VirtualJoystick Setup Guide

Version 1.0 (June 2, 20,2019)

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Required Hardware:

- Adafruit Feather 32u4 Bluefruit LE (1 Unit): https://www.adafruit.com/product/2829

- USB cable - USB A to Micro-B (1 Unit): https://www.adafruit.com/product/592

Required Software:

- Arduino IDE: https://www.arduino.cc/en/Main/Software

- Adafruit Drivers: https://github.com/adafruit/Adafruit_Windows_Drivers/releases/

- VirtualJoystick firmware:

  https://github.com/milador/VirtualJoystick/raw/master/Software/VirtualJoystick_Firmware/VirtualJoystick_Firmware.ino

- Bluefruit Configuration file:

  https://github.com/milador/VirtualJoystick/raw/master/Software/VirtualJoystick_Firmware/BluefruitConfig.h

- PacketParser File:

  https://github.com/milador/VirtualJoystick/raw/master/Software/VirtualJoystick_Firmware/packetParser.cpp

- The Joystick library: https://github.com/MHeironimus/ArduinoJoystickLibrary

- Adafruit_BluefruitLE_nRF51 library: https://github.com/adafruit/Adafruit_BluefruitLE_nRF51

Installation Instructions:

1. Download and install latest version of Arduino IDE.

   1.1. Download Arduino IDE from following link: https://www.arduino.cc/en/Main/Software

   1.2. Install Arduino IDE

2. Add and setup Adafruit AVR Boards through Arduino IDE.

   2.1. Open Arduino IDE

   2.2. Open *"Preferences"* by navigating under "*File"* menu.

   2.3. Add the following URL to the *"Additional Boards Manager URLs"* option:

   https://adafruit.github.io/arduino-board-index/package_adafruit_index.json

   2.4. Click on the *"OK"* button.

   2.5. Open *"Boards Manager"* by navigating to the "*Tools->Board"* menu.

   2.6. Select *"Contributed"* from *"Category"* drop down menu on the top left-hand side of the window.

   2.7. Select and install *"Adafruit AVR Boards"*

2.8. Check to ensure all the Adafruit AVR boards are installed by searching for *"Adafruit Feather 32u4"* under *"Board:"* option through the *"Tools->Board"* menu.

2.9. Exit Arduino IDE

3. Download and install *"Adafruit Drivers"*

3.1. Download "*Adafruit Drivers*" from following link:

https://github.com/adafruit/Adafruit_Windows_Drivers/releases/

3.2. Install "*Adafruit Drivers*"

4. Download the *"VirtualJoystick"* software

4.1. Download the files under *"Software"* directory using following link:

https://github.com/milador/VirtualJoystick/tree/master/Software/VirtualJoystick_Firmware

4.2. Extract all the files under a folder and name it *"VirtualJoystick_Firmware"*.

Note: The VirtualJoystick_Firmware should include following three files: VirtualJoystick_Firmware.ino, BluefruitConfig.h, packetParser.cpp

4.3. You can also download the three files directly using following links:

4.3.1. VirtualJoystick firmware:

https://github.com/milador/VirtualJoystick/raw/master/Software/VirtualJoystick_Firmware/VirtualJoystick_Firmware.ino

Bluefruit Configuration file:

https://github.com/milador/VirtualJoystick/raw/master/Software/VirtualJoystick_Firmware/BluefruitConfig.h

4.3.3. PacketParser File:

https://github.com/milador/VirtualJoystick/raw/master/Software/VirtualJoystick_Firmware/packetParser.cpp

5. Download and install *"ArduinoJoystickLibrary"* library

5.1. Visit the *"ArduinoJoystickLibrary"* GitHub repository using following link: [1]

https://github.com/MHeironimus/ArduinoJoystickLibrary

5.2. Download the "*ArduinoJoystickLibrary"* by clicking on *"Clone or Download"* button and then selecting *"Download ZIP"* option.

5.3. Extract the *"ArduinoJoystickLibrary-master.zip"* file.

5.4. Copy the Joystick folder to the Arduino libraries folder. An example of path to Arduino libraries folder in Windows: *"C:\Program Files (x86)\Arduino\libraries"*.

5.5. Once the folder has been copied, the Joystick library should appear in the Arduino IDE list of libraries.

5.6. Open Arduino IDE and you should be able to see Joystick examples under *"File>Examples>Joystick"*.

6. Download and install *"Adafruit_BluefruitLE_nRF51"* library

6.1. Visit the *"Adafruit_BluefruitLE_nRF51"* GitHub repository using following link: **[2]** https://github.com/adafruit/Adafruit_BluefruitLE_nRF51

6.2. Download the *"Adafruit_BluefruitLE_nRF51"* by clicking on *"Clone or Download"* button and then selecting *"Download ZIP"* option.

6.3. Extract the *" Adafruit_BluefruitLE_nRF51y-master.zip"* file.

6.4. Copy the Joystick folder to the Arduino libraries folder. An example of path to Arduino libraries folder in Windows: *"C:\Program Files (x86)\Arduino\libraries"*.

6.5. Once the folder has been copied, the Joystick library should appear in the Arduino IDE list of libraries.

6.6. Open Arduino IDE and you should be able to see Joystick examples under *"File>Examples> Adafruit BluefruitLE nRF51"*.

7. Now open the *"VirtualJoystick_Firmware.ino"* file under *"VirtualJoystick_Firmware"* directory using Arduino IDE.

8. Select the *"Adafruit Feather 32u4"* as the *"Board"* option under the *"Tools->Board"* menu and then select the available port number under Tools option.

9. Click on upload button to upload the code.

Hardware setup:

1. Connect *"Adafruit Feather 32u4 Bluefruit LE"* board to the Micro-B port of USB cable.

2. Connect USB A port of USB cable to your host device (Xbox Adaptive Controller or Computer).

Usage:

1. Download *"VirtualJoystick"* Android Application in your Android Smartphone or Tablet from *"Play Store"* using following link:
https://play.google.com/store/apps/details?id=com.milador.virtualjoysticko

2. Install *"VirtualJoystick"* Android Application in your Android Smartphone or Tablet.

3. Open *"VirtualJoystick"* Application.

4. Enable Bluetooth in your Android Device.

5. Enable Geo Location in your Android Device if you are using the application for the first time.

Note: Android SDK 22 and above requires enabling Geolocation to use Bluetooth features. You can disable Geolocation permission for the application after the first usage.

6. Power the *"Adafruit Feather 32u4 Bluefruit LE"* board and connect it to your host device through USB port.

7. Select *"Connect"* next to *"VirtualJoystick"*. The blue LED on *"Adafruit Feather 32u4 Bluefruit LE"* board will turn on and stay on.

8. Select the controller pad of your choice to interact with your host device.

Functions:

VirtualJoystick supports following controller options:

1. XAC Controller Left Pad

2. XAC Controller Right Pad

3. Controller Direction Pad

4. Controller Button Pad

"VirtualJoystick" can be used to operate Xbox Adaptive Controller through the USB ports.

References

1. [ArduinoJoystickLibrary Github repository](#)

2. [Adafruit_BluefruitLE_nRF51 Github repository](#)