Twitter Thread by Santiago



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Here is a simple example of a machine learning model.

I put it together a long time ago, and it was very helpful! I sliced it apart a thousand times until things started to make sense.

It's TensorFlow and Keras.

If you are starting out, this may be a good puzzle to solve.



```
import tensorflow as tf
import numpy as np
import math

X = np.random.randint(low=1, high=9, size=(100, 2))
y = np.prod(X, axis=1).reshape(100, 1)

X = np.log(X)

model = tf.keras.Sequential([
  tf.keras.layers.Dense(units=4, input_shape=(2,)),
  tf.keras.layers.Dense(units=4, activation="relu"),
  tf.keras.layers.Dense(units=1)
])

model.compile(
    loss='mean_squared_error',
    optimizer=tf.keras.optimizers.Adam(0.01)
)

model.fit(X, y, epochs=250, batch_size=10, verbose=False)

X_test = np.random.randint(low=1, high=9, size=(10, 2))
y_test = np.prod(X_test, axis=1).reshape(10, 1)

predictions = model.predict(np.log(X_test))

for i, prediction in enumerate(predictions):
    print(f"{X_test[i][0]} * {X_test[i][1]} = {math.floor(prediction[0])}")

# Here is the output (notice how some of the
# results are close, but incorrect):
#
# 1 * 6 = 6
# 2 * 8 = 16
# 5 * 1 = 5
# 4 * 6 = 24
# 2 * 4 = 7
# 7 * 1 = 7
# 7 * 6 = 43
# 3 * 7 = 20
# 6 * 1 = 6
# 6 * 4 = 24
```

The goal of this model is to learn to multiply one-digit numbers.

https://t.co/w8LiMVENT0

> It is a good example of coding, what is the model?
>
> — Freddy Rojas Cama (@freddyrojascama) February 1, 2021