Image Restoration

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# Abstraction

Practice 5 is to restore image that has given gaussian noise. To solve this, first, make a model with following layers:

* Four convolution layers with ReLU, and a convolution layer for model 1.
* Four convolution layers with ReLU, and a convolution layer and input for model 2.
* Four convolution layers each following with batch normalization and ReLU and a convolution layer and input for model 3.

# Method

## Model 1

## Model 2

## Model 3

# Results

|  |  |  |  |
| --- | --- | --- | --- |
|  | Model 1 | Model 2 | Model 3 |
| Train cost | 0.3465819821417099 | 0.35118438720777506 | 0.2447017231338518 |
| Train accuracy (%) | 81.7 | 80.5 | 92.2 |
| Test cost | 0.03509194600150019 | 0.029241388290971414 | 0.23169634311473414 |
| Test accuracy (%) | 80 | 85 | 93 |

# Conclusion

With this assignment, we can see that as the neural net gets deeper and deeper, the learning gets more accurate. Moreover, while finding appropriate learning rate alpha, I tried to find alpha value with a strategy smarter than brute-force. However, the method I have tried failed, and with the brute force, the learning rate’s value reached 1.0 as the best-performing learning rate. Moreover, the initial value of W and b had a little impact on result, but not as much as learning rate alpha.