GR-MANGO AI GUIDE

Let’s challenge next step!

EPMP-IMB-20-0277-1

Introduction

"I want to do AI using color images!"

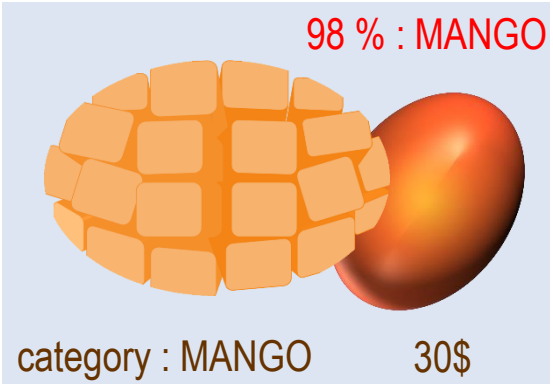
"I tried AI with the e-AI starting package. But I'm not sure what to do when changing to my favorite image…"

We have prepared a sample package for you to try the color image AI, and change it to your favorite food images for your next step!

We will explain about food menu recognition using AI on Renesas GR-MANGO(with RZ/A2M) board.

In conducting trials and development, we ask customers to collect AI learning data and create an AI learning environment. Please note that we do not support AI learning itself.

GR-MANGO
Business card size



ATTENTION

This package includes the open source TFLM (TensorFlow Lite for Microcontrollers)

provided by Google.

There are several types, we selected "Post training integer quantized".

ATTENTION

TFLM is the code of **Apache License 2.0.** If you use this package for purposes other than training (commercial use), please check the contents of the license.

TFLM has a lot of manuals on the official website.

TensorFlow Lite for Microcontrollers

Build and convert models | TensorFlow Lite

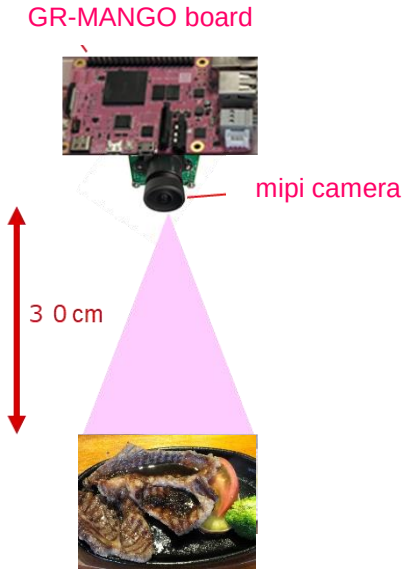
TOC

DEMONSTRATIONS(FOOD MENU RECOGNITION)

- Execute image preprocessing (capturing data) with DRP
- Execute CNN (convolution 2D) with DRP
- Learn CNN framework TensorFlow Lite / Keras, convert with command.

Outline of this guide

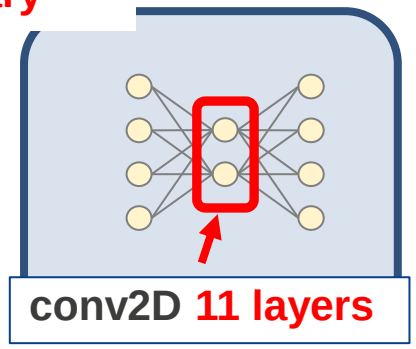
1. Shooting food menu



2. AI preprocessing

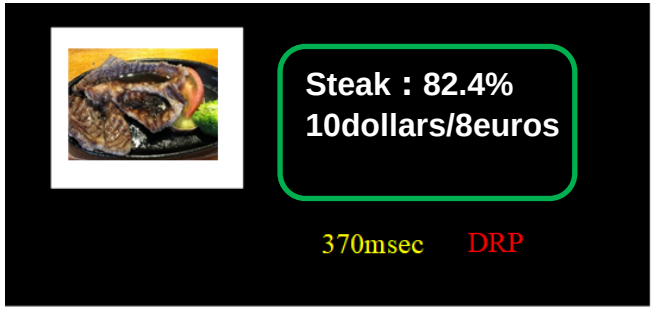
Color matrix correction
with Simple ISP(**DRP library**)

3. AI executing



Switch between using CPU and DRP*

4. Recognition of food menu



Note: If the CNN parameters are supported by the DRP library, it can be processed 5 to 7 times faster than the CPU.
For details, refer to APPENDIX in "AI Customization Guide with GR-MANGO".

Things to prepare

Package contents

Documents ····· 3

0.GR-MANGO_AI_guide.pdf(this document)
1.GR-MANGO_AI_beginner's_guide.pdf
2.GR-MANGO_AI_customization_guide.pdf

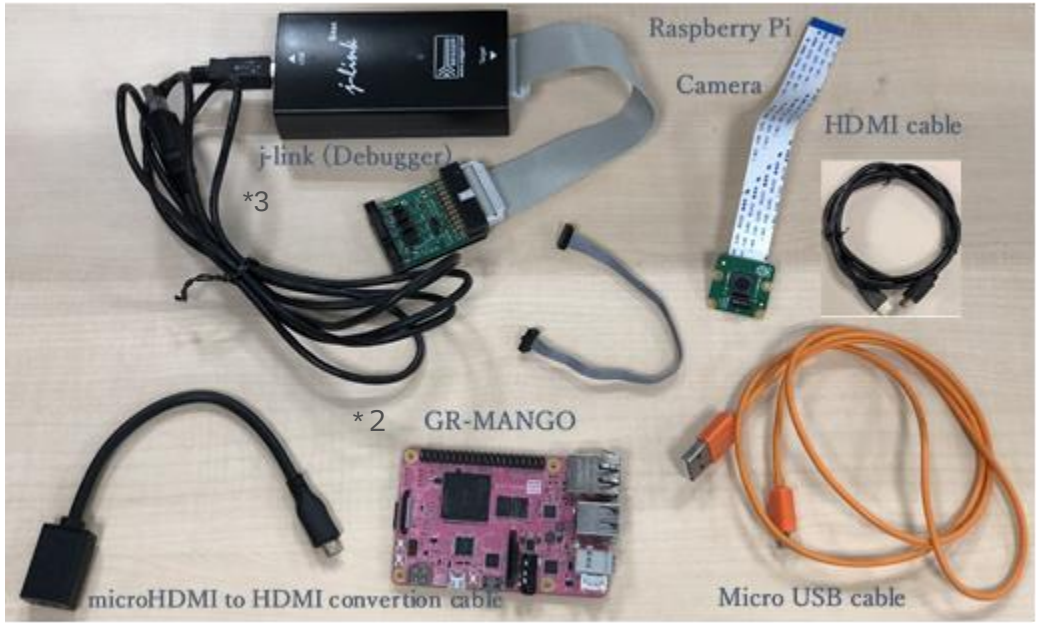
GR-MANGO_food_menu_recognization.zip

CNN_food_menu_recognization.zip

Program packages··· 2

GR-MANGO_food_menu_recognization.zip
Set of e²studio environments for food menu recognition
CNN_food_menu_recognition.zip
Set of AI learning environments for food menu recognition

Hardware to prepare



Windows10 PC 64bit

*1

Note 1 Please prepare a PC with internet connection and free space of 6G or more.

Note2 **URL to order** USA UK Germany China Hong Kong Taiwan Singapore Japan

Note3 J-link is used when debugging. It is possible to run the demonstration without it.

Confirmation environment list (1 of 2)

Contents	Version	Note
Programming language <Python>	3.5.3	Used for AI learning
Library for AI Learning <Keras>	2.2.4	Used for AI learning
Library for AI Learning <Tenserflow>	2.0.1	Used for AI learning
Library for Python <progressBar>	2.4	Used for AI learning
Library for Python <prettytable>	0.7.2	Used for AI learning
Library for Python <imageio>	2.6.1	Used for AI learning
Library for Python <matplotlib>	3.0.3	Used for AI learning

Note: Operation and AI learning accuracy is not guaranteed. Please note that we can not accept questions in an unlisted environment.

Confirmation environment list (2 of 2)

Contents	Version	Note
Microsoft Windows10 Enterprise	1803	Used for AI learning and compiling of inference execution
e2 studio integrated development environment	7.8.0	Used for compiling of inference execution
Python script for AI learning <food menu recognition.py>	1.0	Included RZ/A e-AI next step package

Note: Operation and AI learning accuracy is not guaranteed. Please note that we can not accept questions in an unlisted environment.

STEP

Part. 1 Let’s recognize food menu using AI on GR-MANGO board

First, try with a trained model

We prepared trained AI model for food menu recognition in 15 categories.

1. Download to GR-MANGO using e2studio.
2. After that, we will execute inference.

Part. 2 Let’s recognize favorite food menu using AI on GR-MANGO board

Next, customize to your favorite food menu

1. Change the image of the food menu and create a new AI model.
2. Download to GR-MANGO using e^{2}studio.
3. After that, we will execute inference.

Revision history

Ver 1.00 Dec 2020 Updated

www.renesas.com