CNN

```python
class CNN(nn.Module):
    def __init__(self):
        super(CNN, self).__init__()
        self.conv1 = nn.Conv2d(3, 32, kernel_size=3, stride=1
        self.conv2 = nn.Conv2d(32, 64, kernel_size=3, stride=
        self.pool = nn.MaxPool2d(kernel_size=2, stride=2, pad
        self.flatten = nn.Flatten()
        self.fc1 = nn.Linear(64 * 56 * 56, 128)
        self.fc2 = nn.Linear(128, 10)
        self.relu = nn.ReLU()

    def forward(self, x):
        x = self.relu(self.conv1(x))
        x = self.pool(x)
        x = self.relu(self.conv2(x))
        x = self.pool(x)
        x = self.flatten(x)
        x = self.relu(self.fc1(x))
        x = self.fc2(x)
        return x
```

```
Epoch 1
-------------------------------
/local-pool-83/cheng-yao/.local/lib/python3.10/site-packages/
  Variable._execution_engine.run_backward(  # Calls into the
loss: 2.264230 [    0/   76]
Parameters uploaded successfully.
Test Error:
 Accuracy: 50.0%, Avg loss: 1.627458


Epoch 2
-------------------------------
loss: 1.621157 [    0/   76]
Parameters uploaded successfully.
```

```
Test Error:
 Accuracy: 50.0%, Avg loss: 0.845836

Epoch 3
-------------------------------
loss: 0.860979  [    0/   76]
Parameters uploaded successfully.
Test Error:
 Accuracy: 50.0%, Avg loss: 4.149714

Epoch 4
-------------------------------
loss: 3.704847  [    0/   76]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.170867

Epoch 5
-------------------------------
loss: 1.298066  [    0/   76]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.006881

Epoch 6
-------------------------------
loss: 1.110288  [    0/   76]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 0.835518

Epoch 7
-------------------------------
loss: 0.802565  [    0/   76]
Parameters uploaded successfully.
```

```
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 0.900127


Epoch 8
-------------------------------
loss: 0.831198  [    0/   76]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.130585


Epoch 9
-------------------------------
loss: 1.313878  [    0/   76]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.094246


Epoch 10
-------------------------------
loss: 1.090284  [    0/   76]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 60.0%, Avg loss: 0.750748


Done!
```

```
Epoch 1
-------------------------------
/local-pool-83/cheng-yao/.local/lib/python3.10/site-packages/
  Variable._execution_engine.run_backward(  # Calls into the
loss: 2.380176  [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
```

```
  Accuracy: 50.0%, Avg loss: 12.109319


Epoch 2
-------------------------------
loss: 12.658282  [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 14.020587


Epoch 3
-------------------------------
loss: 14.375854  [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 9.396273


Epoch 4
-------------------------------
loss: 9.268563  [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 2.622200


Epoch 5
-------------------------------
loss: 2.638784  [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.606112


Epoch 6
-------------------------------
loss: 1.569075  [    0/   24]
Parameters uploaded successfully.
```

```
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.344498


Epoch 7
-------------------------------
loss: 1.386292 [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.022367


Epoch 8
-------------------------------
loss: 1.023023 [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.692903


Epoch 9
-------------------------------
loss: 1.641264 [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.952727


Epoch 10
-------------------------------
loss: 1.852235 [    0/   24]
Parameters uploaded successfully.
fail
Test Error:
 Accuracy: 50.0%, Avg loss: 1.986758


Done!
```

```
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:33:09] "POST /upl
ERROR:root:No averaged model parameters available for epoch 1
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 0
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:36:35] "POST /upl
INFO:root:Sending averaged parameters for epoch 0
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:36:37] "GET /mode
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:36:42] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:36:43] "POST /upl
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:37:14] "GET /mode
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:37:19] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 2
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:41:47] "POST /upl
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:41:51] "GET /mode
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:41:56] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 3
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:46:51] "POST /upl
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:47:00] "POST /upl
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:51:55] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 0
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:52:04] "POST /upl
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:56:58] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 16:57:08] "POST /upl
```

```
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 17:02:02] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 2
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 17:02:12] "POST /upl
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 17:07:06] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 3
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 17:07:17] "POST /upl
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 17:12:10] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 4
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 17:12:21] "POST /upl
INFO:root:Received parameters from client. Total received: 1
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 17:17:13] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:werkzeug:127.0.0.1 - - [11/Jun/2024 17:22:17] "POST /upl
INFO:root:Received parameters from client. Total received: 2
INFO:root:Parameters averaged for epoch 5
```

```
Epoch 1
-------------------------------
/local-pool-83/cheng-yao/.local/lib/python3.10/site-packages/
  Variable._execution_engine.run_backward(  # Calls into the
loss: 2.309304  [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 27.664286


Epoch 2
-------------------------------
loss: 28.969927  [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 18.755878


Epoch 3
```

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--------------------------------
loss: 19.772587  [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 9.501508


Epoch 4
--------------------------------
loss: 9.255198  [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 1.133403


Epoch 5
--------------------------------
loss: 0.993073  [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 1.119717


Epoch 6
--------------------------------
loss: 1.213858  [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 1.293011


Epoch 7
--------------------------------
loss: 1.350085  [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 1.166082


Epoch 8
--------------------------------
loss: 1.202079  [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 1.171874


Epoch 9
--------------------------------
loss: 1.219125  [    0/   76]
```

```
Test Error:
 Accuracy: 50.0%, Avg loss: 0.821067


Epoch 10
-------------------------------
loss: 0.880727 [    0/   76]
Test Error:
 Accuracy: 50.0%, Avg loss: 0.739333


Done!
```

```
Epoch 1
-------------------------------
/local-pool-83/cheng-yao/.local/lib/python3.10/site-packages/
  Variable._execution_engine.run_backward(  # Calls into the
loss: 2.245008 [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 1.763485


Epoch 2
-------------------------------
loss: 2.299810 [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 53.969563


Epoch 3
-------------------------------
loss: 57.046383 [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 34.112408


Epoch 4
-------------------------------
loss: 35.707813 [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 3.702119


Epoch 5
```

```
--------------------------------
loss: 3.458905  [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 20.827118


Epoch 6
--------------------------------
loss: 21.098297  [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 24.256105


Epoch 7
--------------------------------
loss: 24.417862  [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 18.993275


Epoch 8
--------------------------------
loss: 19.009922  [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 11.912334


Epoch 9
--------------------------------
loss: 11.901021  [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 6.057322


Epoch 10
--------------------------------
loss: 6.034269  [    0/   24]
Test Error:
 Accuracy: 50.0%, Avg loss: 2.007780


Done!
```