



VGG Reconstructed: Rethinking Deep Learning Foundations

박서영 이요원



Max pooling 4개 사용

default

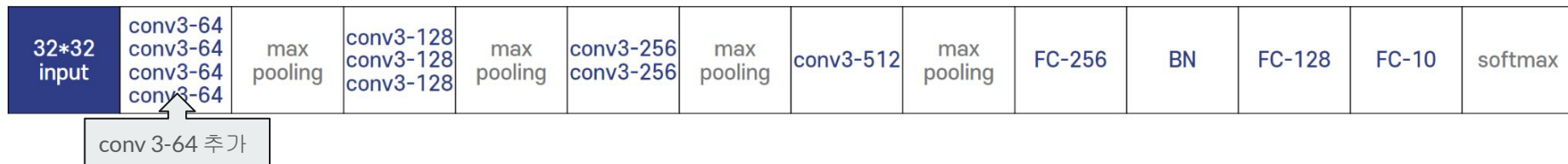
VGG	conv3-64 conv3-64	max pooling	conv3-128 conv3-128	max pooling	conv3-256 conv3-256 conv3-256	max pooling	conv3-512 conv3-512 conv3-512	max pooling	conv3-512 conv3-512 conv3-512	max pooling	FC-512	FC-512	FC-10	Softmax
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Epoch 184/2500 - Train Accuracy: 0.9980 - Val Accuracy: 0.9312 - Test Accuracy: 0.9227

1. conv layer



Epoch 203/500 - Train Accuracy: 0.9998 - Val Accuracy: 0.9303 - Test Accuracy: 0.9241



Epoch 240/500 - Train Accuracy: 0.9997 - Val Accuracy: 0.9313 - Test Accuracy: 0.9223

default

VGG	conv3-64 conv3-64	max pooling	conv3-128 conv3-128	max pooling	conv3-256 conv3-256 conv3-256	max pooling	conv3-512 conv3-512 conv3-512	max pooling	conv3-512 conv3-512 conv3-512	max pooling	FC-512	FC-512	FC-10	Softmax
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Epoch 184/2500 - Train Accuracy: 0.9980 - Val Accuracy: 0.9312 - Test Accuracy: 0.9227

1. conv layer

conv 3-128 추가

32*32 input	conv3-64 conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	conv3-512	max pooling	FC-256	BN	FC-128	FC-10	softmax
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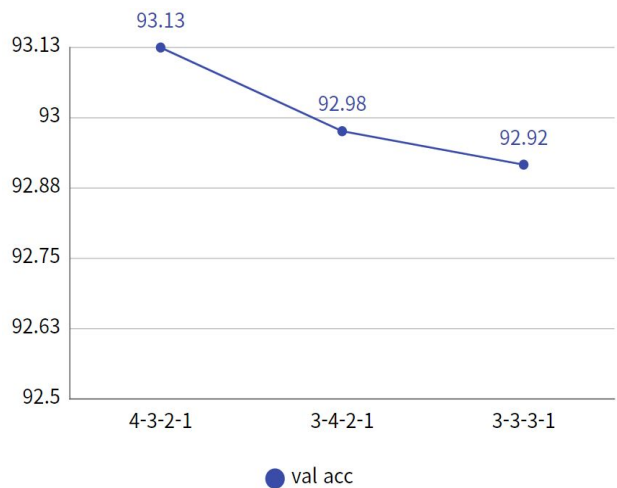
Epoch 202/500 - Train Accuracy: 0.9996 - Val Accuracy: 0.9298 - Test Accuracy: 0.9229

32*32 input	conv3-64 conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256 conv3-256	max pooling	conv3-512	max pooling	FC-256	BN	FC-128	FC-10	softmax
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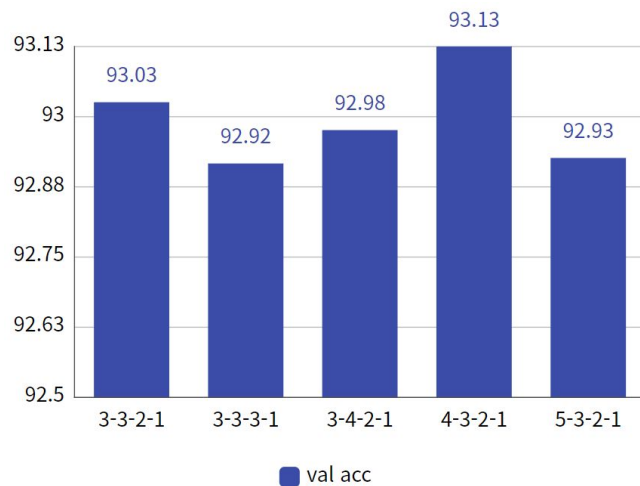
conv 3-256 추가

Epoch 221/500 - Train Accuracy: 0.9996 - Val Accuracy: 0.9292 - Test Accuracy: 0.9211

1. conv layer



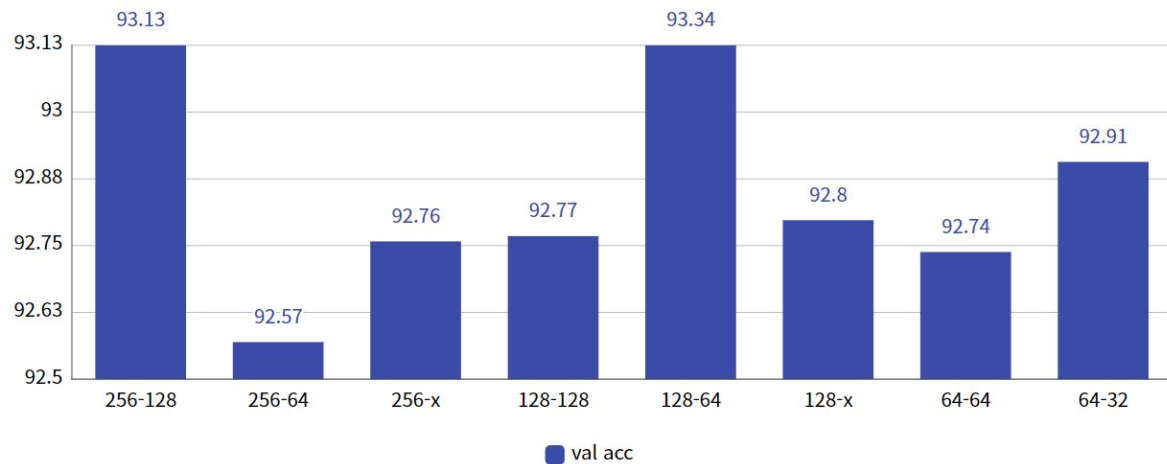
▲ 후반 layer 추가할수록 성능 감소



32*32 input	conv3-64 conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	conv3-512	max pooling	FC-256	BN	FC-256	FC-10	softmax
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▲ best model

2. FC layer



32*32 input	conv3-64 conv3-64 conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	conv3-512	max pooling	FC-128	BN	FC-64	FC-10	softmax
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▲ best model



Max pooling 3개 사용

1. Dense layer 한개 고정

32*32 input	conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256 conv3-256	max pooling	FC-10	softmax
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Epoch 247/2500 - Train Accuracy: 0.9888 - Val Accuracy: 0.9272 - Test Accuracy: 0.9206

32*32 input	conv3-64 conv3-64	max pooling	conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	FC-10	softmax
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Epoch 274/2500 - Train Accuracy: 0.9890 - Val Accuracy: 0.9216 - Test Accuracy: 0.9135



32*32 input	conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	FC-64	BN	FC-10	softmax
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Epoch 452/2500 - Train Accuracy: 0.9959 - Val Accuracy: 0.9360 - Test Accuracy: 0.9268

32*32 input	conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	FC-64	BN	FC-32	FC-10	softmax
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Epoch 206/2500 - Train Accuracy: 0.9948 - Val Accuracy: 0.9332 - Test Accuracy: 0.9280



32*32 input	conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	FC-256	BN	FC-128	FC-10	softmax
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Epoch 267/2500 - Train Accuracy: 0.9966 - Val Accuracy: 0.9337 - Test Accuracy: 0.9314

32*32 input	conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	FC-128	BN	FC-64	FC-10	softmax
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Epoch 255/2500 - Train Accuracy: 0.9961 - Val Accuracy: 0.9357 - Test Accuracy: 0.9288



32*32 input	conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	FC-256	BN	FC-256	FC-10	softmax
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Epoch 252/2500 - Train Accuracy: 0.9976 - Val Accuracy: 0.9340 - Test Accuracy: 0.9333

32*32 input	conv3-64 conv3-64 conv3-64 conv3-64	max pooling	conv3-128 conv3-128 conv3-128	max pooling	conv3-256 conv3-256	max pooling	FC-64	BN	FC-32	FC-10	softmax
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Epoch 213/500 - Train Accuracy: 0.9981 - Val Accuracy: 0.9325 - Test Accuracy: 0.9240