SymphoSolids

A Complete Guide

Move Solid. Create Music.

Designed for the M5StickCplus1/2, SymphoSolids consists of three software components and a physical model that combine to form a musical rehabilitation device that allows with limited mobility to create music, while boosting patient-to-patient engagement. This project provides the following necessary code and details to set-up, use and customize the SymphoSolid experience:

- **SymphoSolids_Main** is the main arduino file uploaded to the M5 Stick. It registers accelerometer data and sends the corresponding musical note as a Bluetooth LE Midi Command.

- **M5StickCplusBLE** is the arduino file used to first register face accelerometer data to the physical solid of choice. It is used in conjunction with **SymphoSolidsConfiguration**.

- **SymphoSolidsConfiguration** is a python GUI program that is used to name the device, assign face and note values, and modify existing face data structures.

Watch a demo of the configuration and initialization process here!

Video

First Time Installation Guide

The easiest way to use SymphoSolids right away is by following the steps below:

1. Clone this project

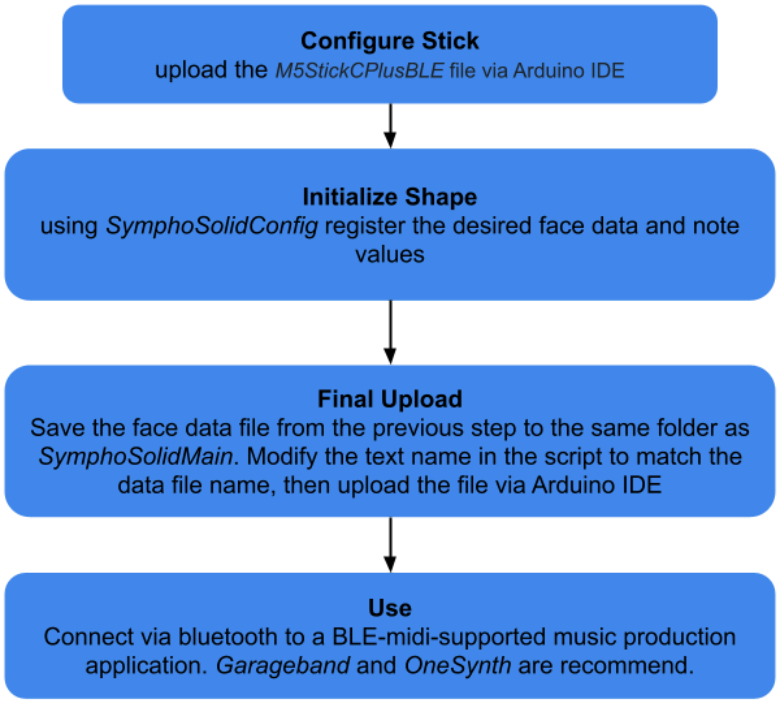
2. Download *Arduino IDE* and associated libraries as needed

    a. Install the appropriate version of *Arduino IDE* and follow the steps on https://www.arduino.cc/en/software

    b. Once installed make sure to download the following libraries; **BLEMIDI_Transport**, **M5StickCPlus2**, **M5StickCPlus** and **ESP32_NimBLE**. For support downloading the libraries refer to https://docs.arduino.cc/software/ide-v1/tutorials/installing-libraries/

General Use Guide

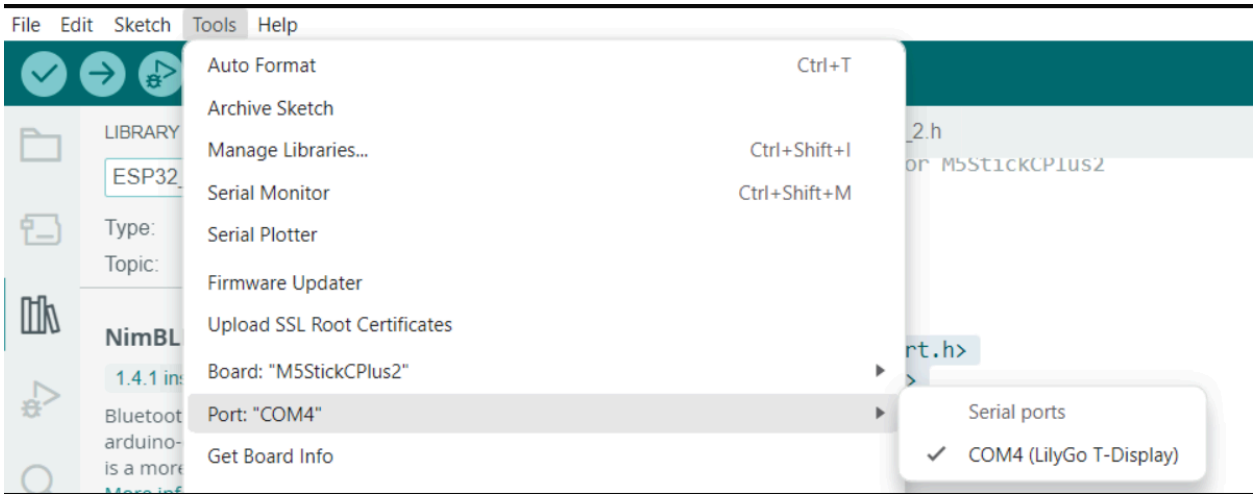
There are 3 stages before use:



Configuration

1. Using a serial cable connect the M5Stick to the laptop/computer.
2. Open up the *M5StickCPlusBLE* file
3. Ensuring the correct COM is chosen, upload the file to the stick pressing the arrow on the top left corner.
    a. To Upload:

    b. To switch COM:



4. Run the SymphoSolidsConfiguration program.

5. Insert the stick into the desired shape.

6. Using the program, scan and connect to stick before initializing the Solid's name, number of sides, face data and note values. For further detail watch the demo video attached above.
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Note values are entered in MIDI values. MIDI values range from 0 to 127, where zero is silence and 127 is the highest pitch value of G9. Use the below conversion table adapted from Manaris et al.

Here is the completed table with the rest of the notes included:

https://inspiredacoustics.com/en/MIDI_note_numbers_and_center_frequencies