Dataset Name

Fashion MNIST.

Dataset Description

Train set: 60000 pictures in the dataset's own train set.
Test set: 10000 pictures in the dataset's own test set.

Model Description

This CNN model includes use of less conventional non-square kernels, which aims to assess if non-square kernels produce acceptable accuracies with relatively small numbers of channels trainable under limited computational power.

Model Architecture and Hyperparameters

```
model = Sequential([
    layers.Conv2D(filters = 32, kernel_size = (1, 5), strides = 1, padding = "same",
        activation = layers.ReLU()),
    layers.Conv2D(filters = 32, kernel_size = (5, 1), strides = 1, padding = "same",
        activation = layers.ReLU()),
    layers.Conv2D(filters = 64, kernel_size = (3, 3), strides = 1, padding = "same",
        activation = layers.ReLU()),
    layers.MaxPool2D(pool_size = (2, 2)),
    layers.Flatten(),
    layers.Dense(128,
        activation = layers.ReLU()),
    layers.Dropout(0.5),
    layers.Dense(10,
        activation = layers.Softmax())
])
model.compile(
    optimizer = "adam",
    loss = "sparse_categorical_crossentropy",
    metrics = ["accuracy"]
)
model.fit(x = x, y = y,
    epochs = 10)
```

Train and Test Results

Experiment No. i	Train accuracy A_i^{train}	Test accuracy A_i^{test}
1	95.70%	92.95%
2	95.70%	92.80%
3	96.16%	93.23%
4	96.27%	92.78%
5	95.39%	92.63%
6	95.86%	92.33%
7	95.20%	92.62%

8	95.63%	93.02%
9	96.14%	92.80%
10	95.80%	92.85%

Train and Test Statistics

Number of experiments n: 10.
D.F. for estimation: 9.

$\bar{A}_n^{train}$: 95.785%.
$SD\left[A_i^{train}\right]$: 0.34066%.
$SE[\bar{A}_n^{train}]$: 0.10773%.
95% $CI\{\mathbb{E}\left[A_i^{train}\right]\}$: 95.541%, 96.029%.

$\bar{A}_n^{test}$: 92.801%.
$SD[A_i^{test}]$: 0.24515%.
$SE[\bar{A}_n^{test}]$: 0.077523%.
95% $CI\{\mathbb{E}[A_i^{test}]\}$: 92.626%, 92.976%.

$\bar{A}_n^{train} - \bar{A}_n^{test}$: 2.984%.
$SD\left[A_i^{train} - A_i^{test}\right]$: 0.34961%.
$SE[\bar{A}_n^{train} - \bar{A}_n^{test}]$: 0.11056%.
95% $CI\{\mathbb{E}\left[A_i^{train}\right] - \mathbb{E}[A_i^{test}]\}$: 2.7339%, 3.2341%.