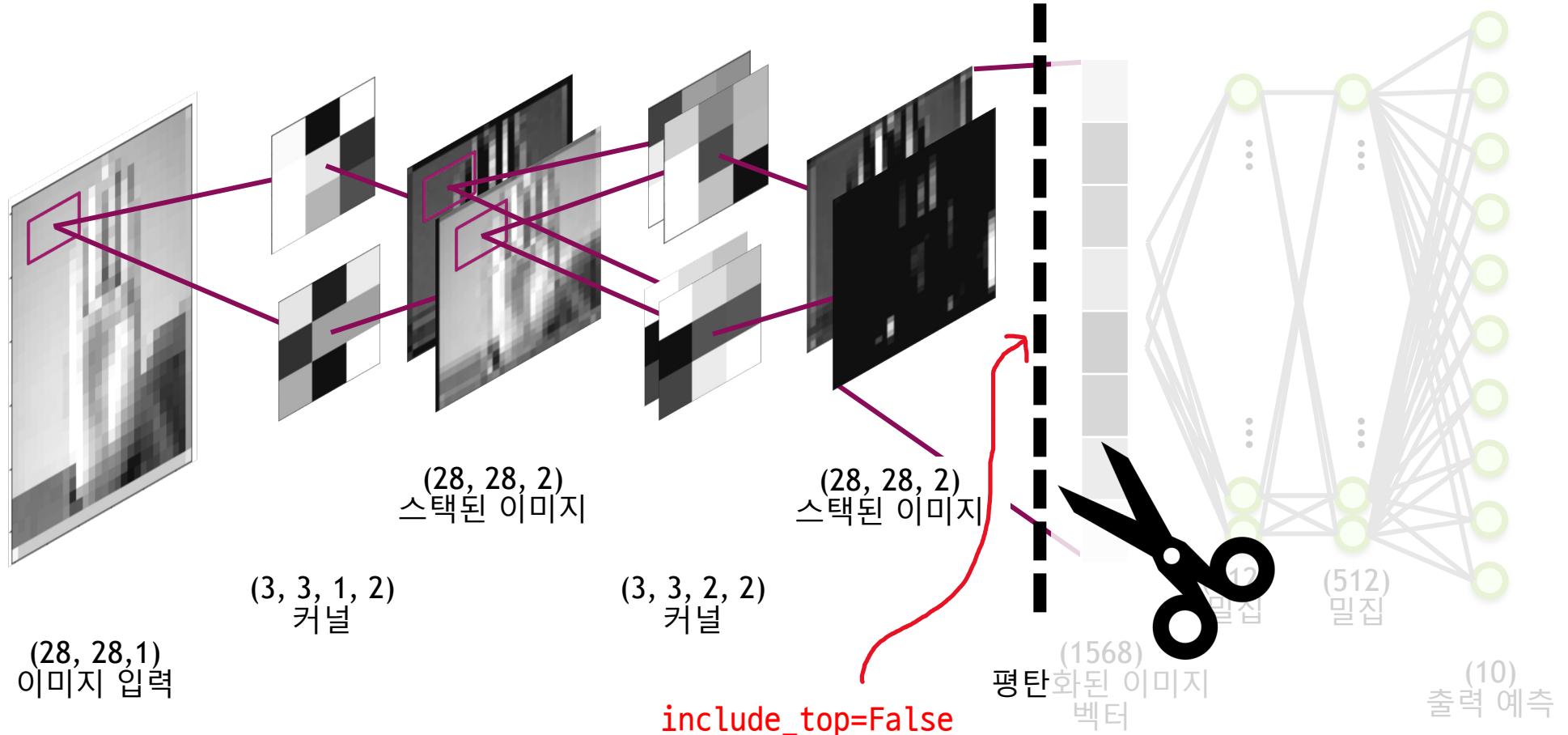
대통령 사저의 강아지 분류기



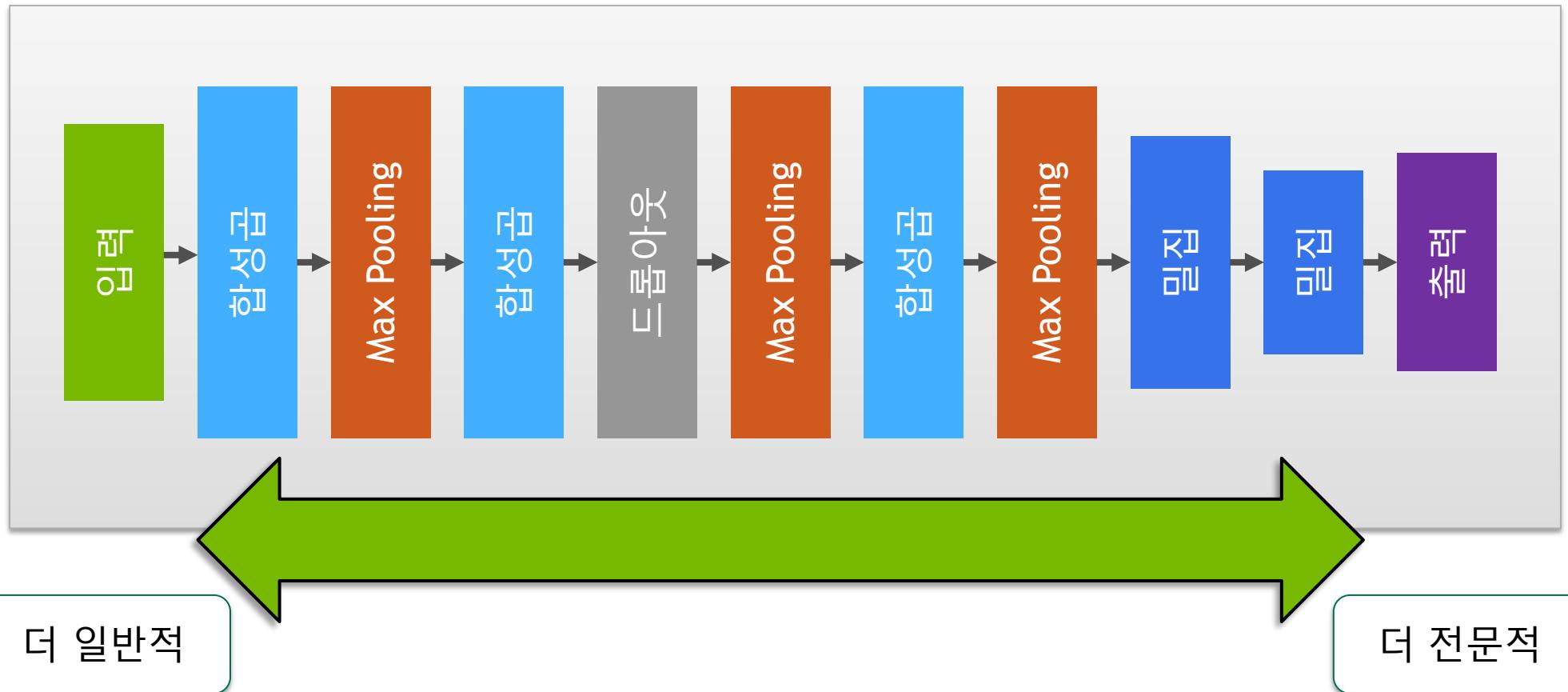
전이 학습(TRANSFER LEARNING)



전이 학습(TRANSFER LEARNING)



전이 학습(TRANSFER LEARNING)

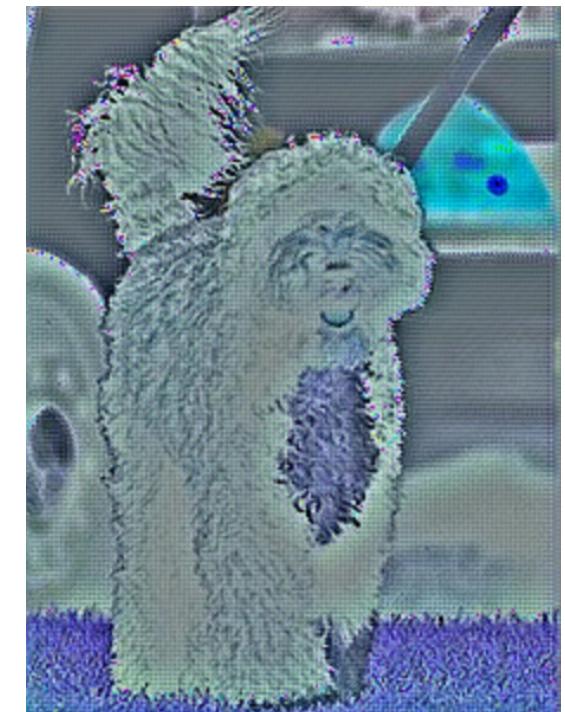
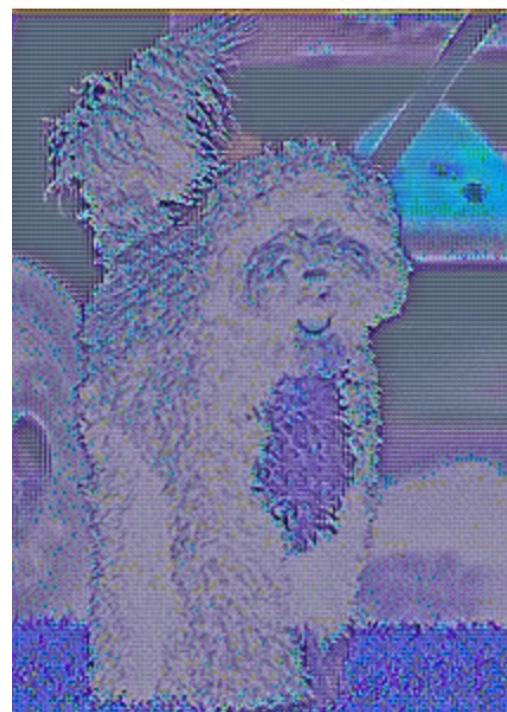
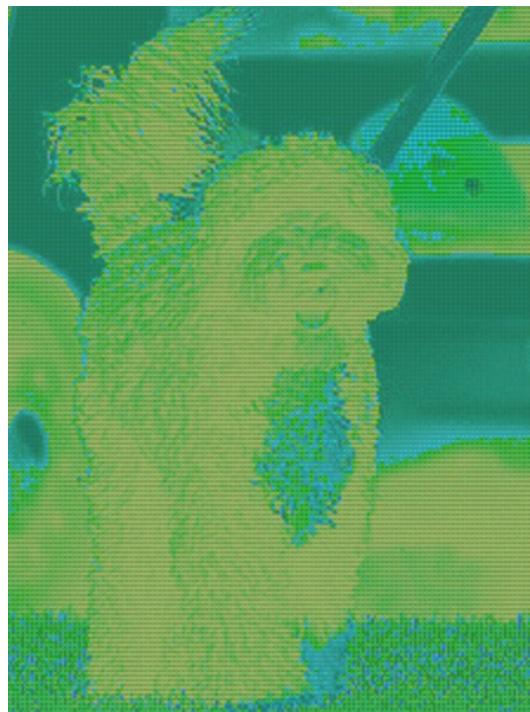


전이 학습(TRANSFER LEARNING)

모델 동결(Freeze)



전이 학습(TRANSFER LEARNING)



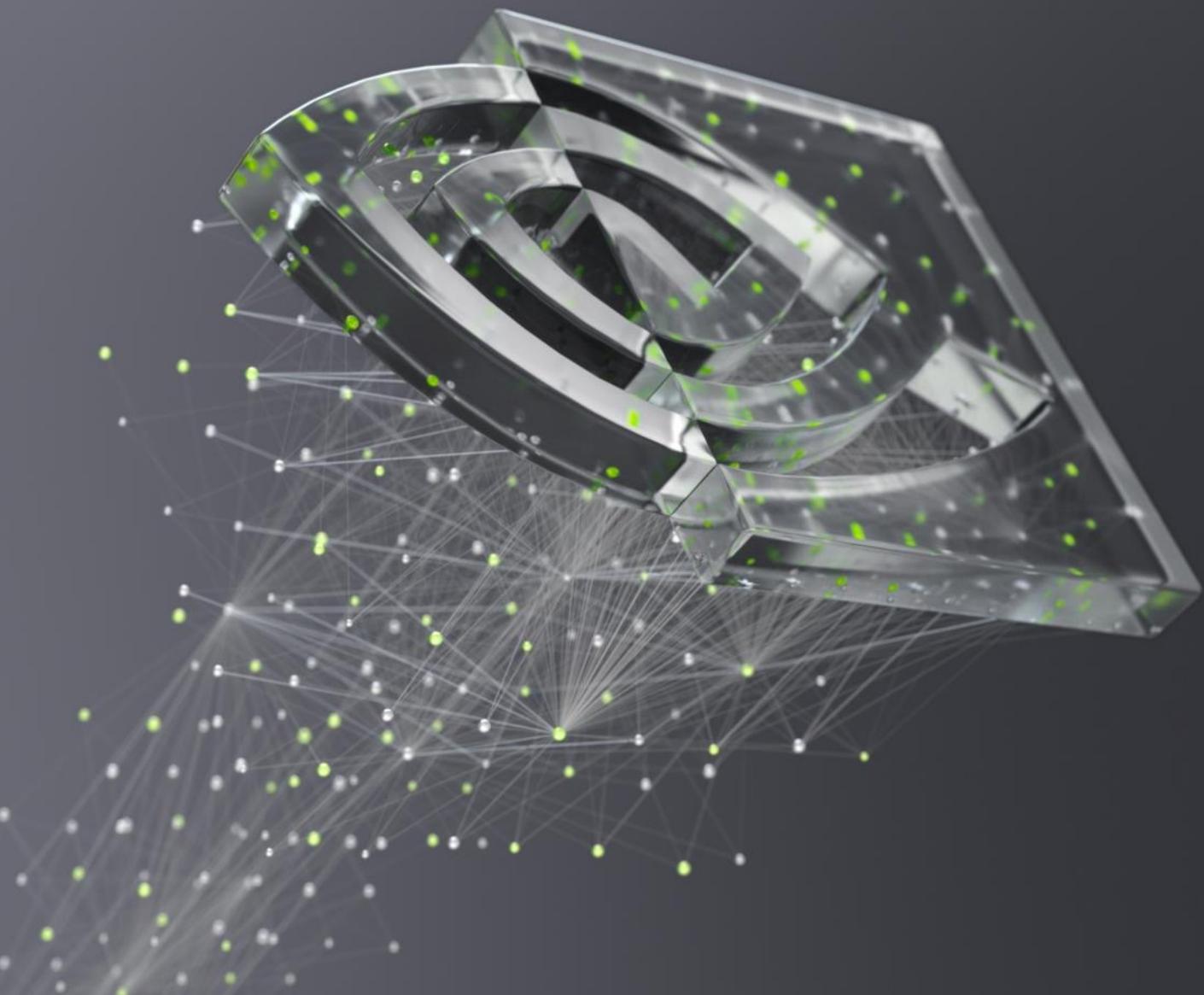
tensorflow Sequential, Funcational Model

```
# Functional Model API  
inputs = keras.Input(shape=(224, 224, 3))  
x = base_model(inputs, training=False)  
  
# CNN layer의 차원을 1차원 벡터로 줄여  
pooling하여 다음 FC layer로 전달  
  
x =  
keras.layers.GlobalAveragePooling2D()(x)  
  
# A Dense classifier with a single unit  
(binary classification)  
outputs = keras.layers.Dense(1)(x)  
model = keras.Model(inputs, outputs)
```

```
# Sequential Model API  
from tensorflow.keras.models import Sequential  
from tensorflow.keras.layers import Dense, GlobalAveragePooling2D  
  
model = Sequential()  
model.add(base_model)  
model.add(GlobalAveragePooling2D())  
model.add(Dense(units=1,  
activation='binary_crossentropy'))
```



시작하겠습니다!



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