

CIFAR-10

airplane



automobile



bird



cat



deer



dog



frog



horse



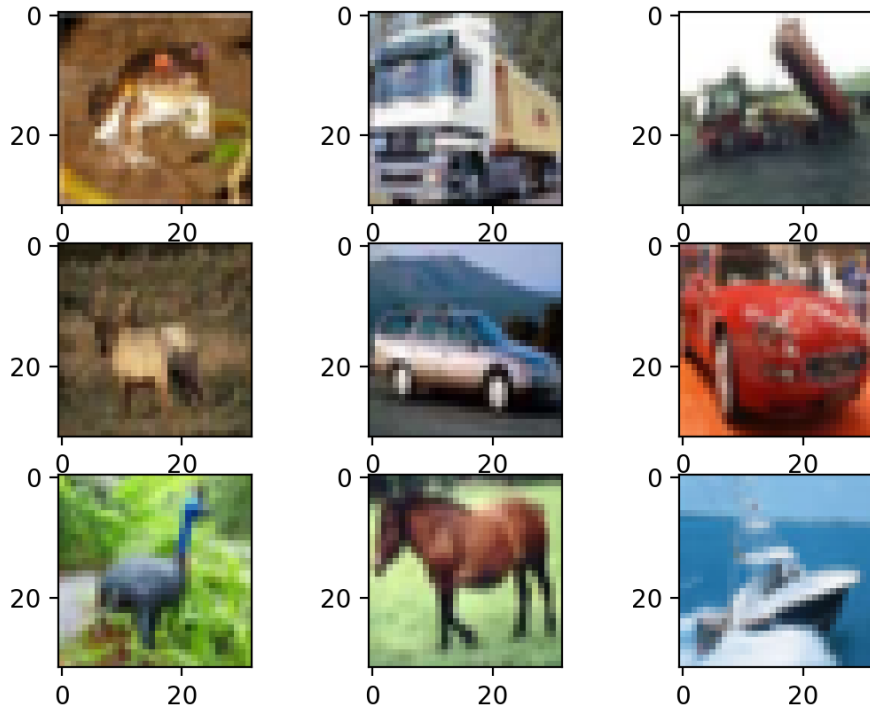
ship



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 classify the images into 10 classes.

[Classes]

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

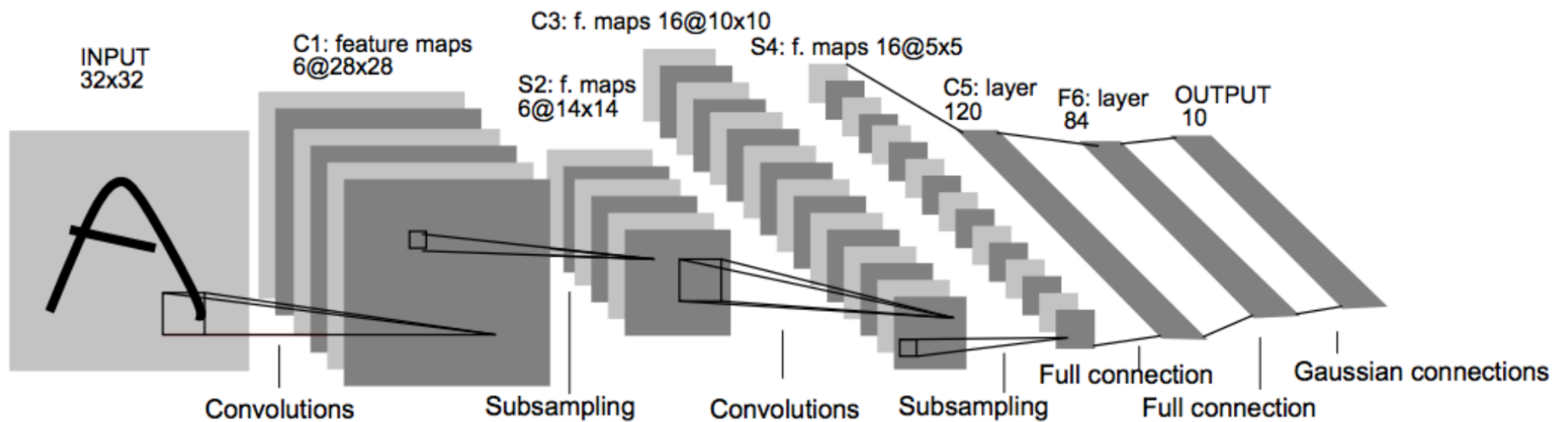
[PyTorch Code structure]

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

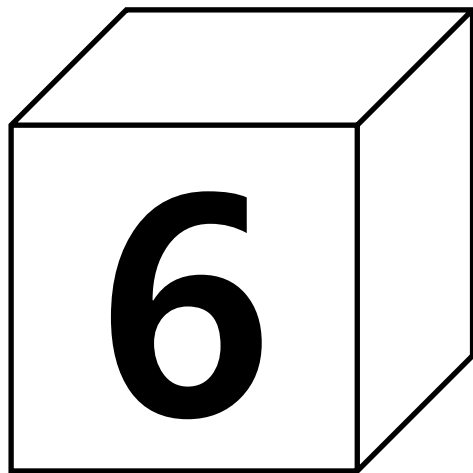
[TensorFlow Code structure]

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

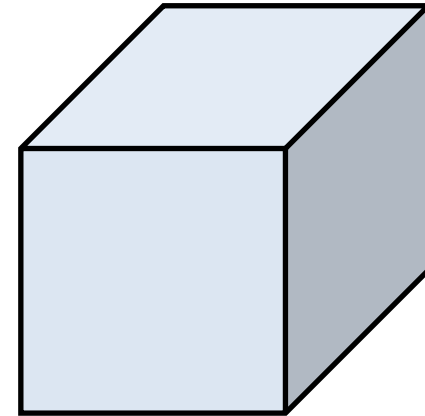
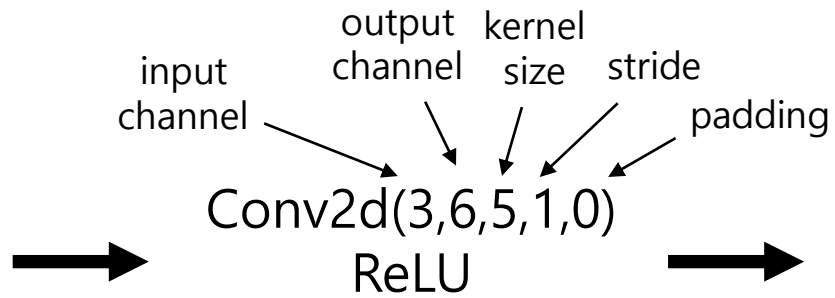
LeNet-5 [1]



LeNet-5

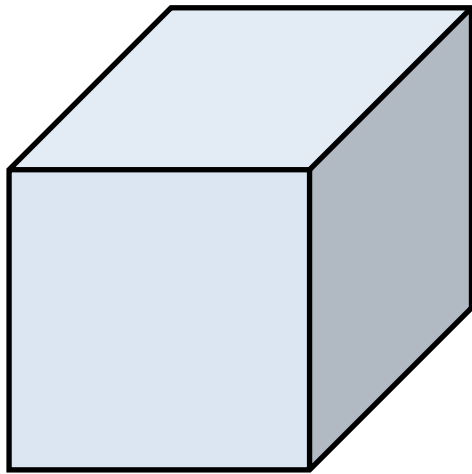


[3, 32, 32]



[6, 28, 28]

LeNet-5



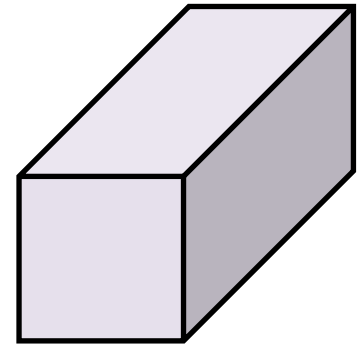
[6, 28, 28]



Pooling(2,2)

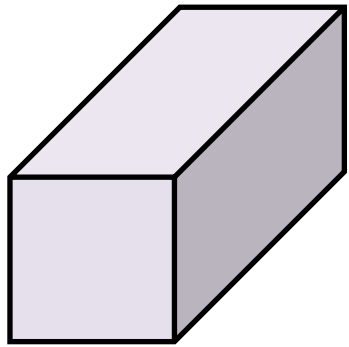
kernel
size

stride



[6, 14, 14]

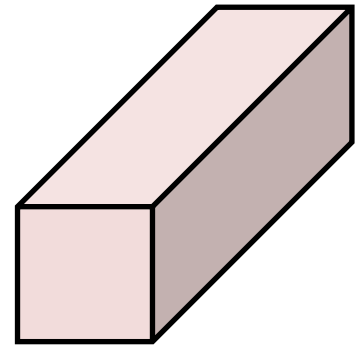
LeNet-5



[6, 14, 14]

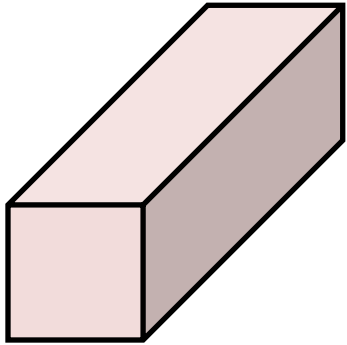


Conv2d(6,16,5,1,0)
ReLU



[16, 10, 10]

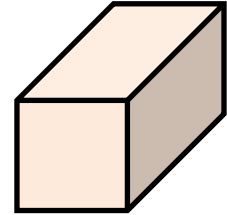
LeNet-5



[16, 10, 10]

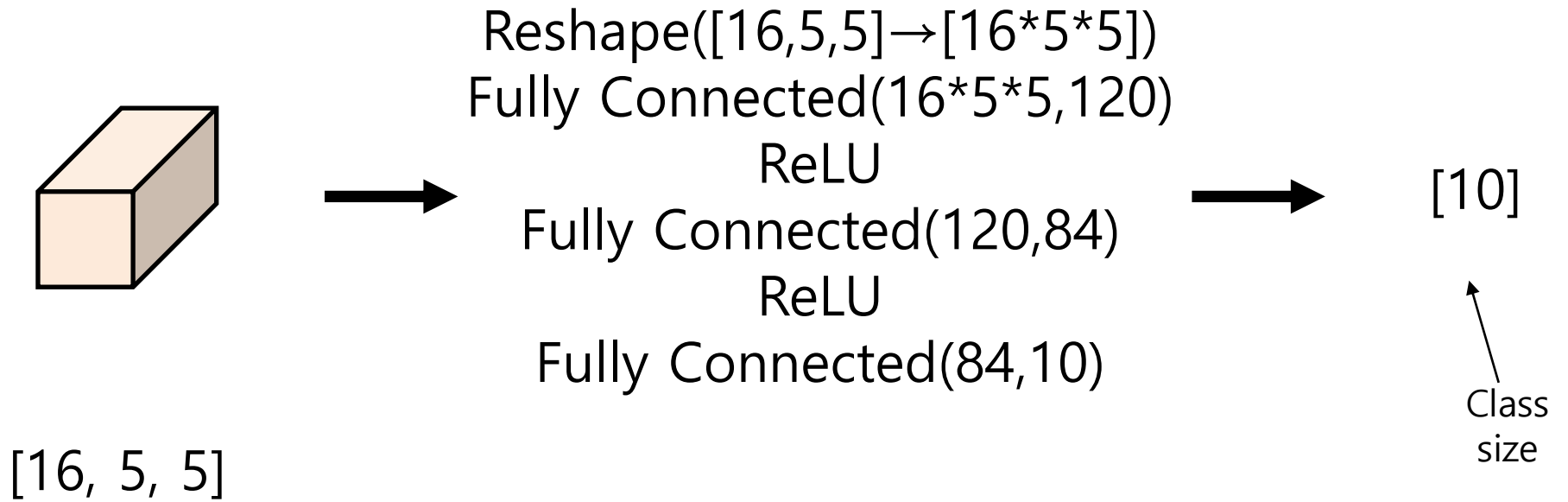


Pooling(2, 2)



[16, 5, 5]

LeNet-5



Assignment 3: LeNet

[Objective]

Your model should classify 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