Exercises 08: ML

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Exercise 1: Implement Super Simple with Keras

Use Keras and implement the “SuperSimple.py” example.

- Read “Introduction to Keras for Engineers” or
- Read “Introduction to Keras for Researchers”

Exercise 2: Extend the “fashion-mnist” Example with KerasTuner

Use KerasTuner and extend the fashion-mnist Example “CI.py”.

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

Quick introduction

Import KerasTuner and TensorFlow:

```
import keras_tuner as kt
from tensorflow import keras
```

Write a function that creates and returns a Keras model. Use the `hp` argument to define the hyperparameters during model creation.

```
def build_model(hp):
  model = keras.Sequential()
  model.add(keras.layers.Dense(
      hp.Choice('units', [8, 16, 32]),
      activation='relu'))
  model.add(keras.layers.Dense(1, activation='relu'))
  model.compile(loss='mse')
  return model
```

Figure 1: Guide from the website

Exercise 3: Transfer learning and fine-tuning

Download the example, read it and execute the notebook step by step.