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Uctronics Machine Learning Kit U6180 Instruction Manual

UCTRONICS MACHINE LEARNING KIT
Based on Raspberry Pi Pico
SKU: U6180
Instruction Manual

Contents

INTRODUCTION

UCTRONICS Machine Learning kit is designed to offer a compact hardware base for more possibilities of the Raspberry Pi Pico. The onboard mini breadboard and expanded available GPIO pins get you started in learning the electronics and circuits easily. More importantly, the kit packs a camera, a display, microphone to help you run the examples of Tensorflow Lite Micro tiny machine learning, which has been ported to the RP2040.
This manual includes how to set up the camera and run the 2 pre-trained TensorFlow Lite Micro examples, Person Detection, and Wake-Word Detection. You can also build, train and deploy your models on it.

SPECS

Camera Module	HiMax HM01130. Up to OVGA (320 x 240)@60(ps
Screen	0.96 inch LCD SPI Display (160 x 80, ST7735)
Operating Voltage	5V
Breadboard	35x47mm, 170 points
Dimension	90x70mm

SCHEMATIC VIEW

01	4 x programmable buttons	02	Mini Breadboard
03	Display	04	Reset button
05	Power indicator	06	Microphone
07	Socket for HMO1B0 and HM0360 camera	08	Socket for SPI camera
09	Socket for Pico	10	Pico GPIO expander
11	Reserved interface for Wifi and Bluetooth module		
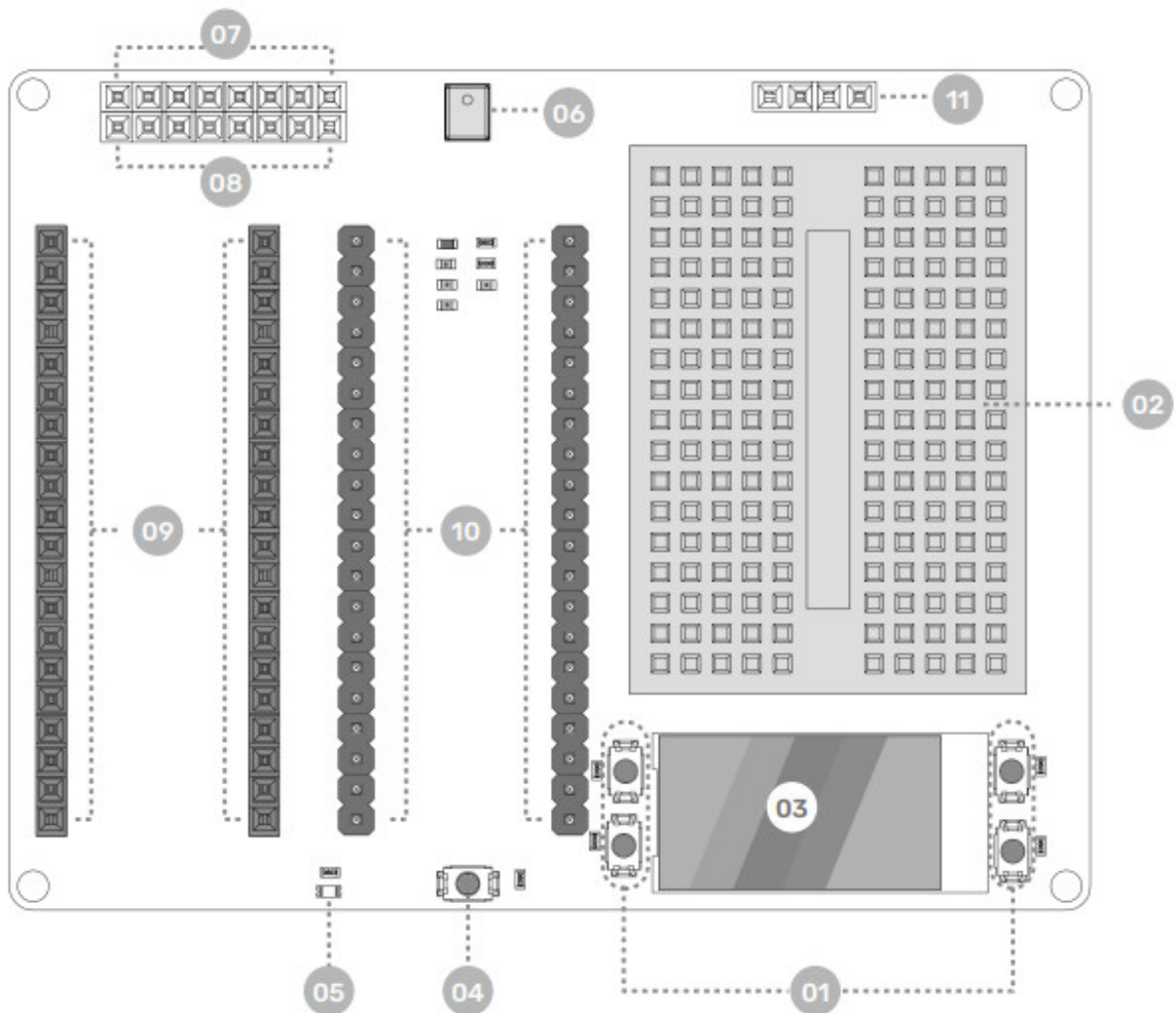
HARDWARE SETUP

1. Align and insert the Pico header into the socket.
2. Align and insert the HM01B0 camera header into the socket, keeping the camera outwards.
3. Plug the USB end of the Micro USB cable into the computer, then press and hold the BOOTSEL button on your Pico and connect the Micro USB end to the port on your Pico, the power indicator and the backlight of the display will come up.
4. Release the button after connection. A disk volume should pop up on your computer. That is your Raspberry Pi Pico.

NOTE: Raspberry Pi Pico and micro USB cable are not included in the kit.

FIRST USE

Go to the page **https://github.com/ArduCAM/Pico4ML_AdapterBoard** and press the code button to download the driver to the Raspberry Pi or laptop, you can also gitclone **https://github.com/ArduCAM/Pico4ML_AdapterBoard.git**

HM01B0 Camera

1. Open the corresponding file HM01B0
2. Compile the driver: cd Pico4ML_AdapterBoard/HM01B0 mkdir build cd build cmake .. make
3. A file named main.uf2 will be generated in the build file under HM01B0, then drag and drop the uf2 file to your Pico. The volume will automatically unmount and the screen should display the imaging of the camera.
   NOTE: Please unplug and reconnect the micro USB cable if the screen displays nothing.

Wake-word Detection

1. Open the corresponding file pico-wake-word
2. Compile the driver: cd Pico4ML_AdapterBoard/pico-wake-word mkdir build cd build cmake .. make
3. A file named pico_micro_speech_pdm.uf2 will be generated in the build file under pico-wake-word, then drag and drop the uf2 file to your Pico.
4. Hold your Pico closer and say "yes" or "no". The screen will display the corresponding word.

Person Detection

1. Open the corresponding file tflmicro
2. Compile the driver: cd Pico4ML_AdapterBoard/tflmicro mkdir build cd build cmake .. make
3. A file named person_detection_screen_int8.uf2 will be generated under the path tflmicro/build/examples/person_detection_screen, then drag and drop the uf2 file to your Pico.
4. Hold your Pio to capture images. The screen will display the image and the probabilities of the presence of a person.
   The driver also includes examples for other cameras, please contact us for more information if you are interested.

CONTACT US

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Documents / Resources

	UCTRONICS Uctronics Machine Learning Kit U6180 [pdf] Instruction Manual Uctronics, Machine, Learning, Kit, U6180