User Manual

Glovesy Configuration Suite

0) Dependencies

In order to install this project, make sure to download, and install the following

- Java11,
- MongoDB,
- Gradle.

1) Installation

To install, start by downloading the repo.

```
git clone
https://gitlab.computing.dcu.ie/devina24/2021-ca400-devina24-molons29.git
```

Now we can move to the following directory:

```
cd 2021-ca400-devina24-molons29/src/GCS
```

listing the contents of this directory we can see the following

```
ls -l
   total 28
   -rw-r--r-- 1 alan alan 1366 May  7 11:19 build.gradle
   drwxr-xr-x 3 alan alan 4096 May  7 11:19 gradle
   -rwxr-xr-x 1 alan alan 5770 May  7 11:19 gradlew
   -rw-r--r-- 1 alan alan 3058 May  7 11:19 gradlew.bat
   -rw-r--r-- 1 alan alan   26 May  7 11:19 settings.gradle
   drwxr-xr-x 4 alan alan 4096 May  7 11:19 src
```

We can now run the following command

```
gradle build
```

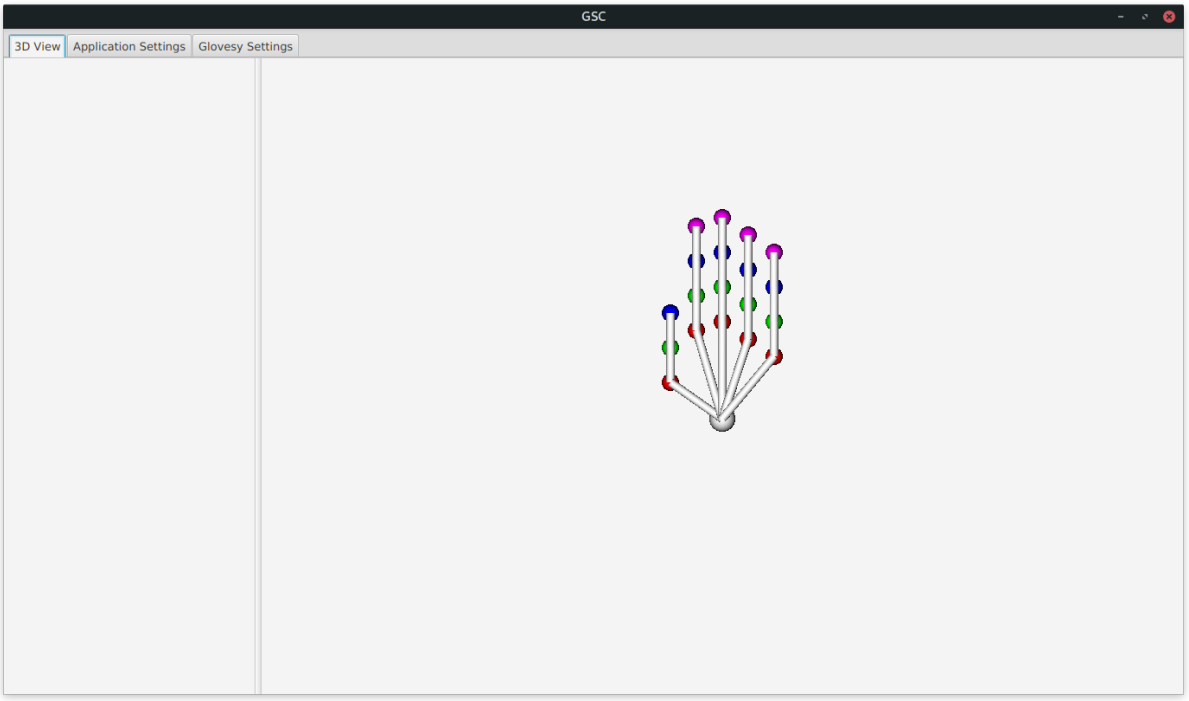
This will compile the source, run the test suite and install the dependencies.

Finally, we can run the program by entering.

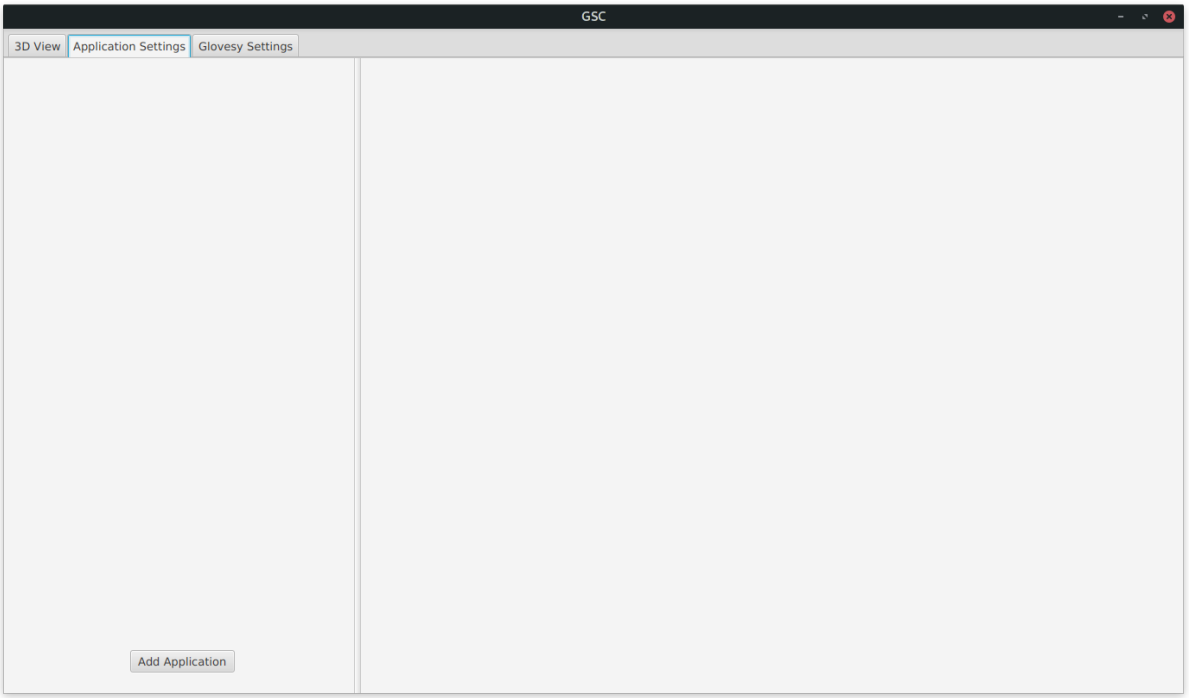
```
gradle run
```

2) Using Glove Configuration suite

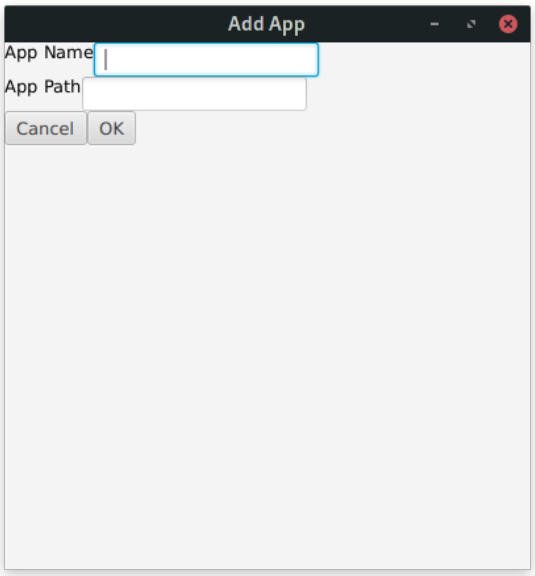
Upon first opening the application, you are greeted with a movable 3D model of your hand. As you can see there is a 3D model of your right hand which is controlled by data coming from the glove.

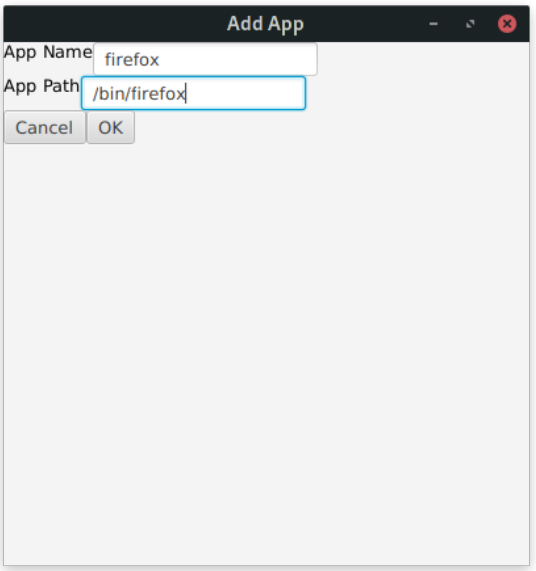


On the next screen, you will see application settings. We can add applications to this by clicking on the “Add Application” button on the bottom left of the screen.

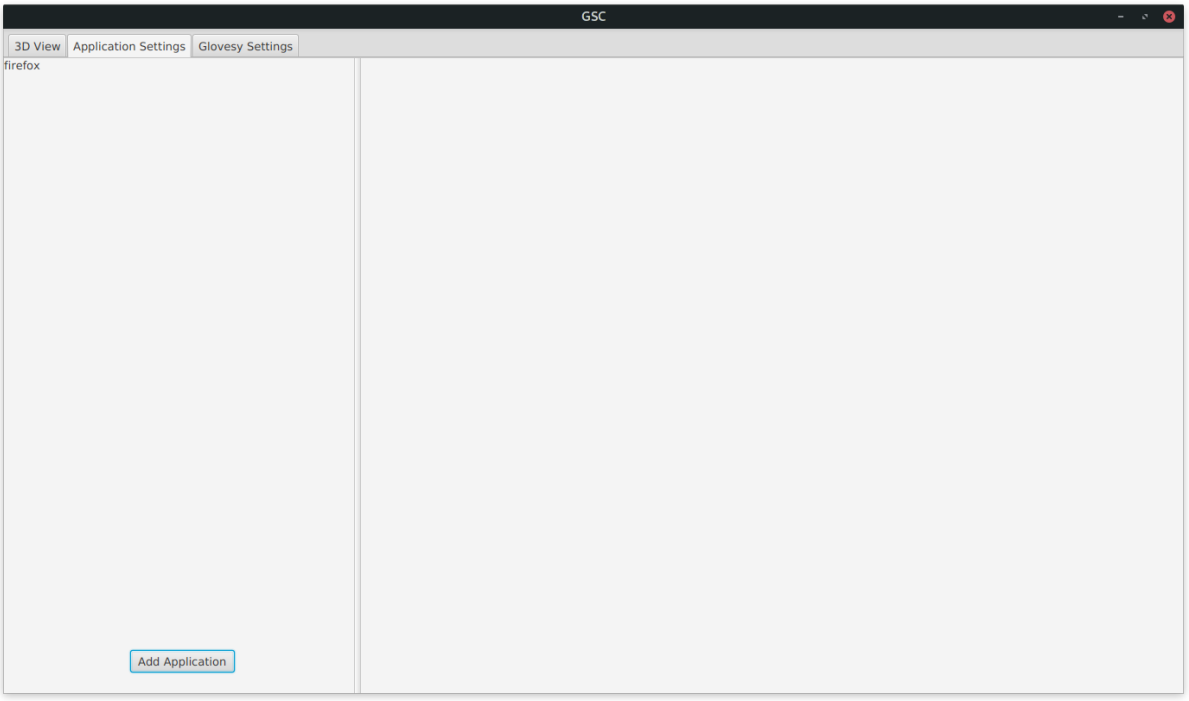


You are prompted for a name and a path to the application. We will use firefox as an example

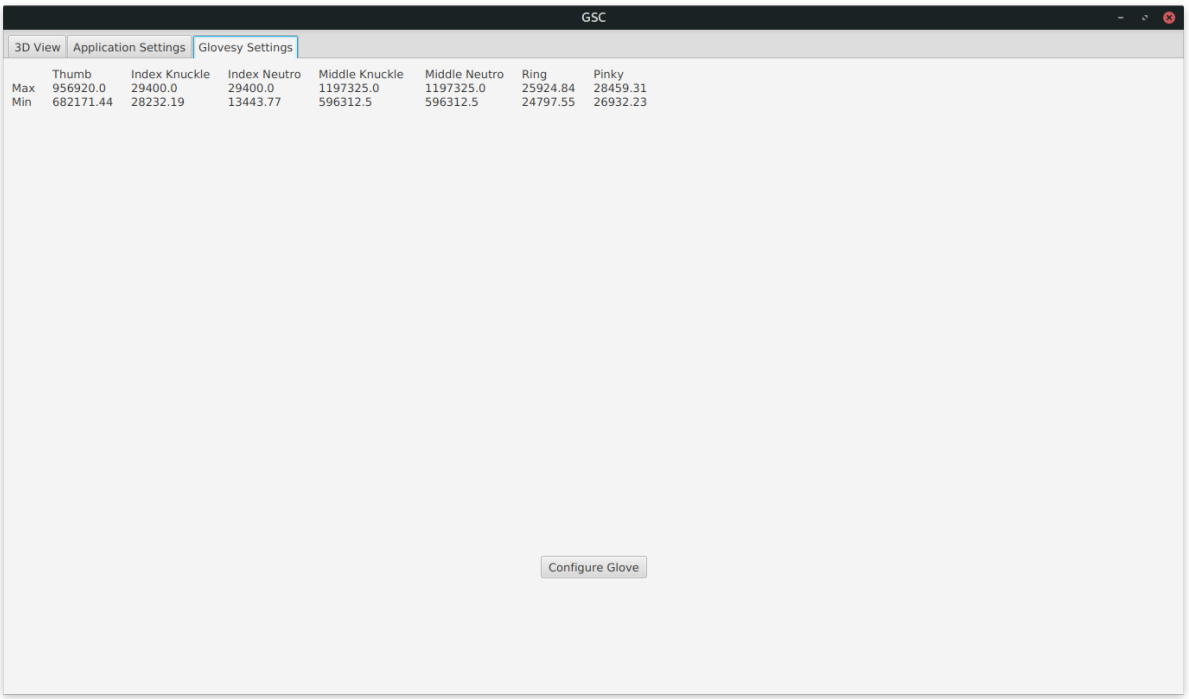




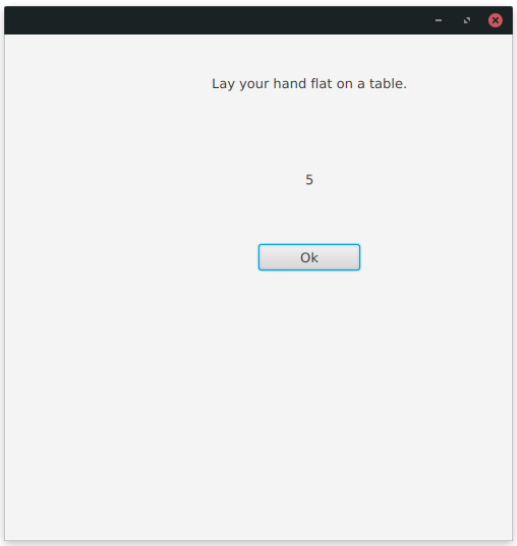
We can now see that firefox has been added to the application list.

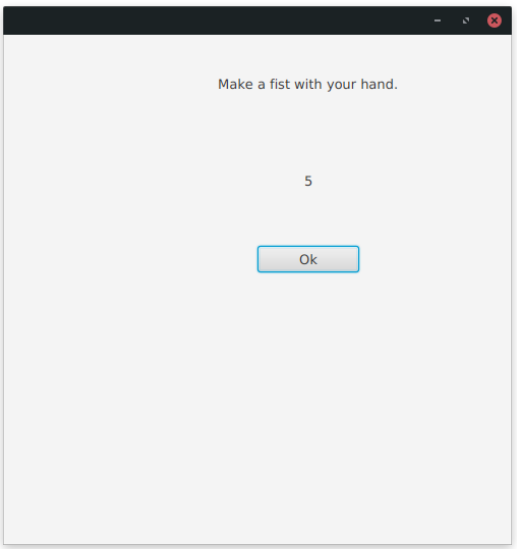


The final tab contains configuration data related to the device. Below are the minimum and maximum resistances for each of the flex sensors attached to the glove.



If for some reason, you would like to reconfigure the resistance, you can do so by clicking on the “Configure Glove” button present at the bottom of the screen. This will result in the following popups





There are instructions to follow as well as a timer.

Setting up the device

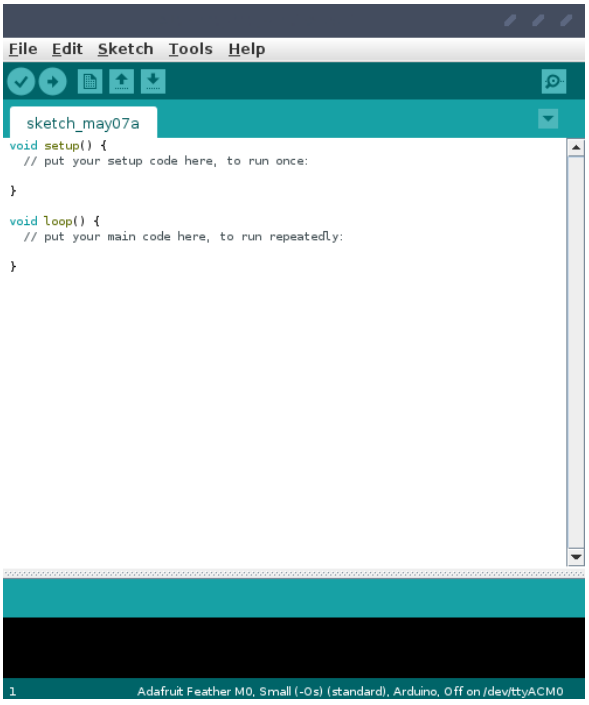
0) Installing the Arduino IDE

Before being able to flash the embedded application to the board, you must install the Arduino IDE, the link to which can be found here.

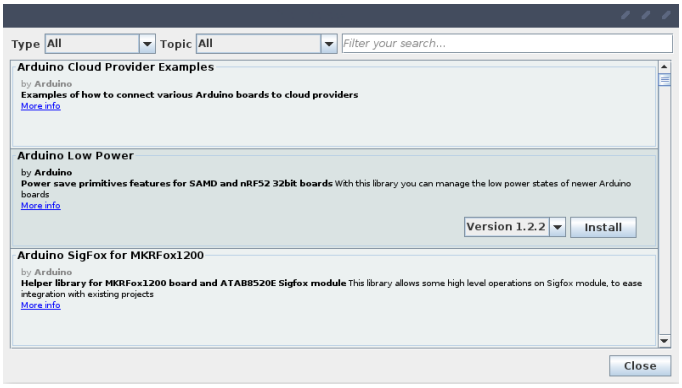
Once that is installed, the following libraries must be installed:

- Arduino_LSM6DS3
- Adafruit BusIO
- Adafruit LSM6DS
- Adafruit Unified Sensor

In order to install them, first open up the arduino IDE



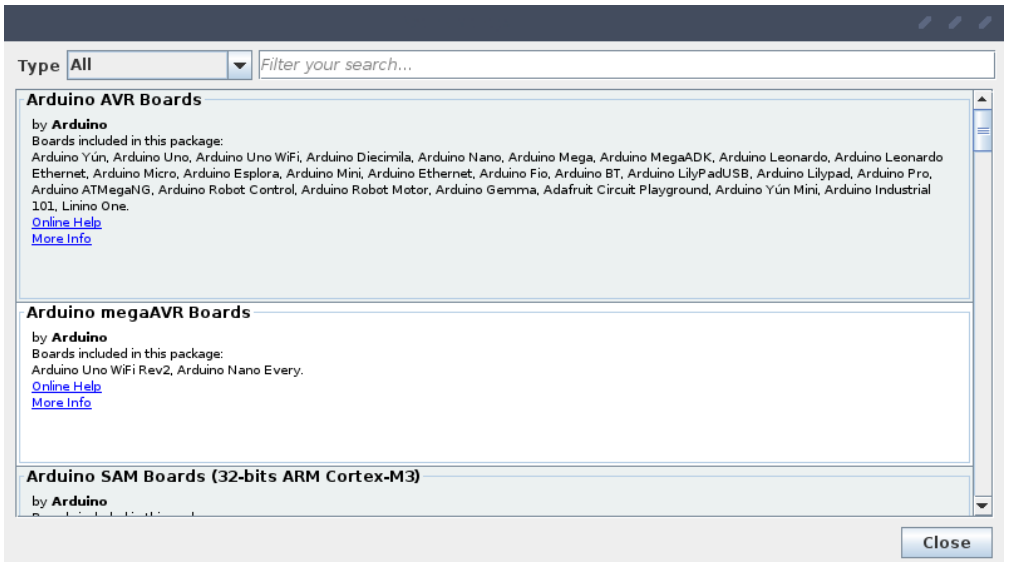
Once the IDE is open, click the tools dropdown and select “Manage Libraries”. Once this is doen the following window will appear



In the search bar on the top left of the window, enter the name of each of the required libraries and click install.

1) Setting up the IDE

Once all the required libraries have been installed, once again open the Tools dropdown and select board manager under the boards option



Once the above window has been opened, search and install the Adafruit SAMD Boards library.

Next plug in the device via usb and under the tools dropdown go to boards again and under Adafruit SAMD Boards select Adafruit Feather M0.

Lastly, once again under tools go to port and select /dev/ttyAMC0

2) Flashing the board

Now all that’s left to do is open the glovesy driver code in the IDE and click the upload button on the top left.

Running the Demo hub

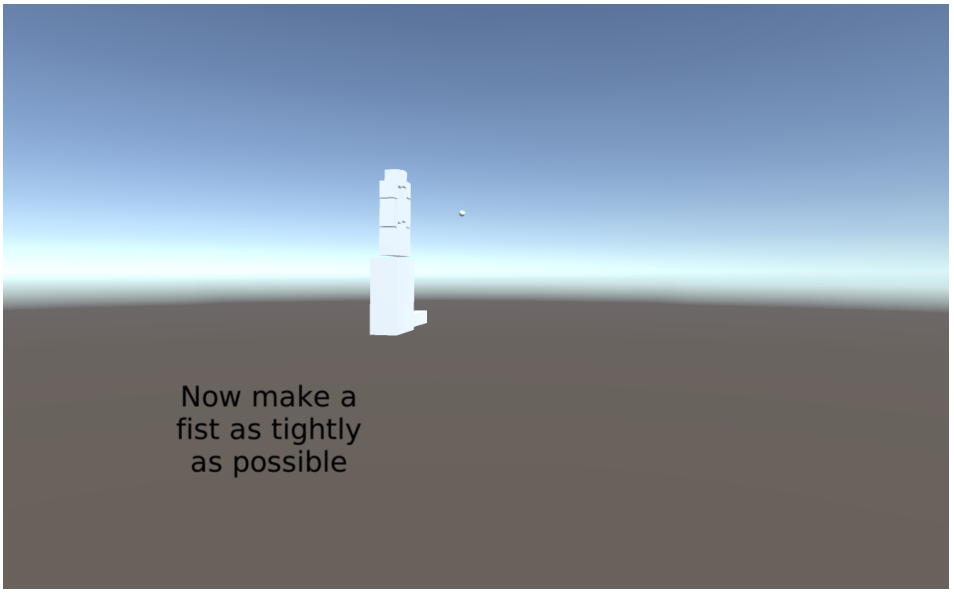
0) Launching

In order to open the Demo, simply run the Glovesy_Demo.x86_64. Once opened you should be able to the following menu screen

1) Starting the demo

Before starting the demo, make sure the device is connected to your PC, then click the Start Demo button.

Once you do, you will be presented with the following calibration screen



After following the on-screen instructions, the device will be calibrated and you may interact with the demo.