## ‣ Understanding the Data (Sprint-1)

[ ]  ↳ *21 cells hidden*

## ⁀ Defining Model (sprint-2)

```python
#Import libraries
from keras.models import Sequential
from keras.layers import Dense, Dropout, Flatten
from keras.layers import Conv2D, MaxPool2D


#Adding Layers
model = Sequential()
model.add(Conv2D(filters=32, kernel_size=(4,4),activation='relu',input_shape=(28,28,1)))
model.add(MaxPool2D(pool_size=(2,2)))
model.add(Flatten())
model.add(Dense(128,activation='relu'))
model.add(Dense(10,activation='softmax'))


#Compilation of the model
model.compile(loss='categorical_crossentropy',optimizer='Adadelta',metrics=['accuracy'])


#Early Stopping and Callbacks
from tensorflow.keras.callbacks import EarlyStopping


early_stop = EarlyStopping(monitor='val-loss', patience=1)


#Test the Model
model.fit(x_train,y_cat_train,
          epochs=15,
          validation_data=(x_test,y_cat_test),
          callbacks=[early_stop])
```

```
Epoch 1/15
1858/1875 [============================>.] - ETA: 0s - loss: 0.0072 - accuracy: 0.997
1875/1875 [==============================] - 7s 3ms/step - loss: 0.0072 - accuracy: 0
Epoch 2/15
1869/1875 [============================>.] - ETA: 0s - loss: 0.0067 - accuracy: 0.997
1875/1875 [==============================] - 6s 3ms/step - loss: 0.0067 - accuracy: 0
Epoch 3/15
1865/1875 [============================>.] - ETA: 0s - loss: 0.0063 - accuracy: 0.997
1875/1875 [==============================] - 6s 3ms/step - loss: 0.0063 - accuracy: 0
```

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Epoch 4/15
1866/1875 [============================>.] - ETA: 0s - loss: 0.0059 - accuracy: 0.998
1875/1875 [==============================] - 6s 3ms/step - loss: 0.0059 - accuracy: 0
Epoch 5/15
1866/1875 [============================>.] - ETA: 0s - loss: 0.0054 - accuracy: 0.998
1875/1875 [==============================] - 7s 4ms/step - loss: 0.0056 - accuracy: 0
Epoch 6/15
1868/1875 [============================>.] - ETA: 0s - loss: 0.0052 - accuracy: 0.998
1875/1875 [==============================] - 7s 4ms/step - loss: 0.0052 - accuracy: 0
Epoch 7/15
1861/1875 [============================>.] - ETA: 0s - loss: 0.0050 - accuracy: 0.998
1875/1875 [==============================] - 7s 4ms/step - loss: 0.0050 - accuracy: 0
Epoch 8/15
1868/1875 [============================>.] - ETA: 0s - loss: 0.0046 - accuracy: 0.998
1875/1875 [==============================] - 6s 3ms/step - loss: 0.0047 - accuracy: 0
Epoch 9/15
1861/1875 [============================>.] - ETA: 0s - loss: 0.0045 - accuracy: 0.998
1875/1875 [==============================] - 6s 3ms/step - loss: 0.0045 - accuracy: 0
Epoch 10/15
1863/1875 [============================>.] - ETA: 0s - loss: 0.0043 - accuracy: 0.998
1875/1875 [==============================] - 6s 3ms/step - loss: 0.0043 - accuracy: 0
Epoch 11/15
1866/1875 [============================>.] - ETA: 0s - loss: 0.0041 - accuracy: 0.998
1875/1875 [==============================] - 7s 4ms/step - loss: 0.0041 - accuracy: 0
Epoch 12/15
1865/1875 [============================>.] - ETA: 0s - loss: 0.0039 - accuracy: 0.998
1875/1875 [==============================] - 7s 4ms/step - loss: 0.0039 - accuracy: 0
Epoch 13/15
1867/1875 [============================>.] - ETA: 0s - loss: 0.0037 - accuracy: 0.998
1875/1875 [==============================] - 8s 4ms/step - loss: 0.0037 - accuracy: 0
Epoch 14/15
1872/1875 [============================>.] - ETA: 0s - loss: 0.0036 - accuracy: 0.998
1875/1875 [==============================] - 7s 4ms/step - loss: 0.0036 - accuracy: 0
Epoch 15/15
1859/1875 [============================>.] - ETA: 0s - loss: 0.0034 - accuracy: 0.998
1875/1875 [==============================] - 7s 4ms/step - loss: 0.0034 - accuracy: 0
<keras.callbacks.History at 0x7f403c0cf190>
```

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