Buggy Code with poor result (Training Accuracy: 9.86%)

```
4   (x_train, y_train), (x_test, y_test) = keras.datasets.mnist.load_data()
5   x_train = x_train.astype("float32")
6   x_test = x_test.astype("float32")
7   x_train = np.expand_dims(x_train, -1)
8   x_test = np.expand_dims(x_test, -1)
9   y_train = keras.utils.to_categorical(y_train, 10)
10  y_test = keras.utils.to_categorical(y_test, 10)
11  model = keras.Sequential([
12          keras.Input(shape=(28, 28, 1)),
13          layers.Conv2D(32, kernel_size=(3, 3), activation="relu"),
14          layers.MaxPooling2D(pool_size=(2, 2)),
15          layers.Conv2D(64, kernel_size=(3, 3), activation="relu"),
16          layers.MaxPooling2D(pool_size=(2, 2)),
17          layers.Flatten(),
18          layers.Dropout(0.5),
19          layers.Dense(10, activation="relu"),
20  model.compile(loss="binary_crossentropy", optimizer="adam",
21                metrics=["accuracy"])
22  model.fit(x_train, y_train, batch_size=128, epochs=15,
23            validation_split=0.1)
24  score = model.evaluate(x_test, y_test, verbose=0)
```

1 2 3

State-of-the-art debugging tools

Keras without any debugging tools

Epoch 15/15 422/422 - 22s 52ms/step
loss: 1.5425 - accuracy: 0.0988 - val_loss: 1.5425 - val_accuracy: 0.0978.
316.7 seconds

DeepLocalize

Batch 19 layer 6: Error in Delta Weights, terminating training; 1
858.57 seconds

UMLAUT

[<Critical: Missing Softmax layer before loss>, <Warning: Last model layer has nonlinear activation> 1 42.91 seconds

AUTOTRAINER

Your model still has training problems ['explode'] are still exist, you can try other solutions: Use 'lecun_uniform' as the kernel initializer. Use 'he_uniform' as the kernel initializer. Using 'tanh' activation in each layers' activation; Use 'he_uniform' as the kernel initializer. Using 'BatchNormalization' layers after each Dense 3 layers in the model. 631.55 seconds

NeuraLint

Learner ==> A last layer activation is required to transform logits into probabilities for classification problem 3 missing sigmoid). Loss should be correctly defined, connected to layer according to input conditions (i.e.shape and type)-post_activation. 9.11 seconds

DL Contract annotated Keras library

Contract Violation for context last_layer: compile(). activation_function for multiclass should not be relu. 1
Contract Violation for context last_layer:compile() activation_function for multiclass, should be softmax, 2 loss should be categorical_crossentropy
Contract Violation for Sequential:fit(). data should be normalized, training data should not be within 0.0 and 255.0 ; 3 5.33 seconds