piRover Builds with K2

piRover Build Activity Rev 1.2

Resources:

Yahboom Instruction Manual

Yahboom Videos

- Build/Install 1
- Build/Install 2
- Build/Install 3

K2 Videos

- piRover - Build 1
- piRover - Build 2
- piRover - Build 3a
- piRover - Build 3b

Task:

Build the Yahboom G1 Tank robot using resources provided by both the manufacturer and the instructor. This is the major project assigned in Sprint 1 of the course and must be completed successfully to continue with future activities.

Review all resources provided and build your piRover using the steps outlined below. Be sure to capture images of your piRover as your complete build sections. These must be shared during the Scrum process reporting completed during following class sessions.

The project is graded on process and product. It's not enough just to build the piRover. You must participate in the team process, discuss, and reflect.

Prior to Build

1. Be sure that you have viewed both the "Unboxing" and the "Website Review" videos. See the links provided in this week's Moodle session.

2. Review both front and back (page 1 and page 2) of the Yahboom Instruction Manual.

3. Locate a good place to work. This is an extensive build and will take considerable time. Either find a workspace where your system, components, and tools can stay organized for the duration of the build or have storage containers and locations identified so that when your work is interrupted, the kit can be packed and stored until the next build session.

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Build 1

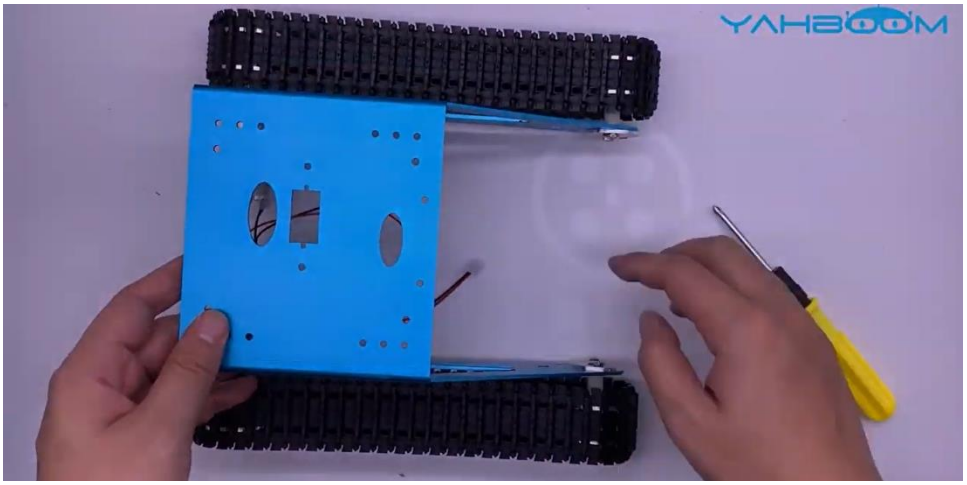
1. Review the Package List on Page 1 of the Yahboom Instruction Manual. Note that components are shown along with the required hardware (nuts, screws, spacers, etc.). Be sure to refer to this section as you complete the build. There are multiple sizes of metric screws and standoffs. The packaging often contains extra items, and it can be difficult to identify the required hardware for a specific build step.

2. View the Yahboom Build/Install 1 video.

3. View the K2 piRover - Build 1 video

4. Complete installation steps 01 through 07 shown on pages 3 and 4 of this document. Be sure you read and follow the red note at the top specifying plastic spacers to be used on wheel screws.

5. Once the build is completed, take a picture of the current piRover status. An example image is shown below.



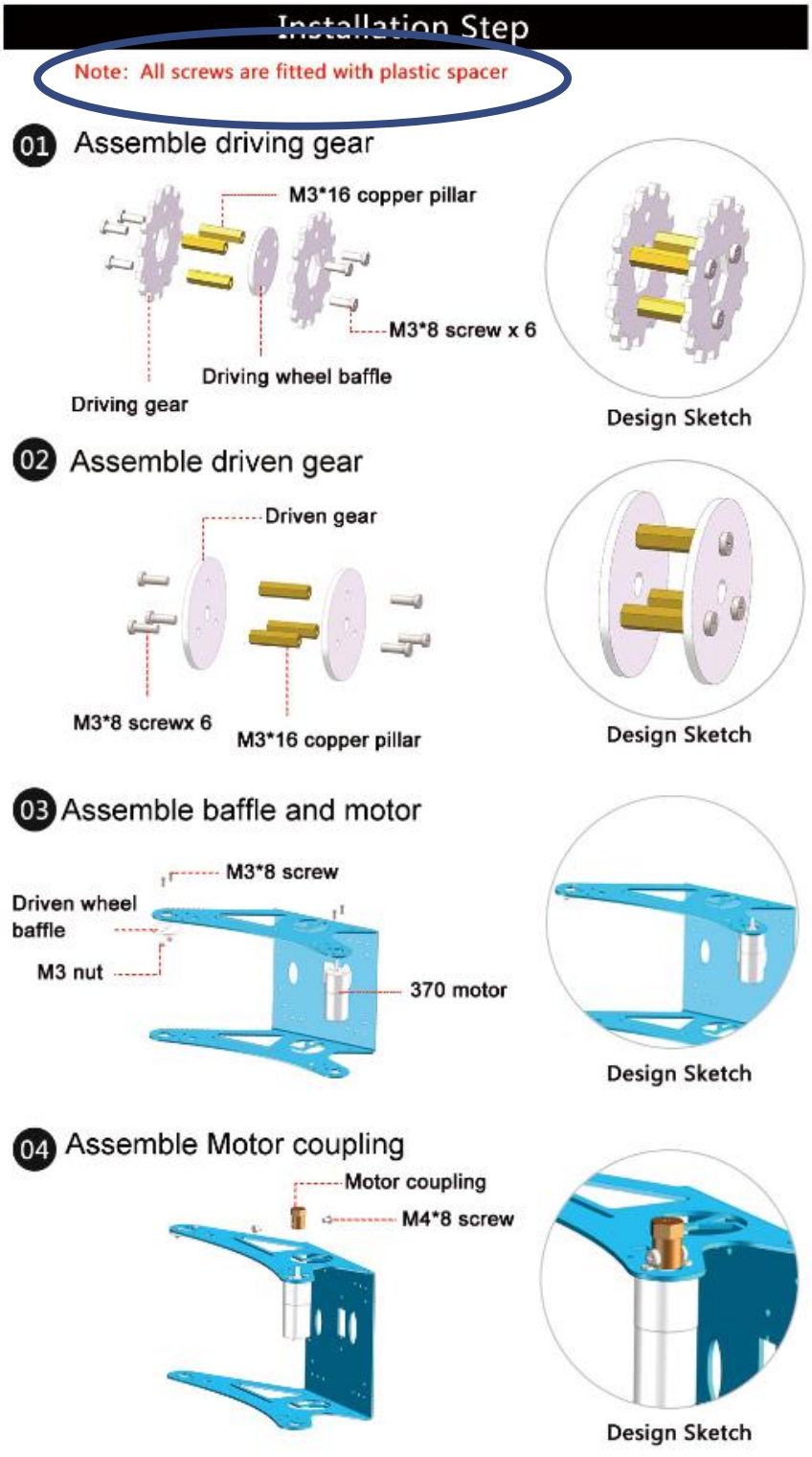
6. Locate the Build Scrum 1 assignment item in Moodle. **Post** your Build 1 image to this link prior to the assigned class session

   Build Scrum 1

7. During the class session, each member will share their Build 1 experience. Reflect on your experience, consider the following, and be prepared to share.

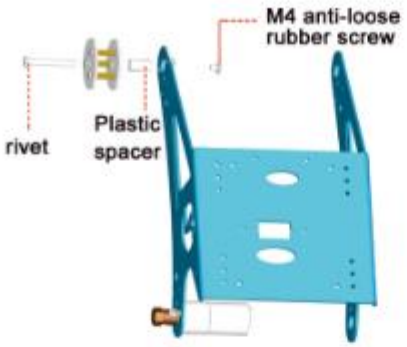
   a. Were you able to locate and use the correct parts?
   b. Were the directions clear and easy to follow?
   c. Which part or parts of the build were difficult or challenging?

d. What would you do differently next time?



4

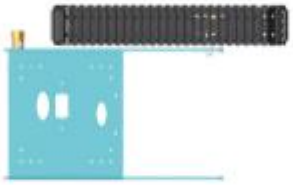
05 Assemble driven wheel



Design Sketch

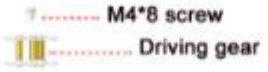
06 Assemble track

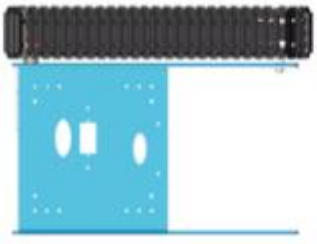
Cover the track around the driven wheel and insert the internal gear of the track into the driven wheel.



Design Sketch

07 Assemble track and driving wheel



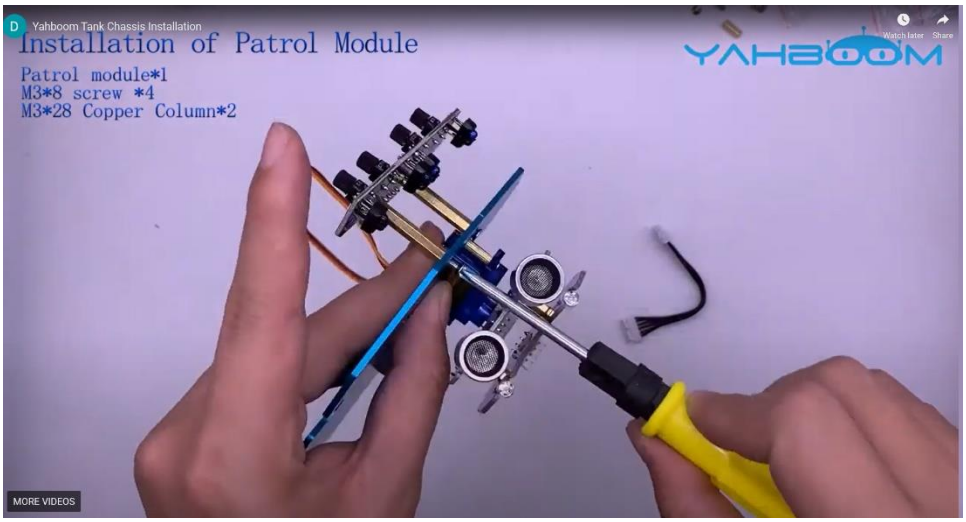


Design Sketch

piRover Builds with K2

Build 2

1. View the Yahboom Build/Install 2 video.
2. View the K2 piRover - Build 2 video
3. Review the Package List on Page 1 of the Yahboom Instruction Manual. Search kit contents and locate the parts required this build
4. Complete installation steps 08 through 10 shown on pages 6 and 7 of this document.
5. Once the build is completed, take a picture of the current piRover status. An example image is shown below.



6. Locate the Build Scrum 1 assignment item in Moodle. **Post** your Build 1 image to this link prior to the assigned class session

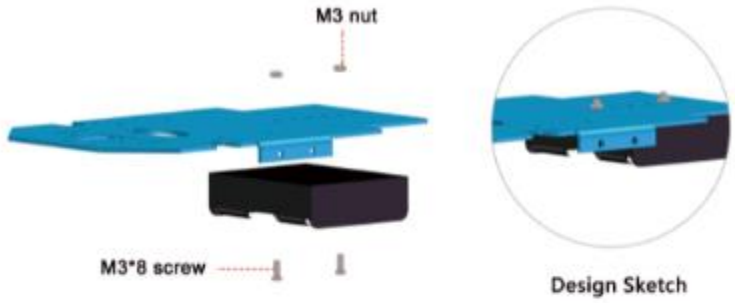
   Build Scrum 1

7. During the class session, each member will share their Build 1 experience. Reflect on your experience, consider the following, and be prepared to share.
   a. Were you able to locate and use the correct parts?
   b. Were the directions clear and easy to follow?
   c. Which part or parts of the build were difficult or challenging?
   d. What would you do differently next time?

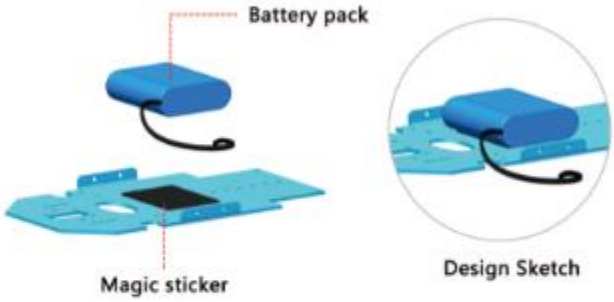
5

08 Assemble battery

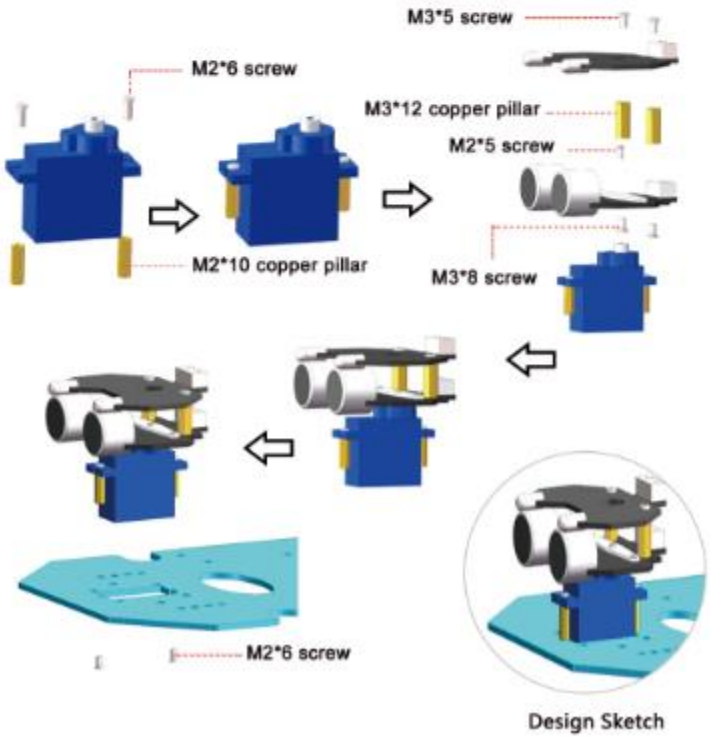
Assemble Arduino

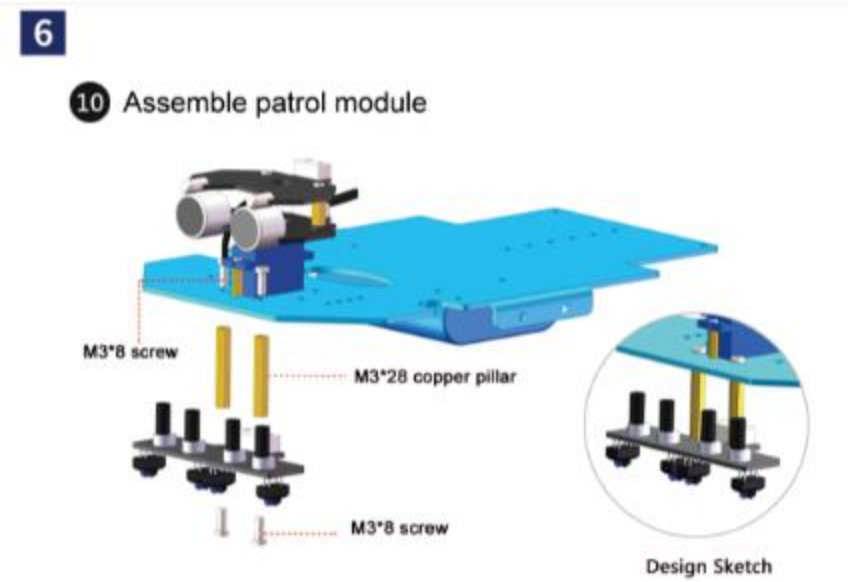


Assemble Raspberry pi



09 Assemble ultrasonic module and servo



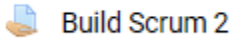


piRover Builds with K2

Build 3a

1. View the Yahboom Build/Install 3 video from the start to 5:25.
2. View the K2 piRover - Build 3a video
3. Review the Package List on Page 1 of the Yahboom Instruction Manual. Search kit contents and locate the parts required this build
4. Complete installation steps 11 through 20 shown on pages 9 through 11 of this document.
5. Once the build is completed, take a picture of the current piRover status. An example image is shown below.

6. Locate the Build Scrum 1 assignment item in Moodle. **Post** your Build 2 image to this link prior to the assigned class session

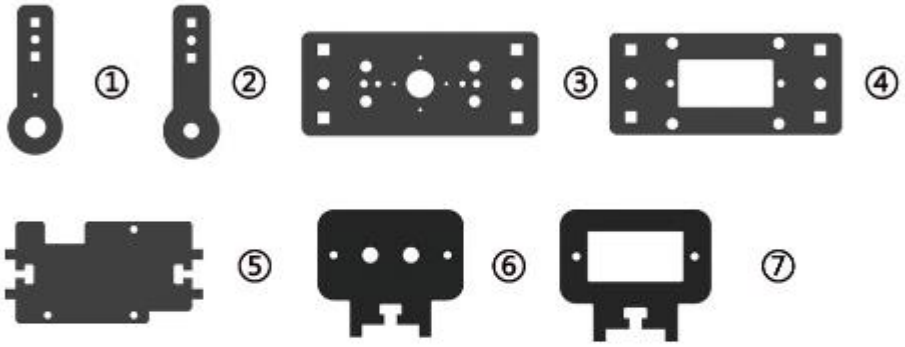


7. During the class session, each member will share their build and reflect on the experience.

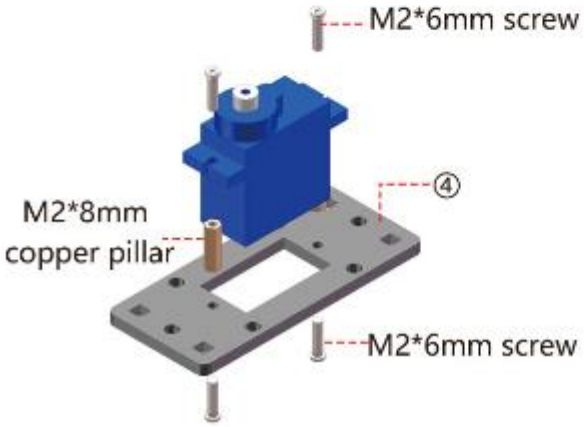
Raspberry Pi version

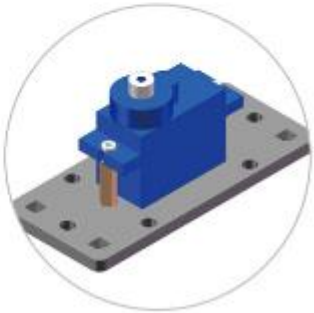
Assemble camera

Acrylic plate introduction



11 Assemble camera vertical servo

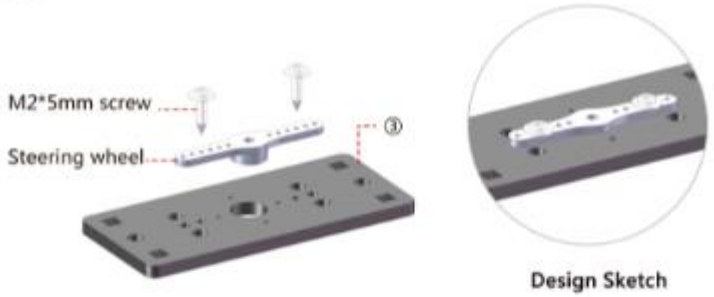




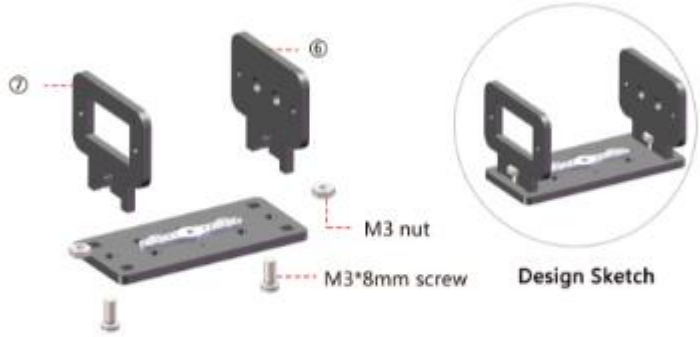
Design Sketch

8

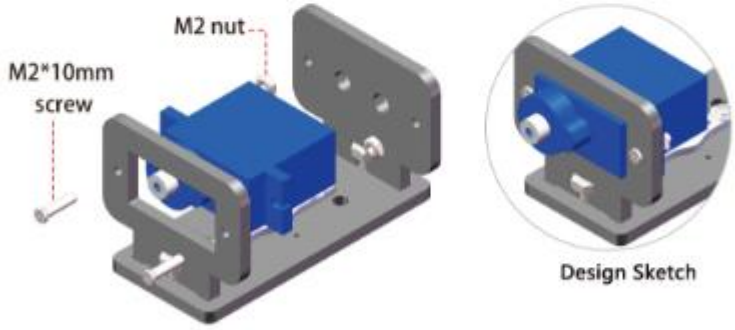
12 Assemble steering wheel for vertical servo



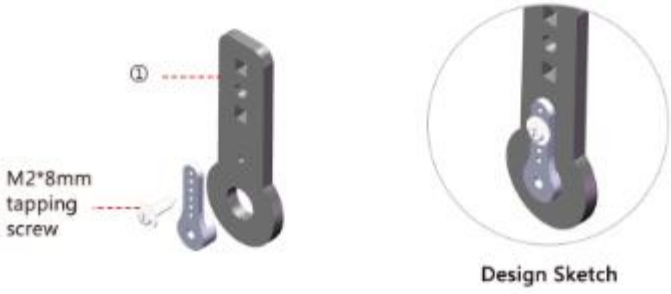
13 Assemble camera horizontal servo stand



14 Assemble camera horizontal servo



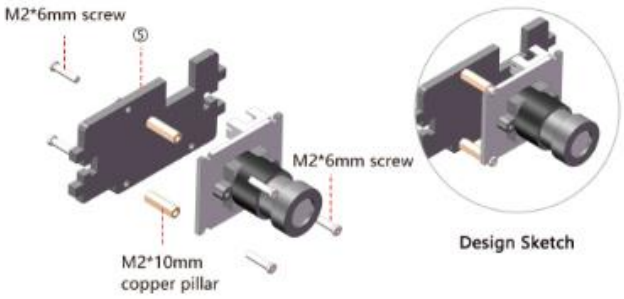
15 Assemble rotating arm



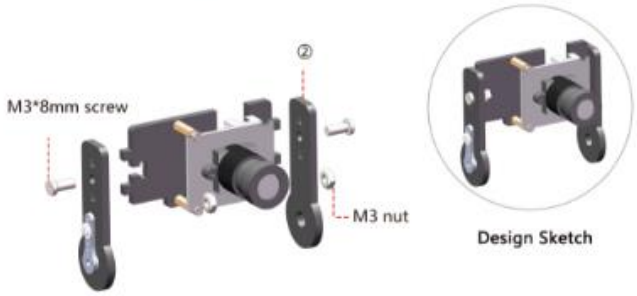
Build 3c

9

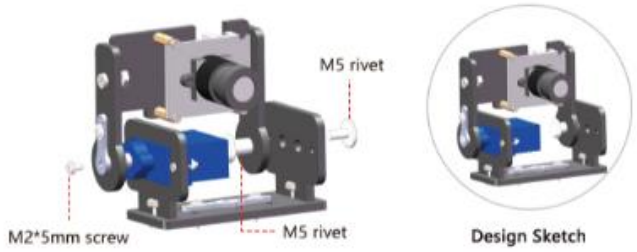
16 Assemble camera and plate



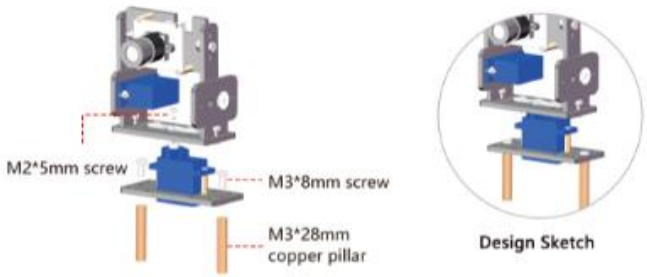
17 Assemble camera plate and rotating arm



18 Assemble horizontal servo and camera



19 Assemble copper pillar for camera platform



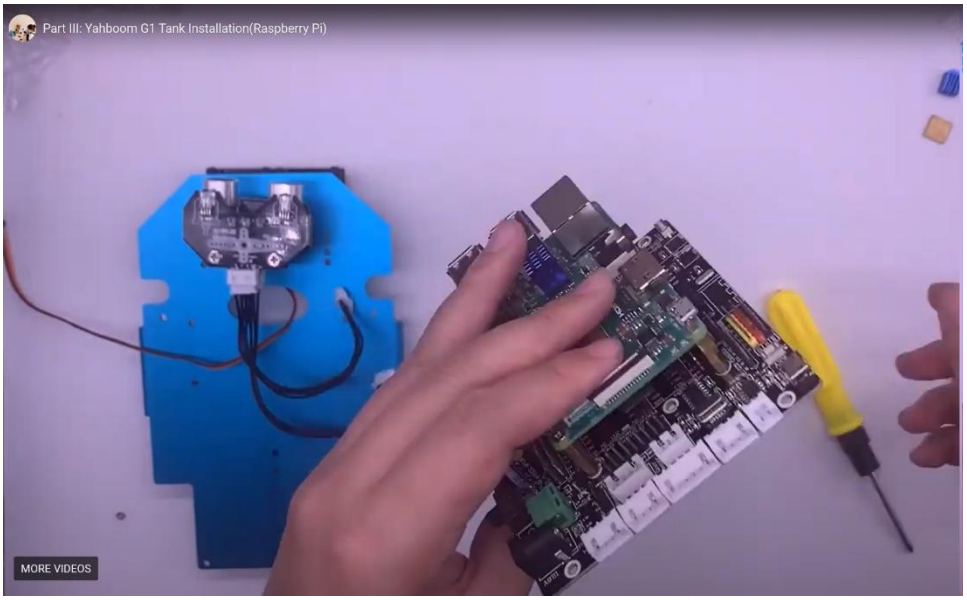
10

20 Assemble camera

piRover Builds with K2

Build 3b

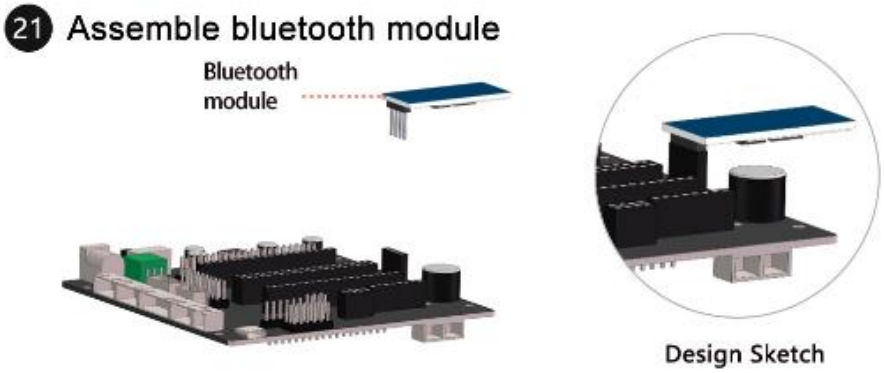
1. View the Yahboom Build/Install 3 video from the 5:25 to the end.
2. View the K2 piRover - Build 3b video
3. Review the Package List on Page 1 of the Yahboom Instruction Manual. Search kit contents and locate the parts required this build
4. Complete installation steps 21 through 25 shown on pages 9 through 11 of this document.
5. Once the build is completed, take a picture of the current piRover status. An example image is shown below.

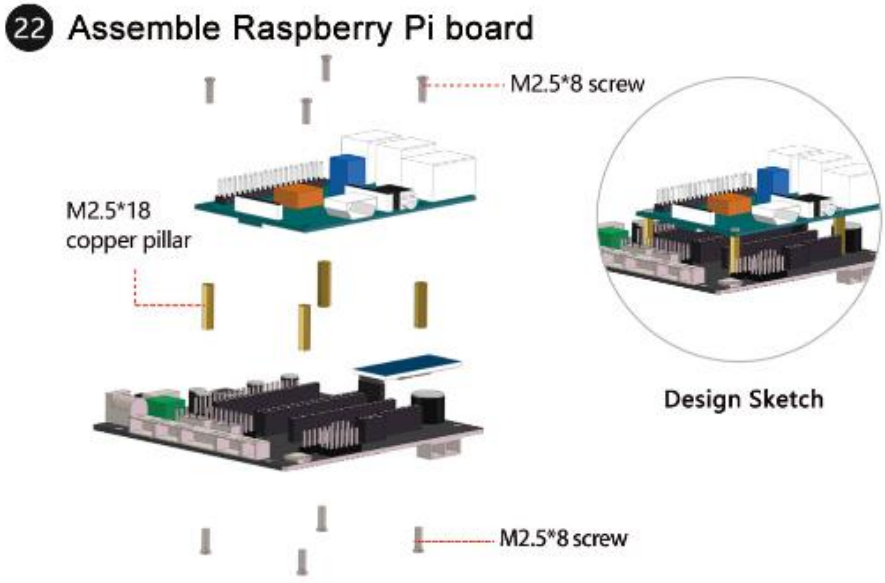


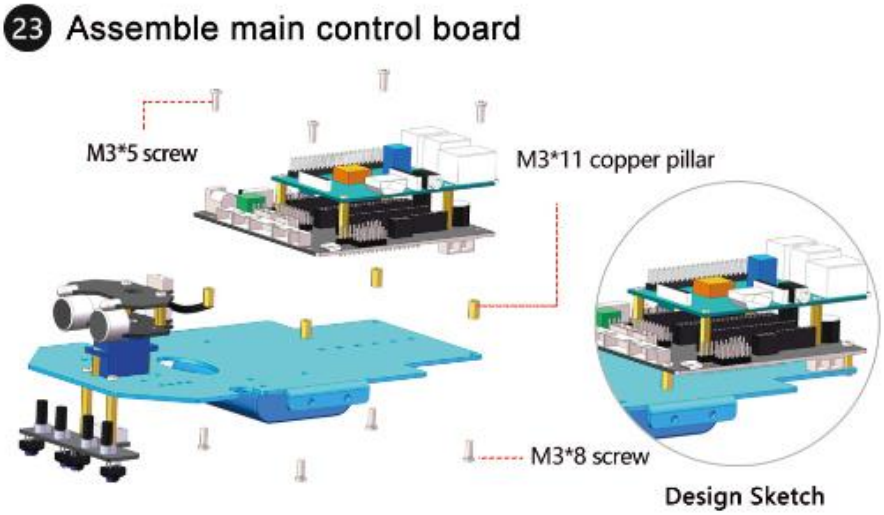
6. Locate the Build Scrum 1 assignment item in Moodle. **Post** your Build 2 image to this link prior to the assigned class session.

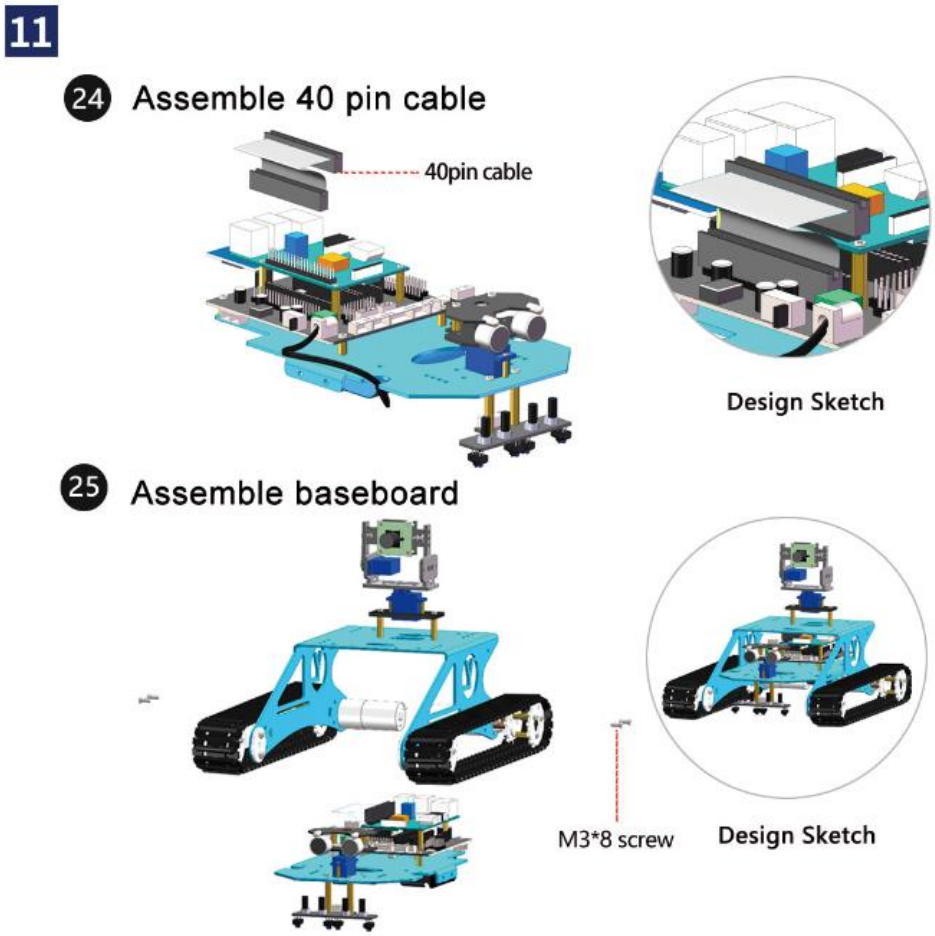
   Build Scrum 2

7. During the class session, each member will share their build and reflect on the experience.









Assessment

This build assignment is an intermediate activity. Build images are submitted and discussed during class periods. Reflection activities are also included during class time. Keep all images and documentation. These will be submitted as part of a final piRover Build document.