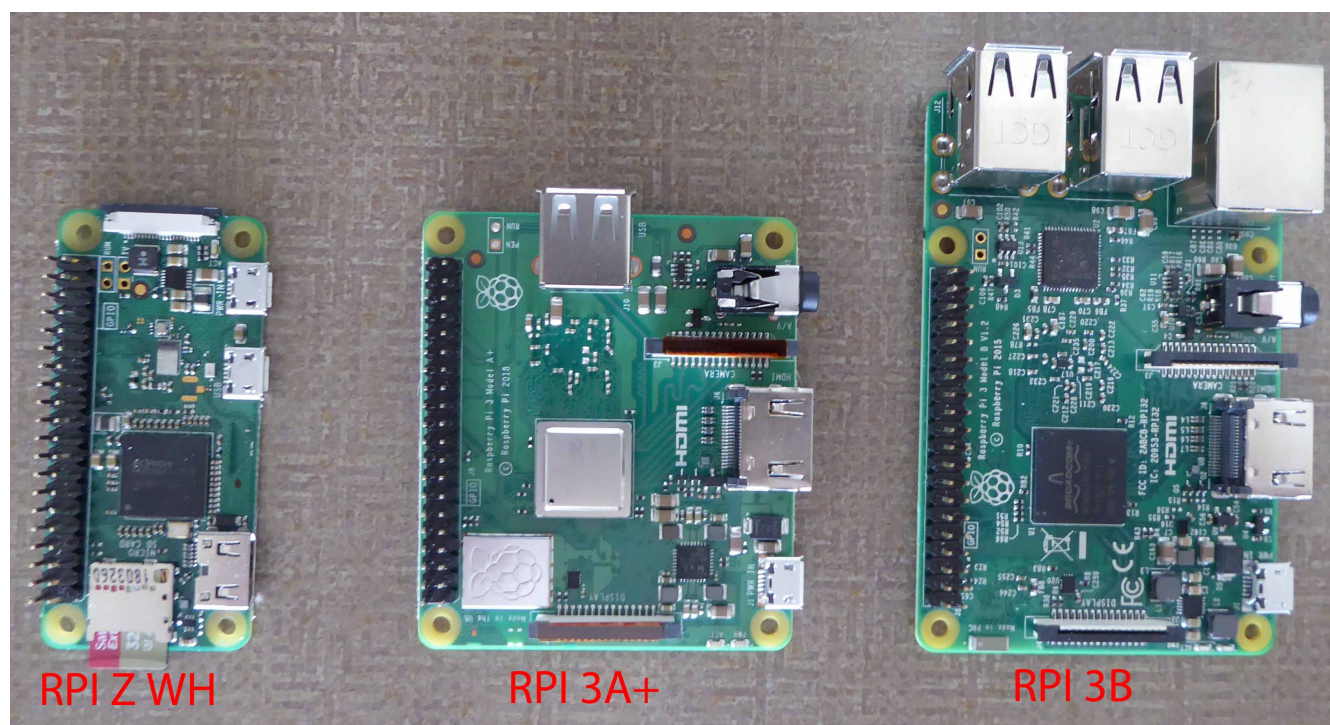
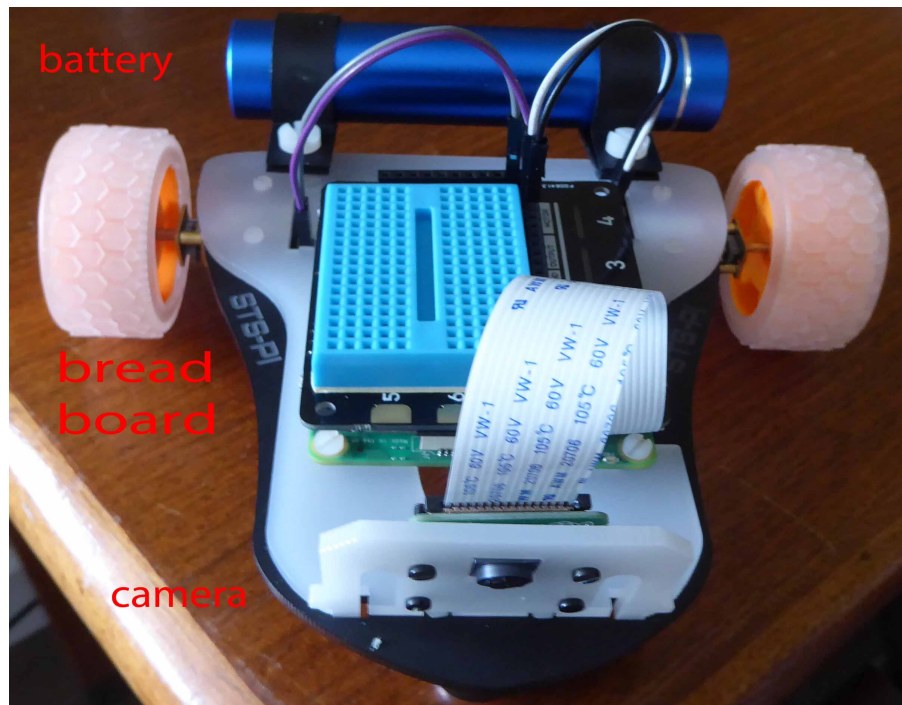


When we started building robots, the computer/controller was the arduino from Italy. We had to use software on the PC for programming and then download the program, thru an USB cable to the arduino. About a year ago, we purchased our first Raspberry PI (RPI) board from England, actually built in the Sony plant in Sheffield. We could use the python language on the RPI for our programming. We then connected the RPI to the arduino controller thru an USB cable, and thus Allie was created.

We received some investment funds from Mad Max Michael and decided to build a robot that only uses the RPI board. We will use a new RPI called the 3A+. It is faster than the RPI Z WH, which we used for the remote camera, and it does not have all the USB and ethernet connectors that the RPI 3B has.

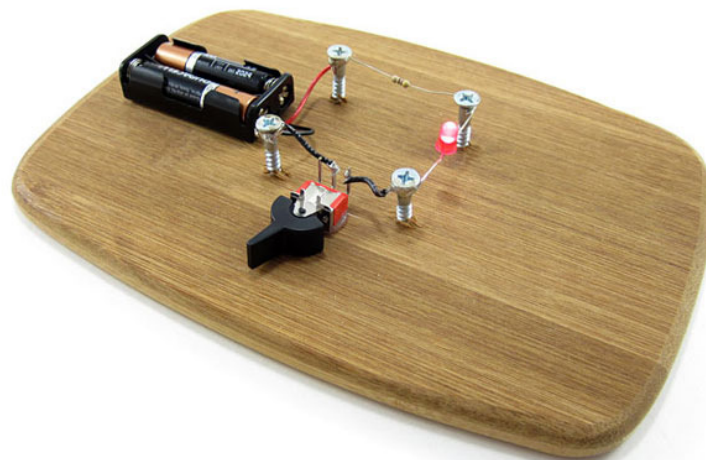


We will use our standard form of a three wheeled robot, two which are motorized. We will also add a camera for vision. We will switch from using AA batteries to using a 5V lithium cylinder battery. Since the RPI does not have many connections to handle sensors or motors, we will add a Hardware Attached on Top (HAT) that will give us that capability. We have chosen a HAT from Pimoroni, another English company, that will give us the opportunity to add 3.3V and 5V electronics and also give us a breadboard. This is the same company that supplied us with the air quality monitor stuff. Remember that the mandate of RPI is the creation of products to enhance the teaching of technology to students and therefore the hardware uses standard interfaces and has detailed documentation.



One of the fundamental tools that electronics hobbyists use is a breadboard. It is used to design and test circuits. Why is it called a breadboard? Because they were readily available and do not conduct electricity, people actually used the wooden boards used to slice bread.

Below is an example of a simple circuit which consists of a battery, a light and an on/off switch.



note: no breadboard was harmed in the creation of this report.

Today the breadboards are made with metal channels, covered with a plastic skin. They come in three basic sizes, full, half and mini. Our HAT uses the mini format and is light blue in colour. The black base of the HAT has the power connections and a keypad. Next month we will add a pin entry circuit to this robot.