3. Neuron Projects

Colour for the little ones, the neuron set is provided you with 3 projects with different levels of difficulty and all sticking to the simple instruction manual.

Using the breadboard app neuron, one can learn about the different sensors and how to fit them in a project. But don't worry, these projects are designed to be simple enough to let the kids play, and learn what they can achieve.

Bill of Materials:

Quantity	Part	Description
1	XC4390	Wireless Neuron Kit

The projects are arranged from easiest to hardest, and only take a couple of minutes to set up.

Project 1: Musical Fruit

This is a simple project to get started. Use the following three modules from your neuron inventor kit:

- Power
- Funny Touch and cables
- Buzzer

and connect as shown:

The modules will magnetically clip into each other. The cables of the funny touch should also be attached, with the black wire connected to the ground pin, and the other cable attached to the bottom. If you find that the device doesn't work properly, try switching these cables around.

Find some fruit or other household items to connect to each of the coloured alligator clips, as well as the USB alligator clip. Get your friend or each of the household items and listen to the music. Try to make a fruit musical, or set a story around the fruit and its music.

Project 2: Tail Wagging Cat

This project steps up the pace a little bit with a bit of construction. Use the following 3 modules:

- Power
- Tyre sensor
- Ultrasonic and servo (with arm, shown in 2nd picture below)

Set aside for a bit of time.

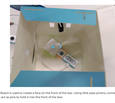
You should find in your kit a foldable box with gear layout and servo stencils for the tails and ears. You can begin constructing the box, making sure that the servo and body hole lie on these stencils.

Take one of the tabs and slide through the servo arm, so that the servo can attach to the coloured side of the tail. Slide the servo connection in the back of the box (opposite the big hole in shown)

Then attach the servo to the tail, and slide the servo to fit nicely into the hole that the cable has emerged.

then open the lid of the box, and place in the modules, connecting in order as shown:

Below is a picture showing our connections, you do not have to turn it on yet, as the tail will begin wagging.



The Neuron Board is used to create a face on the front of the box. Using little pipe pieces, connect two boards together and use the set pieces to hold it into the front of the box.

You can then use a whiteboard marker to draw a face on it. The face of the neuron boards are whiteboard marker friendly.

Ink here also attached the ears to the box, which simply sit in the little slots on the top. Do not glue them in, as they will need to be removable to connect with glued.

With the cat, ears, and face on, the robot cat is complete.

Turn the power unit on and pat the cat on the head. It should respond like this:

Project 3: Multiple Faces

This is the hardest project of the 3, but still fairly easy for the older children. It involves programming and is a great start with learning the logic behind computer and engineering systems with inputs and outputs. First step is to install the app:

Search the google play or apple stores for "Neuron"

You still need 3 modules for this project to work:

- Bluetooth module
- Power module
- Funny Touch
- LED panel

Connect in order as shown:

Make sure that the bluetooth module is to the left of the power module.

If you turn the unit on now, you will find that the LED panel lights up depending on what alligator clip touches the ground clip. We will now program using the neuron app to change what the LED panel displays.

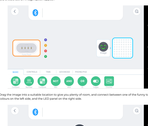
Open up the app and press "Code", then "New Project"

A pop-up will ask you to connect to the blocks (turn on the power block and press "Bluetooth connection" in the app. Hold them close together and they should connect automatically.

If the app warns you about firmware updates, it is best to do those at a low, as different versions of firmware will be compatible for more you can drag, and create a better app. You can change the app later if the blocks of course, but it is easier later.

When you are in a new neuron project, and you have your blocks connected, you should see them appear at the top of the screen.

Drag the orange funny touch to the left side, and the LED panel to the right. Then, double tap on the LED panel and you should see an image option appear.



Drag the image into a suitable location to give you plenty of room, and connect between one of the funny touch outputs on the left side, and the LED panel on the right side.

You can now press on the image to open the image editor, this will allow you to select a few different faces, or to edit your own.

Confirm the changes and make 3 more images, change the first 3 to use the 3 different face presets, and add the final one, so the image editor is make a "loop" face.

You can also use the plus sign on the left hand side, and add an image, to make a moving pattern. Click on the face icon (highlighted square) with the face on it to add a second face. Drag it into the LED panel, then click on it to make a face stage and add a heart. This will flash a given smiley and a heart on the LED Panel.

Connect all 4 faces to different pieces of the funny touch as shown:

You can now connect some objects to each of the alligator clips, and create different faces and images when you touch the LED panel. If you are very creative, try using some of the basic controls on the bottom of the screen and figure out what they do.

Congratulations.

You have just taken an exciting step in a new direction of engineering and programming. You've made a robot cat, a musical keyboard, and an interactive display. Engineers use many of these types of blocks to build bridges, programs, computers and machines. With your Neuron kit, you will be able to make all sorts of wonderful creations.

If you enjoyed these projects, please feel free to mention neuron on our facebook page so that we can make more.

Notes and errata

- Be sure to read the XC4390 manual so you get a better understanding of block connections and common mistakes.
- Training multiple Wireless CAN cause issues depending on set up, usually output blocks (Buzzer) will use the input of from closest input neighbour (orange) from the left.
- Use the Neuron Bluetooth app, not the Neuron Wi-Fi app, as the app catalog that can interface with this project. Check our "Hi Project Controller" on our project pages or on github.com/jaycarelectronics.

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