**Sequential class**

* work on images as input, both B&W (single channel) and colour (three channels)
* add() function

**Dense class**

* Param: number of neurons, input shape (not mandatory), activation (Sigmoid, ReLU, TanH, Softmax)

**Conv2D class**

* Param: number of filters, size of filters, stride, padding, input shape (not mandatory), activation (Sigmoid, ReLU, TanH, Softmax)

**Flatten class**

**Dropout class**

* Param: rate

**MaxPooling2D class**

* Param: pool\_size

**Loss functions**

* Cross-entropy, MSE

**Results**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 10 classes | | | | | | 20 classes | |
| *Image\_size* | (28, 28, 1) | | | | (32, 32, 3) | | | |
| *dataset* | mnist | | Fashion mnist | | Cifar10 | | Cifar20 | |
|  | Test = 20\_000  Batch = 32  Epoch = 5 | | Test = 25\_000  Batch = 64  Epoch = 8 | | Test = 35\_000  Batch = 32  Epoch = 15 | | Test = 10\_000  Batch = 32  Epoch = 20 | |
|  | Acc  % | Time  s | Acc  % | Time  s | Acc  % | Time  s | Acc  % | Time  s |
| Keras | 97.83 | 3.8 | 86.4 | 16.6 | 60.5 | 84.5 | 48.8 | 31.6 |
| My | 95.05 | 316  (min) | 77.25 | 625.5  (10min) | 53.84 | 3441  (57min) | 33.0 | 1442  (24min) |