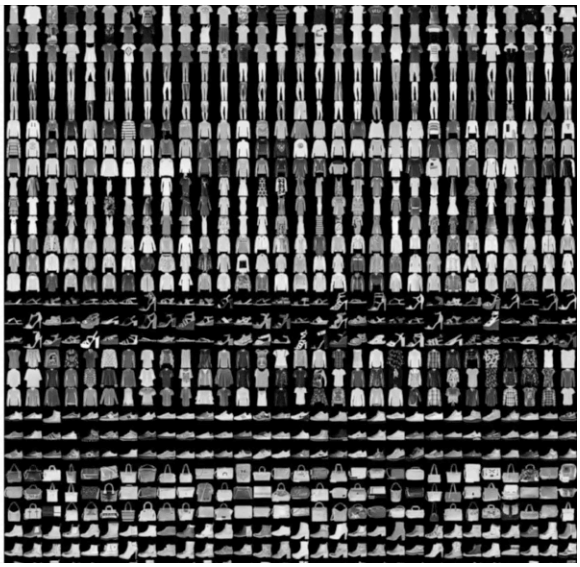
Fashion MNIST

- 70k Images
- 10 Categories
- Images are 28x28
- Can train a neural net!



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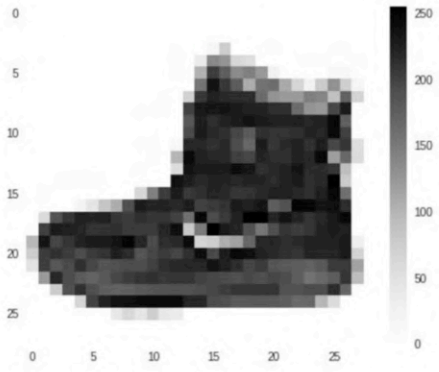
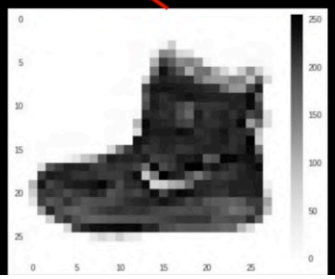
https://github.com/zalandoresearch/fashion-mnist



```
import tensorflow as tf
from tensorflow import keras

fashion_mnist = keras.datasets.fashion_mnist
(train_images, train_labels), (test_images, test_labels) = fashion_mnist.load_data()
```



09

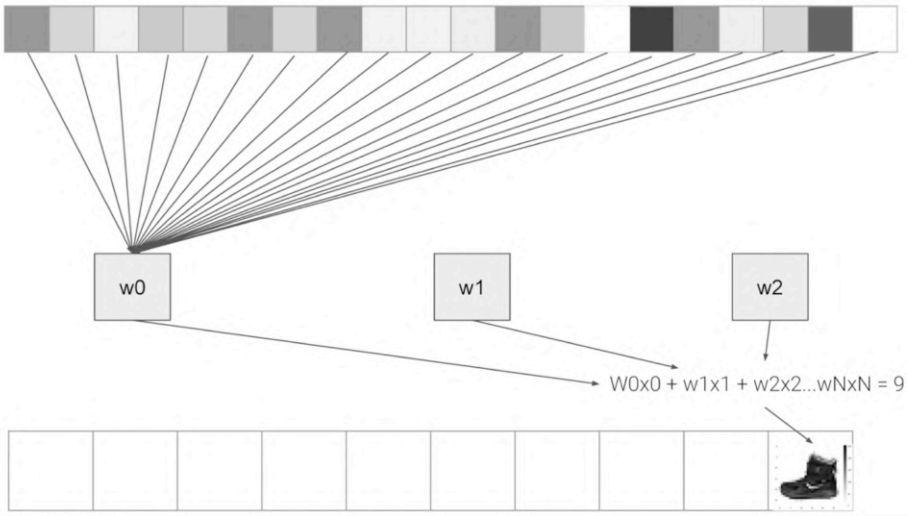
Using a number is a first step in avoiding bias -- instead of labelling it with words in a specific language and excluding people who don't speak that language!

09 = ankle boot;
踝靴;
アンクルブーツ;
Bróg rúitín

https://ai.google/responsibilities/responsible-ai-practices/

```
model = keras.Sequential([
    keras.layers.Flatten(input_shape=(28, 28)),
    keras.layers.Dense(128, activation=tf.nn.relu),
    keras.layers.Dense(10, activation=tf.nn.softmax)
])
```

Flatten takes this 28 by 28 square and turns it into a simple linear array.



```
mnist = tf.keras.datasets.fashion_mnist
(training_images, training_labels), (test_images, test_labels) = mnist.load_data()
training_images=training_images/255.0
test_images=test_images/255.0
model = tf.keras.models.Sequential([
  tf.keras.layers.Flatten(),
  tf.keras.layers.Dense(512, activation=tf.nn.relu),
  tf.keras.layers.Dense(10, activation=tf.nn.softmax)
])
model.compile(optimizer='adam', loss='sparse_categorical_crossentropy')
model.fit(training_images, training_labels, epochs=5)
```

Get Data

Scale

Model

The training loop does support callbacks. So in every epoch, you can callback to a code function, having checked the metrics. If they're what you want to say, then you can cancel the training at that point.

```
class myCallback(tf.keras.callbacks.Callback):
  def on_epoch_end(self, epoch, logs={}):
    if(logs.get('loss')<0.4):
      print("\nLoss is low so cancelling training!")
      self.model.stop_training = True
```

Sends logs object about current state of training

When Epoch Ends

```
class myCallback(tf.keras.callbacks.Callback):
  def on_epoch_end(self, epoch, logs={}):
    if(logs.get('loss')<0.4):
      print("\nLoss is low so cancelling training!")
      self.model.stop_training = True
```

Query


instantiate
callbacks = myCallback()
mnist = tf.keras.datasets.fashion_mnist
(training_images, training_labels), (test_images, test_labels) = mnist.load_data()
training_images=training_images/255.0
test_images=test_images/255.0
model = tf.keras.models.Sequential([
tf.keras.layers.Flatten(),
tf.keras.layers.Dense(512, activation=tf.nn.relu),
tf.keras.layers.Dense(10, activation=tf.nn.softmax)
])
model.compile(optimizer='adam', loss='sparse_categorical_crossentropy')
model.fit(training_images, training_labels, epochs=5, callbacks=[callbacks])
Use Callbacks parameter