TensorFlow Lite – Magic Wand

# Materials

* AmebaD [AMB21 / AMB22 / AMB23 / BW16] x 1
* Adafruit LSM9DS1 Accelerometer x1
* LED x2

# Example

**Procedure**

**AMB21/AMB22 Wiring Diagram:**

Connect the Accelerometer and LEDs to the board shown in the following diagram.

**A picture containing text, electronics, circuit, screenshot

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**AMB23 Wiring Diagram:**

For AMB23, we will use the onboard LEDs on the board itself.

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**BW16 Wiring Diagram:**

For BW16, we will use the onboard LED on the board itself.

**A picture containing text, electronics, circuit

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**BW16-TypeC Wiring Diagram:**

**![A picture containing text, electronics, circuit

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Download the Ameba customized version of TensorFlow Lite for the Microcontrollers library at

<https://github.com/ambiot/ambd_arduino/tree/master/Arduino_zip_libraries>.

Follow the instructions at <https://www.arduino.cc/en/guide/libraries> to install it.

Ensure that the patch files found at  <https://github.com/ambiot/ambd_arduino/tree/master/Ameba_misc/>

Open the example, “Files” → “Examples” → “TensorFlowLite\_Ameba” → “magic\_wand”.

Graphical user interface, application

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Upload the code and press the reset button on Ameba board once the upload has completed.

Holding the Accelerometer steady, with the position x-axis pointing to the right and the positive z-axi pointing upwards, move it following the shapes as shown, moving it in a smooth motion over 1 to 2 seconds, avoiding any sharp movements.

Shape

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If the movement is recognised by the TensorFlow Lite model, you should see the same shape output to the Arduino serial monitor. Different LED will light up corresponding to different recognized gestures.

Note that the wing shape is easy to achieve, while the slop and ring shapes tend to be harder to get right.

A picture containing chart

Description automatically generated

# Code Reference

More information on TensorFlow Lite for Microcontrollers can be found at: <https://www.tensorflow.org/lite/microcontrollers>