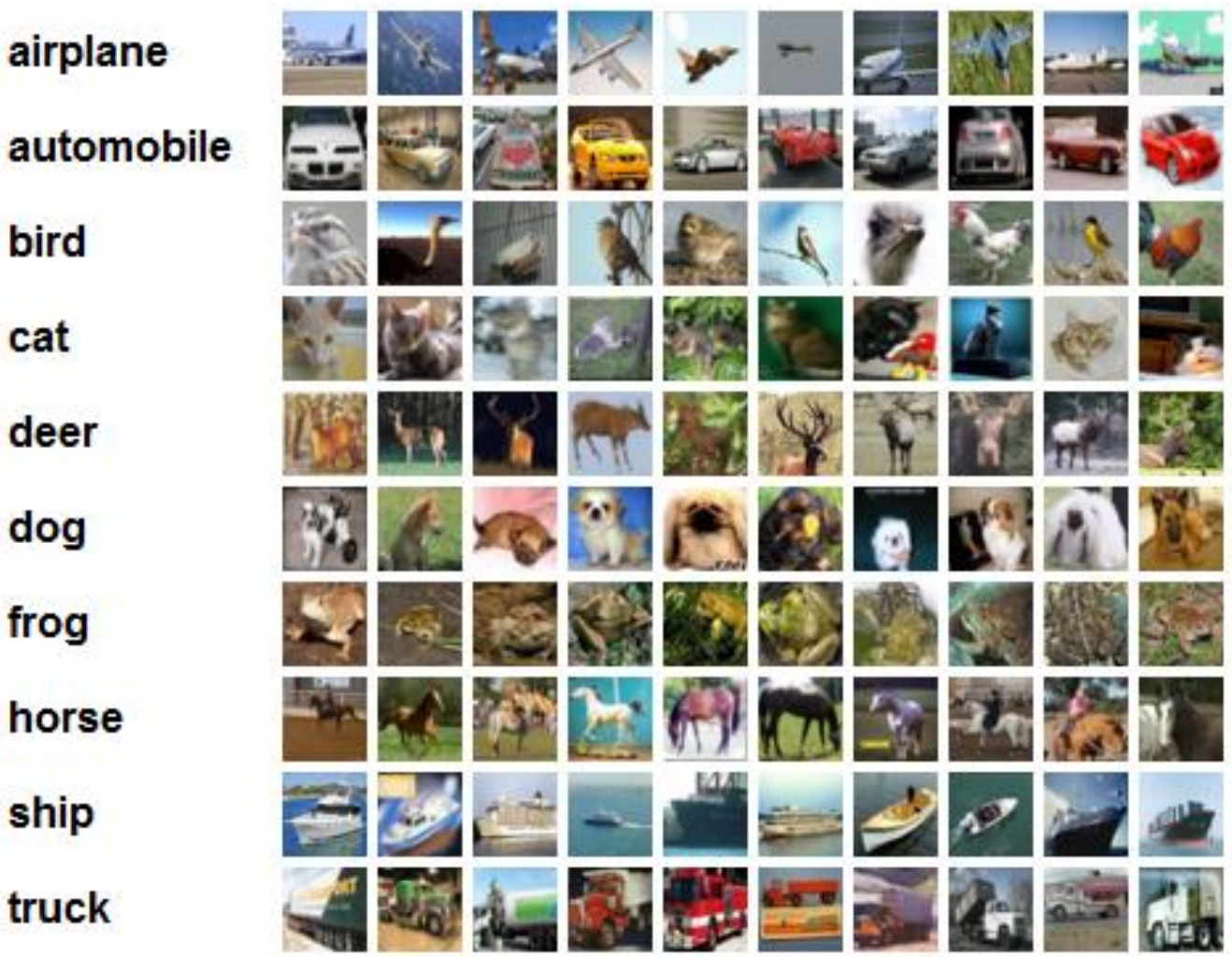
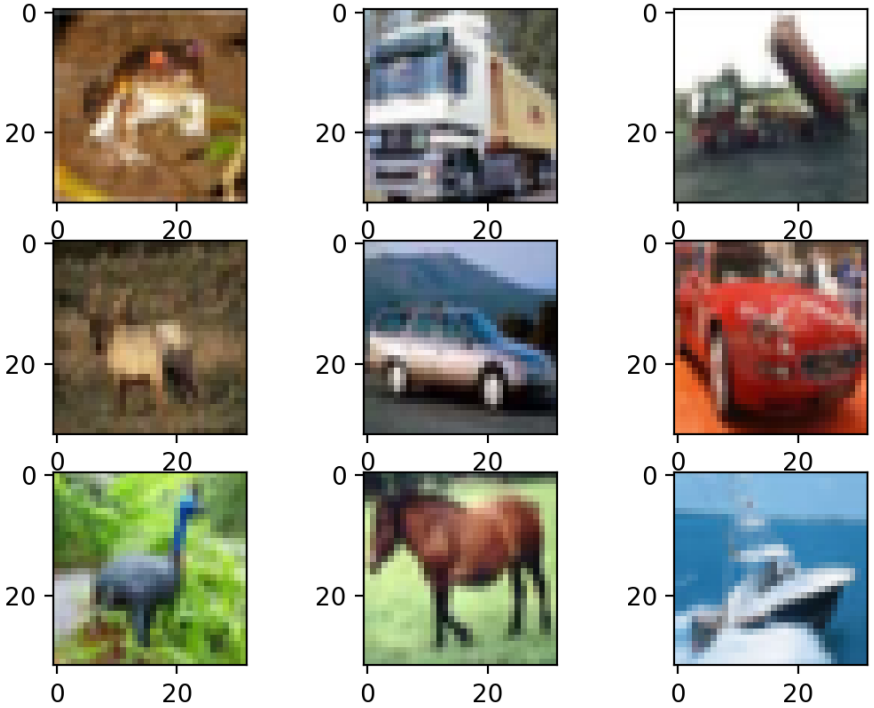
CIFAR-10


airplane
automobile
bird
cat
deer
dog
frog
horse
ship
truck

CIFAR-10



- Shape of each data : [3, 32, 32]

- Range : 0 to 255

- You can see the image of each data. (available in the assignment code)

Code review

[Objective]

Your model should classifiy of the images into 10 classes.

[Classes]

classes = ('plane', 'car', 'bird', 'cat', 'deer', 'dog', 'frog', 'horse', 'ship', 'truck')

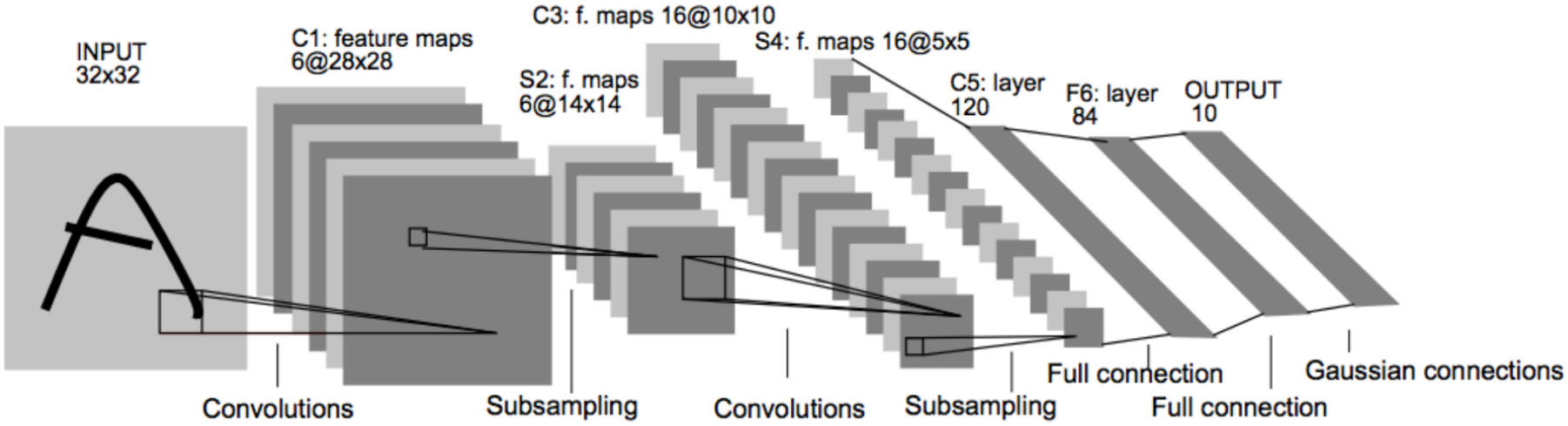
[PyTorch Code structure]

- **LeNet5_model.py**
- **LeNet5_train.py**
- **LeNet5_evaluation.py**

[TensorFLow Code structure]

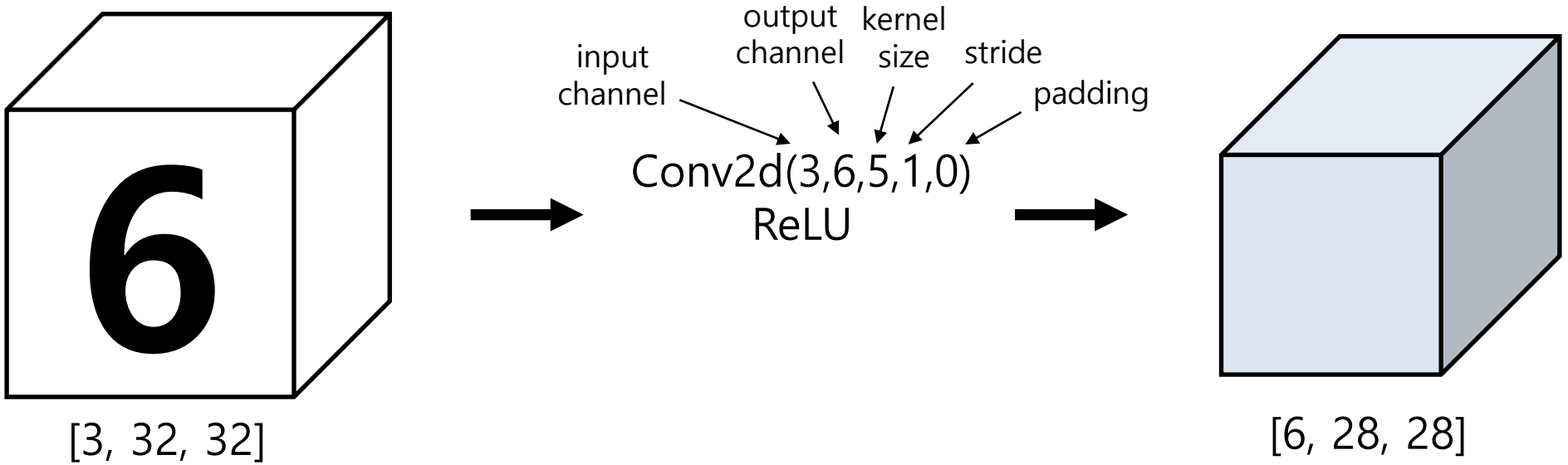
- **lenet.py**
- **lenet_train.py**
- **lenet_eval.py**
- **data_helpers.py**

LeNet-5 [1]

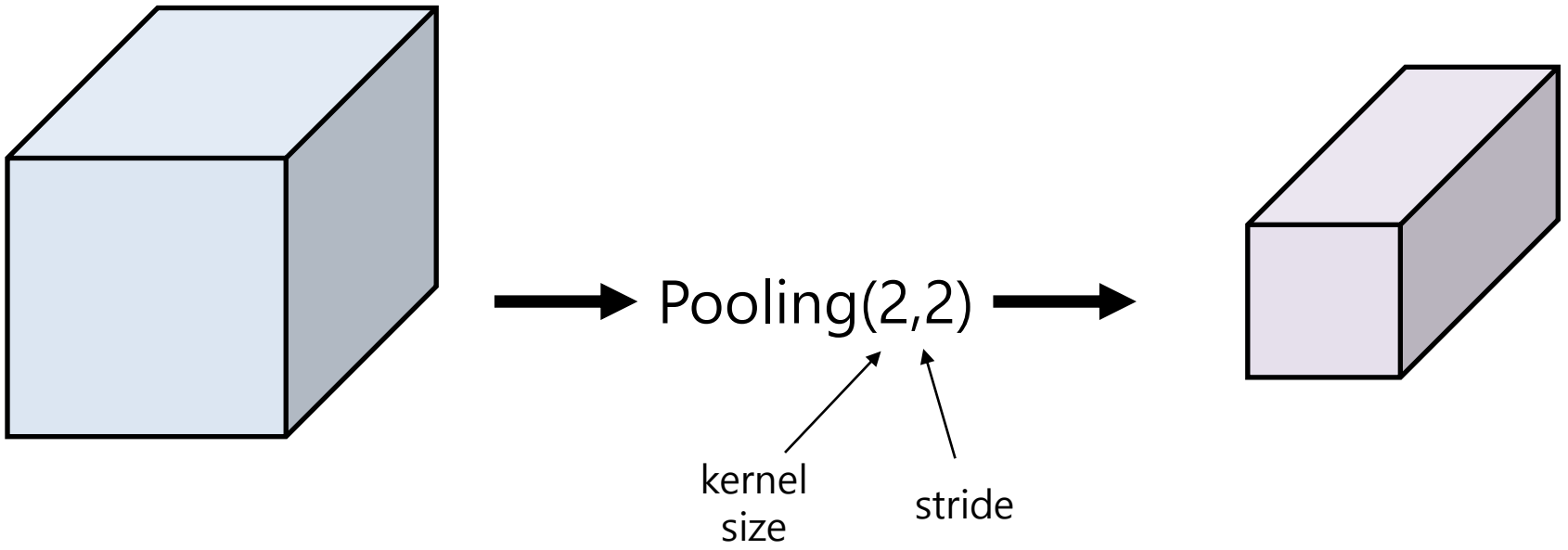


[1] LeCun, Yann, et al. "Gradient-based learning applied to document recognition." *Proceedings of the IEEE* 86.11 (1998): 2278-2324.

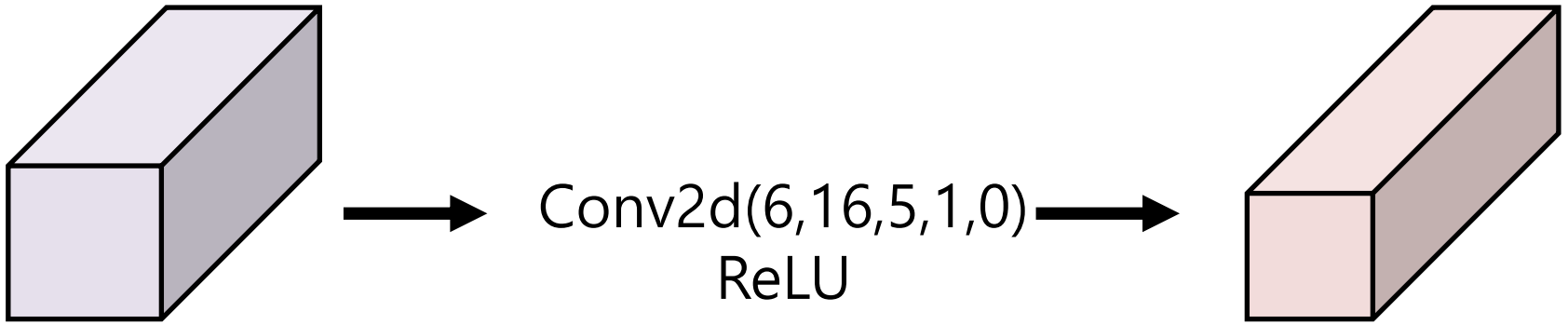
LeNet-5


6
[3, 32, 32]
input channel
output channel
kernel size
stride
padding
Conv2d(3,6,5,1,0)
ReLU
[6, 28, 28]

LeNet-5



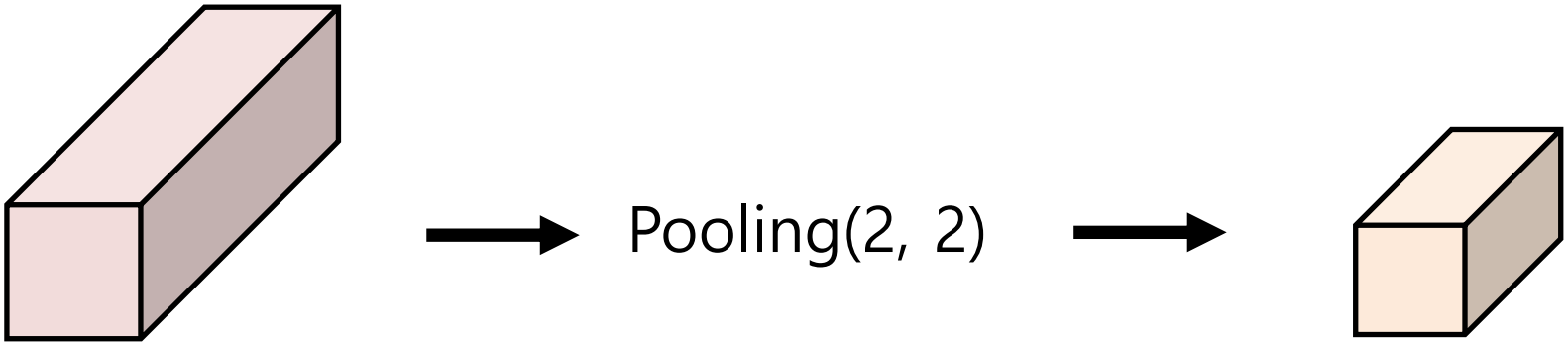
LeNet-5



[6, 14, 14]

[16, 10, 10]

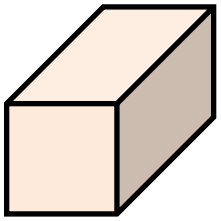
LeNet-5



[16, 10, 10]

[16, 5, 5]

LeNet-5



[16, 5, 5]

Reshape([16,5,5]→[16*5*5])
Fully Connected(16*5*5,120)
ReLU
Fully Connected(120,84)
ReLU
Fully Connected(84,10)

[10]

Class size

Assignment 3: LeNet

[Objective]

Your model should classifiy of the images into 10 classes.

[Requirements]

1. Implement LeNet5 model with Pytorch or Tensorflow.

(Basic code is provided)

2. You should experiment with settings stated in the evaluation report, and report the result of each settings.

3. You should attach the plot of the validation dataset accuracy plot.

4. You should report the experimental results.

(all kinds of additional experiments are recommended)

model

"Truck"

Assignment 3: LeNet

[Evaluation report]

LeNet Evaluation Report													
	Batch_size	Activation function	Weight initialization	Optimizer	Learning rate	Epoch	dropout	Weight decay	data augmentation	LR decay	training time (m)	Early stopping epoch	Accuracy
Setting #1	128	ReLU	0.01	Adam	0.001	200	0.1	x	x	x			
Setting #2	128	ReLU	0.01	Adam	0.001	200	0.1	0.0001	x	x			
Setting #3	128	ReLU	0.01	Adam	0.001	200	0.1	0.0001	O	x			
Setting #4	128	ReLU	He	Adam	0.001	200	0.1	0.0001	O	O			
add setting...													
Validation dataset accuracy plot													

Setting #1 Setting #2 Setting #3 Setting #4

[결과 정리]

Assignment 3: LeNet

- **Evaluation Criteria**

Simplicity	How concisely did you write the code? - 배점 6점 Convolution, pooling, and FC layers: 5점 Filter initialization: 1점 Learning rate decay: 1점
Performance	How well did the results of the code perform? - 배점 2점 - acc 73%이상 달성 시 만점
Brevity and Clarity	How concisely and clearly did you explain the results? - 배점 2점

Assignment 3: LeNet

- Due to : **~ 9.27(Sun)**

- Submission : Online submission on blackboard

- Your submission should contain
  1) The whole code of your implementation
  2) The evaluation report

- You must implement the components yourself!
- File name : StudentID_Name.zip