Tiny Trainable Instruments - User Guide

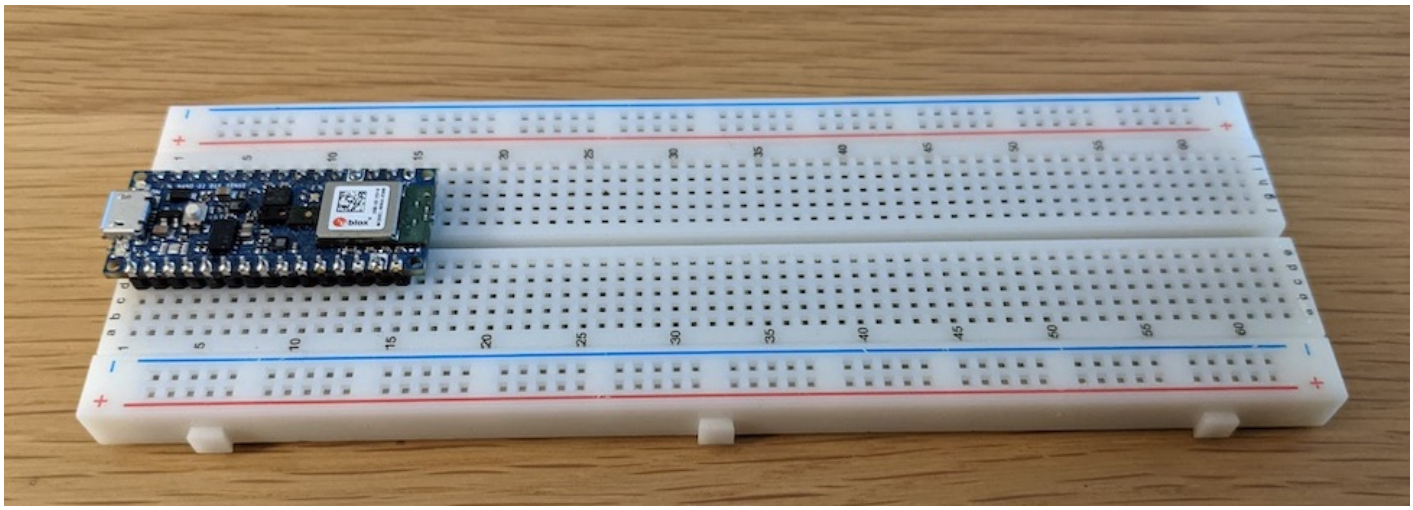
Materials

Participants of the study will will get these 6 minimum materials for building your Tiny Trainable Instruments:

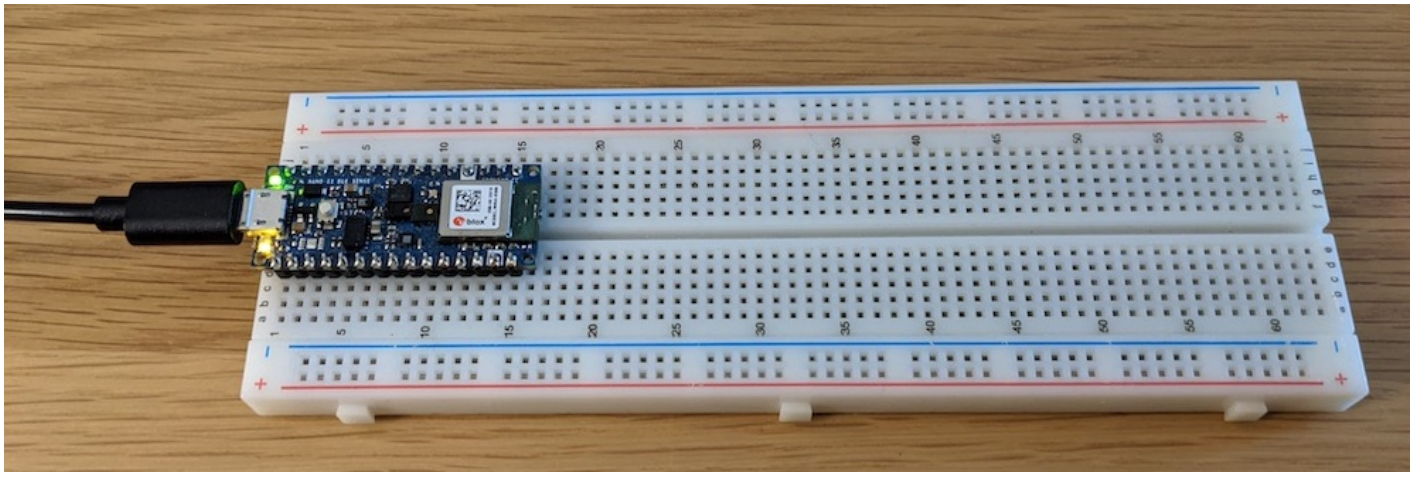
1. 1x Arduino Nano 33 BLE Sense microcontroller with headers
2. 1x Micro USB Cable
3. 1x Solderless breadboard
4. 1x Pack of jumper wires
5. 1x Micro servo motor
6. 1x Piezo buzzer

Assembly

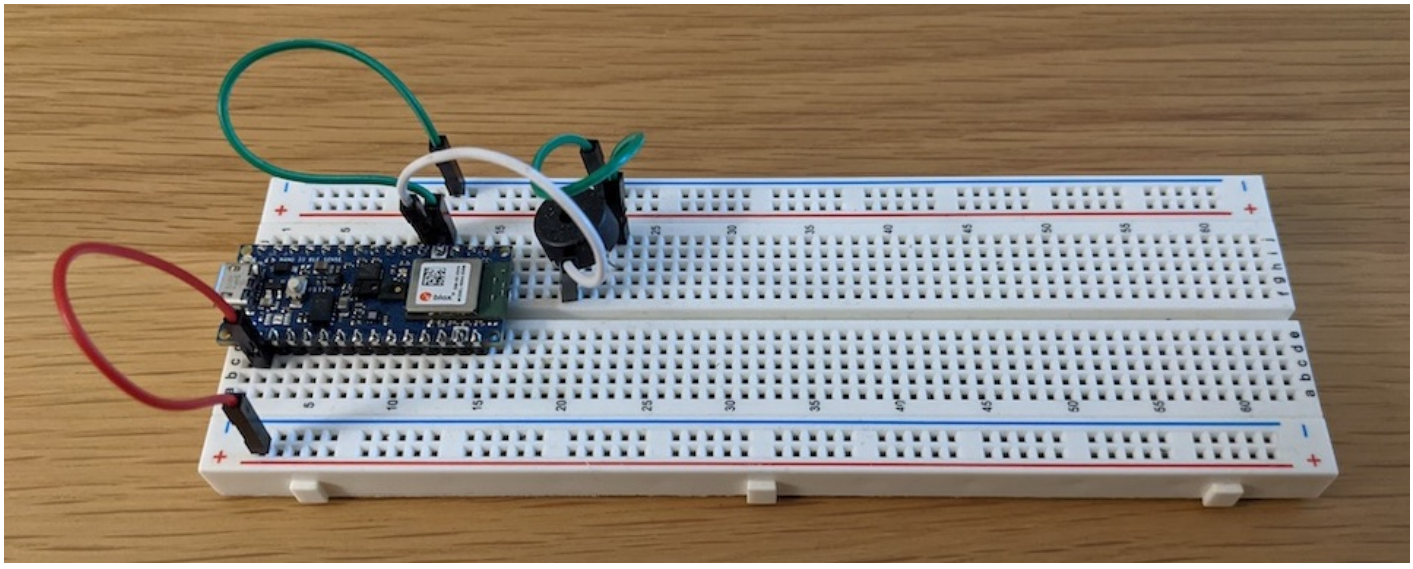
During the workshop, we will place the Arduino microcontroller on the solderless breadboard, to make all the connections in a safe and easy way.



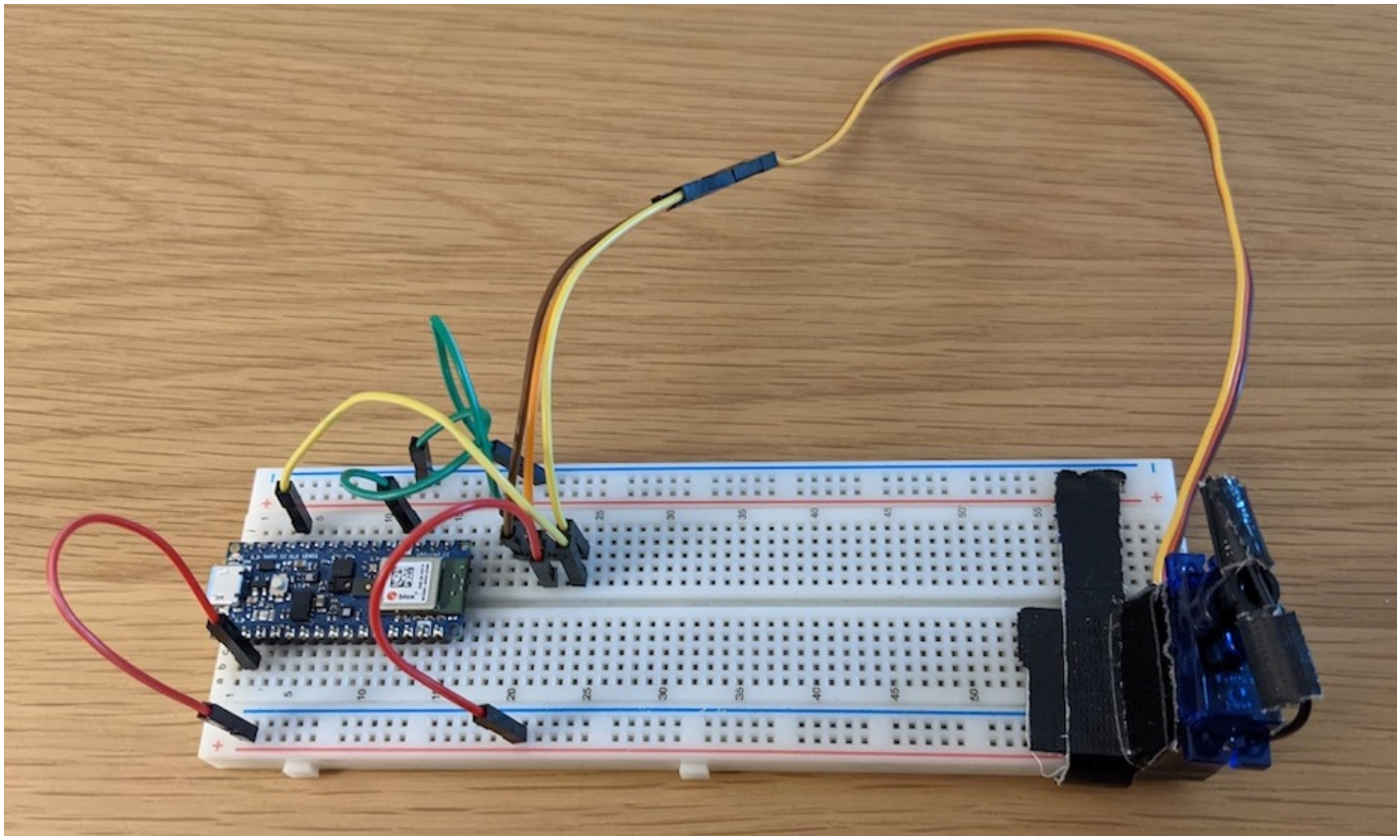
We will use the USB cable to both power our circuits and to be able to upload code from our computers. When the Arduino microcontroller is powered on, its LEDs light up.



During the workshop we will assemble 2 circuits: the first one involves the piezo buzzer, and it involves 4 jumper wires.



The other circuit is for the servo motor and it involves 8 jumper wires.



Installation

For this study the participants will install free open source software on their computer from Arduino, and use the Google Chrome web browser, and the Google Colab cloud service for training machine learning algorithms.

Step 1

Install on your computer the free open source official Arduino editor from their website https://www.arduino.cc/en/software, available for Linux, Mac, and Windows computers.

Step 2

Install the support for the microcontroller we are using, the Arduino Nano 33 BLE Sense, following the official Arduino quickstart guide, available at https://docs.arduino.cc/software/ide-v1/installing-mbed-os-nano-boards

Step 3

For this study, you need a free Google account, to be able to run machine learning algorithms on the cloud using the free service Google Colaboratory, also known as Google Colab. More information is available at https://research.google.com/colaboratory/faq.html

Step 4 (optional)

Install the Google Chrome web browser on your computer, available at https://www.google.com/chrome/.