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```
[28]    input_shape=(IMAGE_WIDTH, IMAGE_HEIGHT, IMAGE_CHANNELS),
        kernel_size=(2, 2), # Changed kernel size to (2, 2) or (1, 1)
        filters=8,
        strides=1,
        activation=tf.keras.activations.relu,
        kernel_initializer=tf.keras.initializers.VarianceScaling(),
        padding='same'  # Add padding to avoid negative dimensions
    ))

    # ... (rest of the model definition)
```

```
/usr/local/lib/python3.10/dist-packages/keras/src/layers/convolutional/base_conv.py:107: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using Sequent
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
```

```
model.summary()
```

Model: "sequential"

Layer (type)	Output Shape	Param #
conv2d (Conv2D)	(None, 2, 2, 8)	72

Total params: 72 (288.00 B)
Trainable params: 72 (288.00 B)
Non-trainable params: 0 (0.00 B)

```
[ ] tf.keras.utils.plot_model(
        model,
        show_shapes=True,
```

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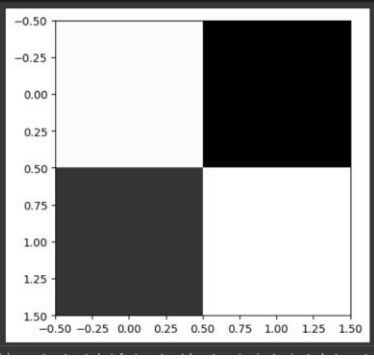
```
[22] # For grayscale, assuming the last two dimensions represent the image:
     plt.imshow(X_train[0, :, :, 0], cmap=plt.cm.binary)  # Take the first channel
     plt.show()

     # Alternatively, if you want to combine channels, you can sum or average them:
     # plt.imshow(X_train[0].sum(axis=-1), cmap=plt.cm.binary)  # Sum across channels
     # plt.imshow(X_train[0].mean(axis=-1), cmap=plt.cm.binary)  # Average across channels
```



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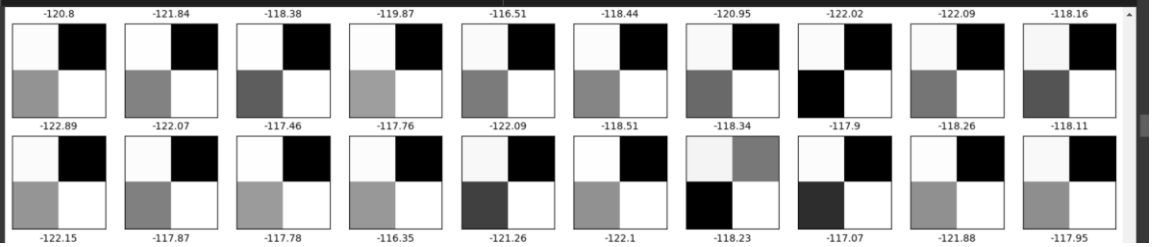
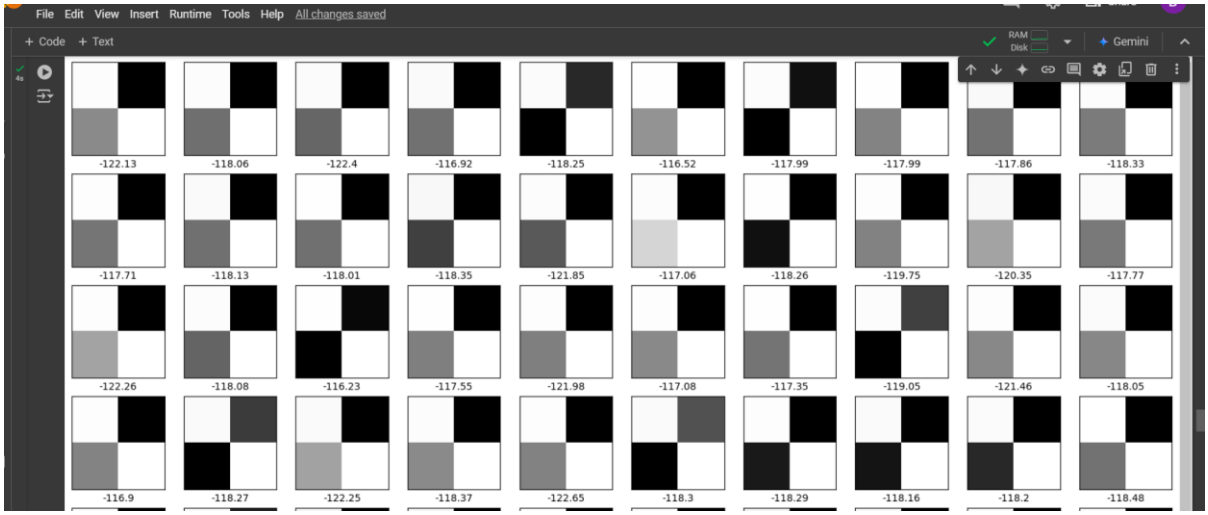
```
import math
numbers_to_display = 100
num_cells = math.ceil(math.sqrt(numbers_to_display))
plt.figure(figsize=(20,20))
for i in range(numbers_to_display):
    plt.subplot(num_cells, num_cells, i+1)
    plt.xticks([])
    plt.yticks([])
    plt.grid(False)
    # Assuming X_train contains the image data
    plt.imshow(X_train[i, :, :, 0], cmap=plt.cm.binary)  # Accessing the first channel for grayscale
    # If y_train contains labels corresponding to X_train
    plt.xlabel(y_train[i])
plt.show()
```

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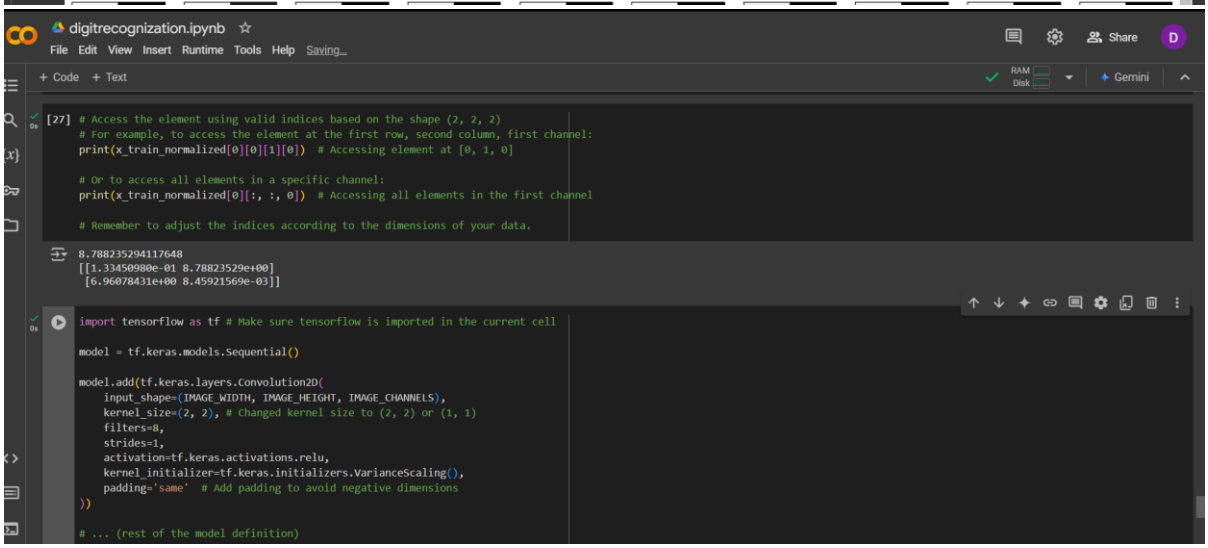
-117.71 -118.13 -118.01 -118.35 -121.85 -117.06 -118.26 -119.75 -120.35 -117.77
-122.26 -118.08 -116.23 -117.55 -121.98 -117.08 -117.35 -119.05 -121.46 -118.05
-116.9 -118.27 -122.25 -118.37 -122.65 -118.3 -118.29 -118.16 -118.2 -118.48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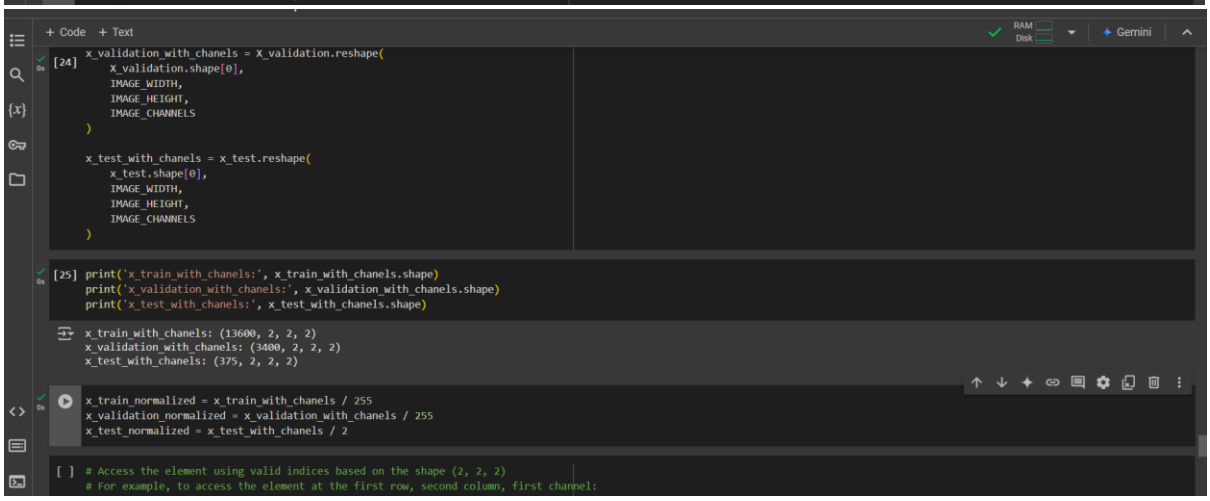
[27] # Access the element using valid indices based on the shape (2, 2, 2)
For example, to access the element at the first row, second column, first channel:
print(x_train_normalized[0][0][1][0]) # Accessing element at [0, 1, 0]
Or to access all elements in a specific channel:
print(x_train_normalized[0][:, :, 0]) # Accessing all elements in the first channel
Remember to adjust the indices according to the dimensions of your data.
8.788235294117648
[[1.33450980e-01 8.78823529e+00]
[6.96078431e+00 8.45921569e-03]]
import tensorflow as tf # Make sure tensorflow is imported in the current cell
model = tf.keras.models.Sequential()
model.add(tf.keras.layers.Convolution2D(
input_shape=(IMAGE_WIDTH, IMAGE_HEIGHT, IMAGE_CHANNELS),
kernel_size=(2, 2), # Changed kernel size to (2, 2) or (1, 1)
filters=8,
strides=1,
activation=tf.keras.activations.relu,
kernel_initializer=tf.keras.initializers.VarianceScaling(),
padding='same' # Add padding to avoid negative dimensions
))
... (rest of the model definition)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[24] x_validation_with_chanels = X_validation.reshape(
X_validation.shape[0],
IMAGE_WIDTH,
IMAGE_HEIGHT,
IMAGE_CHANNELS
)
x_test_with_chanels = x_test.reshape(
x_test.shape[0],
IMAGE_WIDTH,
IMAGE_HEIGHT,
IMAGE_CHANNELS
)
[25] print('x_train_with_chanels:', x_train_with_chanels.shape)
print('x_validation_with_chanels:', x_validation_with_chanels.shape)
print('x_test_with_chanels:', x_test_with_chanels.shape)
x_train_with_chanels: (13600, 2, 2, 2)
x_validation_with_chanels: (3400, 2, 2, 2)
x_test_with_chanels: (375, 2, 2, 2)
x_train_normalized = x_train_with_chanels / 255
x_validation_normalized = x_validation_with_chanels / 255
x_test_normalized = x_test_with_chanels / 2
[ ] # Access the element using valid indices based on the shape (2, 2, 2)
For example, to access the element at the first row, second column, first channel:

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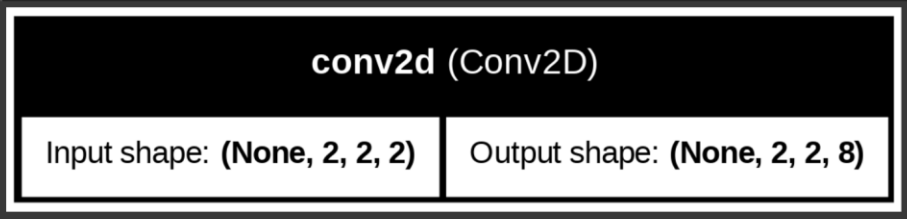
```
[29]  Total params: 72 (288.00 B)
      Trainable params: 72 (288.00 B)
      Non-trainable params: 0 (0.00 B)
```

```
tf.keras.utils.plot_model(
    model,
    show_shapes=True,
    show_layer_names=True,
)
```



digitrecognization.ipynb - Colab

New Issue · diikshasharmaa/diksha

colab.research.google.com/drive/1sJtA4PyRb8VLI9bQRvCU_kbeEvhUuhun#scrollTo=FBBh6Gn4IIoz

This notebook is open with private outputs. Outputs will not be saved. You can disable this in Notebook settings.

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```
[16]  X_train, X_validation, y_train, y_validation = train_test_split(X, y, test_size = 0.2,random_state = 1212)
```

```
print('X_train:', X_train.shape)
print('y_train:', y_train.shape)
print('X_validation:', X_validation.shape)
print('y_validation:', y_validation.shape)
```

```
X_train: (13600, 8)
y_train: (13600,)
X_validation: (3400, 8)
y_validation: (3400,)
```

```
[ ]  print('x_train:', X_train.shape)
     print('y_train:', y_train.shape)
     print('x_validation:', X_validation.shape)
     print('y_validation:', y_validation.shape)
     print('x_test:', X_test.shape)
```

```
[ ]  X_train = X_train.to_numpy().reshape(-1, 2, 2, 2)  # Reshape to dimensions compatible with the data
     y_train = y_train.values
     X_validation = X_validation.to_numpy().reshape(-1, 2, 2, 2)  # Reshape to dimensions compatible with the data
     y_validation = y_validation.values
     x_test = test.drop(columns=['longitude', 'latitude', 'housing_median_age', 'total_rooms', 'total_bedrooms', 'population', 'households', 'median_income']).to_numpy().reshape(-1, 2, 2
```

```
[ ]  # Save image parameters to the constants that we will use later for data re-shaping and for model training.
```

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