

\*\*\*\*\*Default\*\*\*\*\*

## RaspBerry Pi 4 classification TensorFlow 10/21/22

\*\*\*\*\*Default\*\*\*\*\*

This can be run on a CoLab at Google classification.ipynb

The screenshot shows a Google Colab notebook interface. The browser address bar displays the URL: <https://colab.research.google.com/github/tensorflow/docs/blob/master/site/en/tutorials/keras/c>. The notebook title is "classification.ipynb". The left sidebar contains a "Table of contents" with the following items:

- Copyright 2018 The TensorFlow Authors.
  - Licensed under the Apache License, Version 2.0 (the "License");
  - MIT License
- Basic classification: Classify images of clothing
  - Import the Fashion MNIST dataset
  - Explore the data
  - Preprocess the data
  - Build the model
    - Set up the layers
    - Compile the model
  - Train the model
  - Feed the model
  - Evaluate accuracy
  - Make predictions
  - Verify predictions
  - Use the trained model

The main content area shows the first two sections of the notebook:

- Copyright 2018 The TensorFlow Authors.**
  - Licensed under the Apache License, Version 2.0 (the "License");
- MIT License**

Below these sections is a heading for "Basic classification: Classify images of clothing". Under this heading, there are links to "View on TensorFlow.org", "Run in Google Colab", "View source on GitHub", and "Download notebook". The text below the links states: "This guide trains a neural network model to classify images of clothing, like sneakers and shirts. It's okay if you don't understand all the details; this is a fast-paced overview of a complete TensorFlow program with the details explained as you go." and "This guide uses [tf.keras](#), a high-level API to build and train models in TensorFlow."

The bottom of the notebook shows a code cell with the following code:

```
[3] # TensorFlow and tf.keras
import tensorflow as tf
```

The status bar at the bottom indicates "0s completed at 6:12 PM".

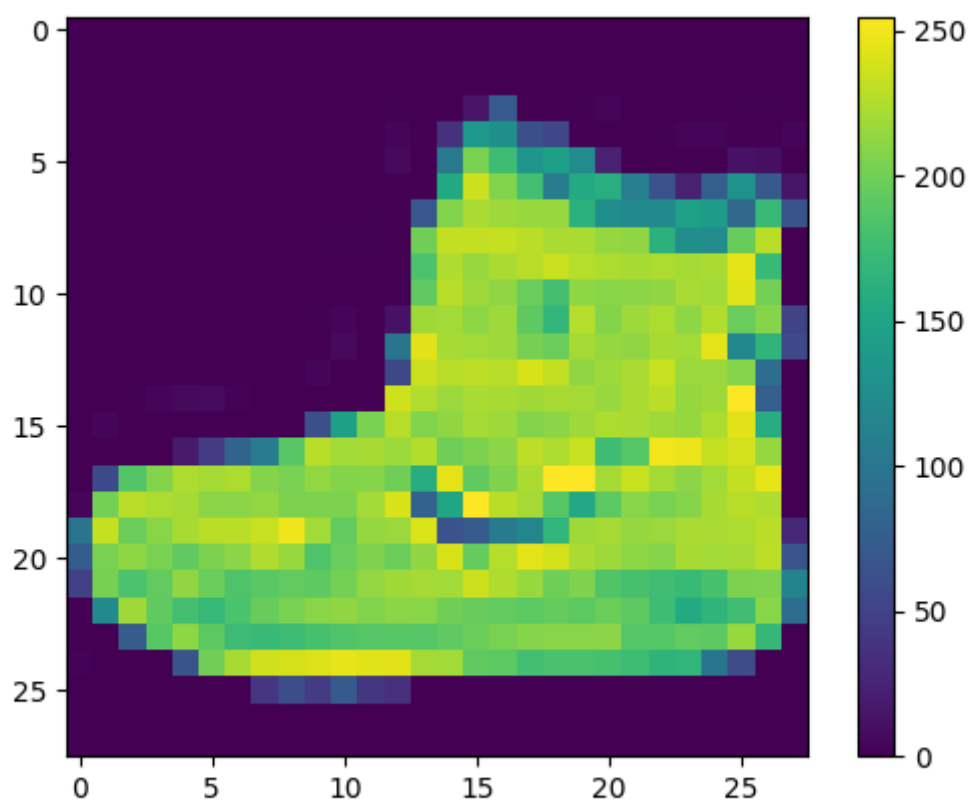
This can be run on a RaspBerry Pi 4 B with 4Gb classification.ipynb

```
File Edit Selection View Go Run Terminal Help
Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More
classification.ipynb x
home > devel > test-1-2.8 > classification.ipynb > ...
Open in Notebook Editor
1
2 "cells": [
3   {
4     "cell_type": "markdown",
5     "metadata": {
6       "id": "MhoQ0WE77laV"
7     },
8     "source": [
9       "##### Copyright 2018 The TensorFlow Authors."
10    ]
11  },
12  {
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16      "cellView": "form",
17      "id": "_ckMIh707s6D"
18    },
19    "outputs": [],
20    "source": [
21      "#@title Licensed under the Apache License, Version 2.0 (the \"License\");\n",
22      "# you may not use this file except in compliance with the License.\n",
23      "# You may obtain a copy of the License at\n",
24      "#\n",
25      "# https://www.apache.org/licenses/LICENSE-2.0\n",
26      "#\n",
27      "# Unless required by applicable law or agreed to in writing, software\n",
28      "# distributed under the License is distributed on an \"AS IS\" BASIS,\n",
29      "# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.\n",
30      "# See the License for the specific language governing permissions and\n",
31      "# limitations under the License."
32    ]
33  }
34 ]
```

This can be run on RaspBerry Pi 4 classification.ipynb

```
File Edit Selection View Go Run Terminal Help
Restricted Mode is intended for safe code browsing. Trust this window to enable all features. Manage Learn More

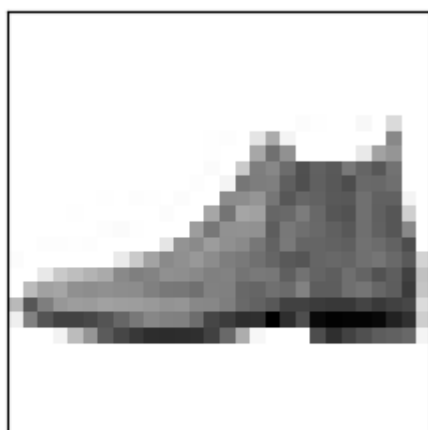
classification.ipynb x
home > devel > test-1-2.8 > classification.ipynb > ...
150 10 : DL0CCHMUCawQ
151 },
152 "source": [
153     "This guide uses the [Fashion MNIST](https://github.com/zalando-research/fashion-mnist) dataset which contains 70,000 grayscale images in 10 categories. The images show individual articles of clothing at low resolution (28 by 28 pixels), as seen here:\n",
154     "\n",
155     "<table>\n",
156     "  <tr><td>\n",
157     "    <img src=\"https://tensorflow.org/images/fashion-mnist-sprite.png\" \n",
158     "      alt=\"Fashion MNIST sprite\" width=\"600\">\n",
159     "    </td></tr>\n",
160     "    <tr><td align=\"center\">\n",
161     "      <b>Figure 1.</b> <a href=\"https://github.com/zalando-research/fashion-mnist\">Fashion-MNIST samples</a> (by Zalando, MIT License).<br/>\n",
162     "    </td></tr>\n",
163     "</table>\n",
164     "\n",
165     "Fashion MNIST is intended as a drop-in replacement for the classic [MNIST](http://yann.lecun.com/exdb/mnist/) dataset often used as the \"Hello, World\" of machine learning programs for computer vision. The MNIST dataset contains images of handwritten digits (0, 1, 2, etc.) in a format identical to that of the articles of clothing you'll use here.\n",
166     "\n",
167     "This guide uses Fashion MNIST for variety, and because it's a slightly more challenging problem than regular MNIST. Both datasets are relatively small and are used to verify that an algorithm works as expected. They're good starting points to test and debug code.\n",
168     "\n",
169     "Here, 60,000 images are used to train the network and 10,000 images to evaluate how accurately the network learned to classify images. You can access the Fashion MNIST directly from TensorFlow. Import and [load the Fashion MNIST data](https://www.tensorflow.org/api_docs/python/tf/keras/datasets/fashion_mnist/load_data)
```



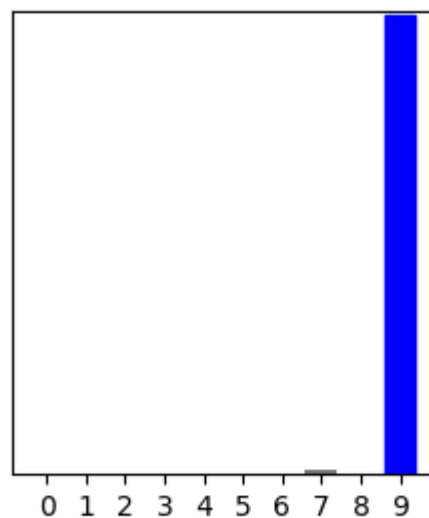
xxx



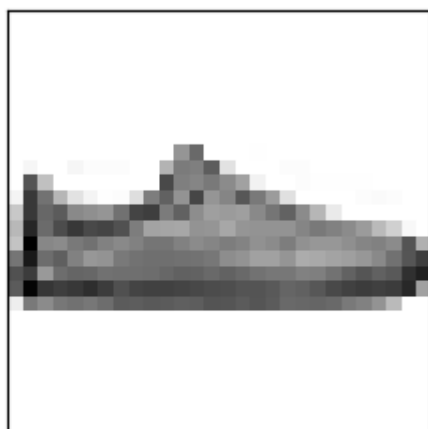
XXX



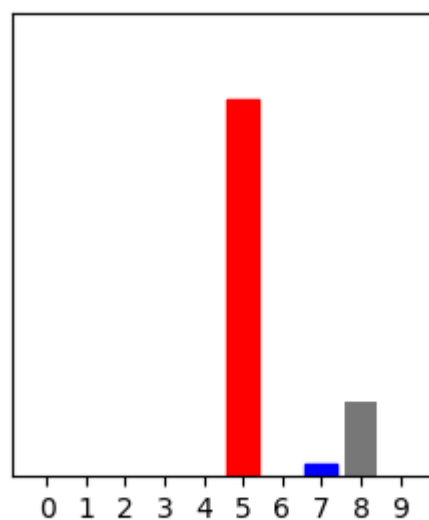
Ankle boot 99% (Ankle boot)



XXX



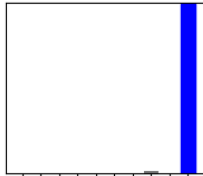
Sandal 81% (Sneaker)



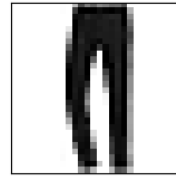
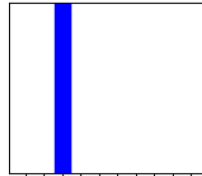
Images after testing



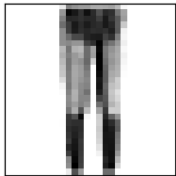
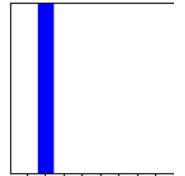
Ankle boot 99% (Ankle boot)



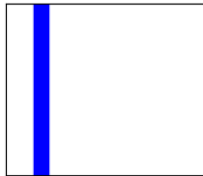
Pullover 100% (Pullover)



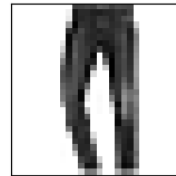
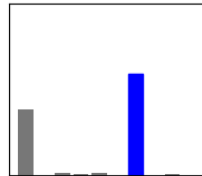
Trousers 100% (Trousers)



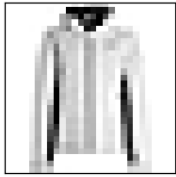
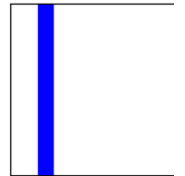
Trousers 100% (Trousers)



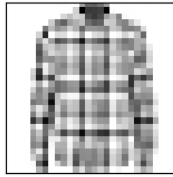
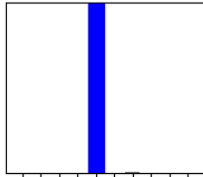
Shirt 59% (Shirt)



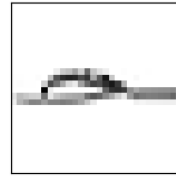
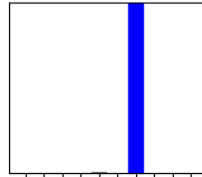
Trousers 100% (Trousers)



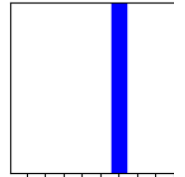
Coat 99% (Coat)



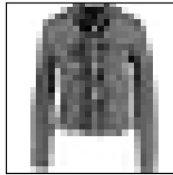
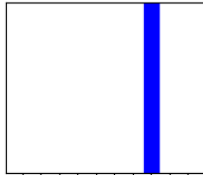
Shirt 99% (Shirt)



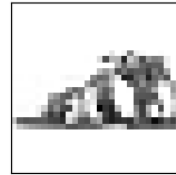
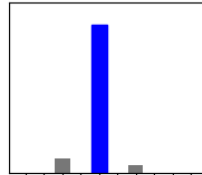
Sandal 100% (Sandal)



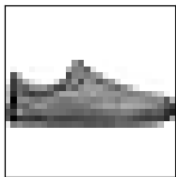
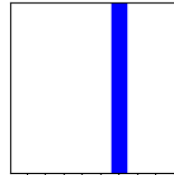
Sneaker 100% (Sneaker)



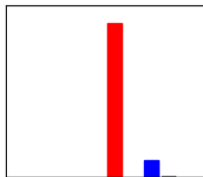
Coat 87% (Coat)



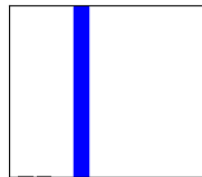
Sandal 100% (Sandal)



Sneaker 90% (Sneaker)



Dress 99% (Dress)



Coat 86% (Coat)

