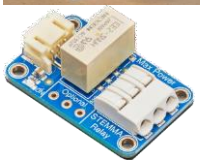
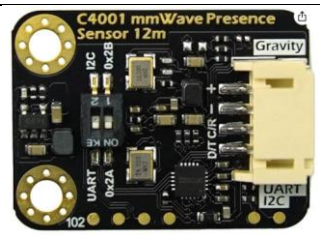
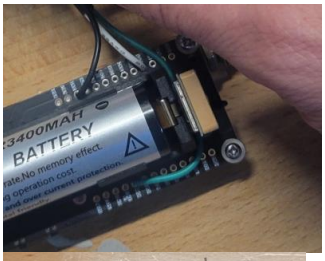
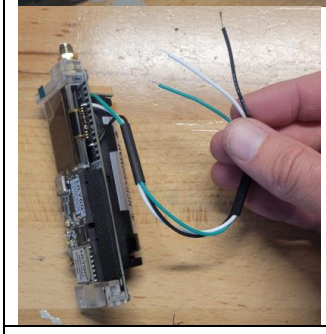
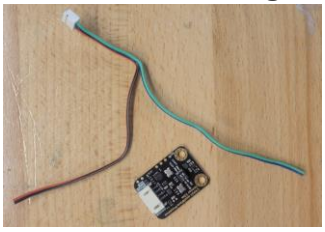
ChatterBox Proximity Sensing/Switch Node Assembly

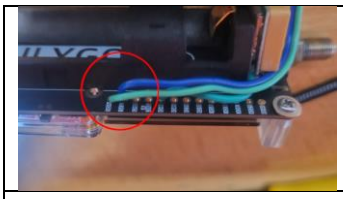
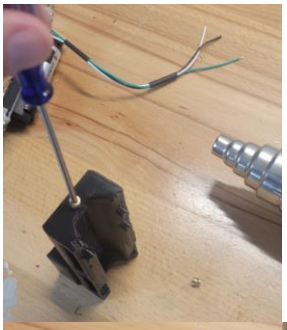
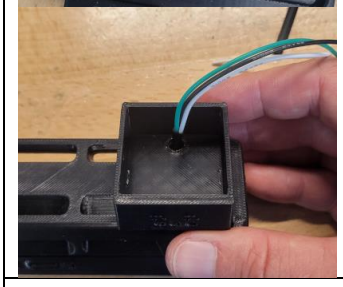
Based on Lilygo T-Beam Supreme

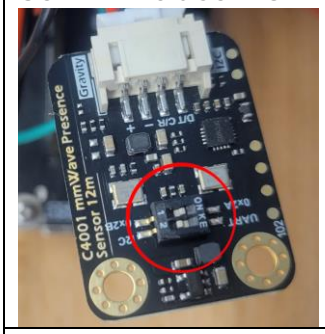
WARNING: Do not attempt unless you have a good understanding of electricity, wiring, and batteries. LiPo batteries can be dangerous and cause fires!

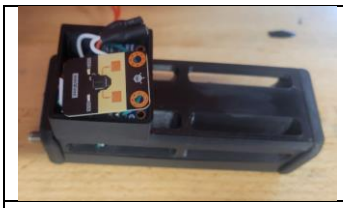
You can create a proximity sensing node by slightly modifying a T-Beam supreme. You do not have to add a relay, but the instructions below cover adding both a mmWave radar and relay.

3D Print Relay Enclosure 	This case is based on an original design from AlleyCat. I modified it to add a small enclosure for housing a relay module. **STL Files** Enclosure Back Enclosure Front Relay Cover Enclosure Buttons
Gather Components  	In order to signal the relay, the ChatterBox node sends a HIGH signal to the pin. So, in theory, any relay switch that can be signaled with a HIGH could be used. Here, I use an Adafruit non-latching relay. The T-Beam has pins to support both 5V and 3.3V, but I have only personally used the 3.3V pin. **Buy from Adafruit (unless you can find elsewhere):** Adafruit Non-Latching Relay **Amazon Buy Links**

	T-Beam Supreme DFRobot mmWave Radar SD Card Battery (18650 flat) Heat Inset Nuts M3 Screws **AliExpress Product Links:** T-Beam Supreme DFRobot mmWave Radar SD Card Battery (18650 flat) Heat Inset Nuts M3 Screws
Solder VCC/GND/Signal Wires to T-Beam  	I typically use white for voltage, black for ground, and green for signal. As shown here, you'd connect: **Green -> Pin 46** **White -> DC1 (3.3v 500mAh)** **Black -> GND**
Prepare DFRobot Wires for Soldering 	We will be using the white plug end of the DFRobot-included wires, but need to cut the black dupont adapters from the other end. You'll also want to separate the blue/green wires from the red/black, as shown in the image. **NOTE: Route the DFRobot blue/green wires *through* the relay housing** (as shown a few steps down) *before* soldering. The DFRobot white plug will be sitting in the relay housing.

	In the wires provided with the DFRobot sensor: **Green** (Data) goes to SDA **Blue** (Clock) goes to SCL
Add Heat Inserts  	Using a soldering pin with an inset adapter or a heat gun and light pressure from a screwdriver, carefully press the inserts into the T-Beam back.
Route Wires To the Relay Housing  	In addition to the 2 DFRobot wires that have been routed through the relay housing, route all relay wires through the back of the case into the housing where the relay will sit (the hollowed out square area). The image to the left only shows 3 wires, you should have 5 wires routed through here, and be left with the DFRobot's red/black wires waiting to be connected to something.
Connect VCC/GND/Signal to Relay 	You may choose to use a plug. I soldered the wires, but either way… **Green -> Sig** **White -> Vin** **Black -> Gnd**

Connect the Circuit Wires 	Here is where you choose to connect Normal Open (NO), Normally Closed (NC), or both. I'm using normally open. This is pretty self-explanatory, but if you don't know what those mean, I'm not going to explain it here (you should learn more about circuits before completing this project, or you could easily get injured or cause damage if you don't know what you're doing).
Insert the Relay Module and Route Wires 	Insert the relay module into the housing and route the circuit wires out, so you can connect them to your circuit
Set DFR to use I2C 	The DFRobot sensor has two switches. 1) Controls the device's I2C address. Leave it at 0x2A 2) Controls UART vs I2C. **Switch this to I2C**
Connect the DFRobot Power/Ground to the Relay's Power/Ground. 	Connect the DFR's 3v/Gnd wires as shown to the left. You will need to cut the relay's white and black wires, to splice them back together along with the DFR's +/Gnd. You may want to do the wiring differently than what I've done here, but essentially both the DFRobot sensor and relay will be powered from the same connections on the T-Beam. I simply twisted and soldered the wires as shown, and then slid/shrunk a heat shrink insulator over each set of wires.
Tuck the Components	Tuck the Relay and DFRobot sensor into the relay housing as shown. It will be a tight fit.

	
Attach Relay Housing Cover 	
Complete "Node" Setup	The rest of the setup is essentially the same as a GPS Node / T-Beam Supreme node, starting with the *insert SD card* step.
Test your Remote Switch 	Once your swich/node is onboarded, use any Communicator to test flipping the remote switch. **The Node/Remote Switch** * Power on your node/switch and wait for it to initialize. * Attach the switch wires to a simple circuit, such as a continuity tester that beeps or otherwise indicates whether a circuit is open or closed. **Any Communicator** Within a few minutes of being onboarded to your cluster, communicators should start to become aware of this new node, and should show it (on the devices screen) as a motion sensor. * Go to the Devices screen and select this device * Open the commands menu, by touching the game controller button * Scroll to the *Switch 5 Sec* item, and choose it Within a couple of seconds, you should see the switch opened or closed for 5 seconds, depending on how you wired it. You can also use the *Last Motion* command to test whether the sensor is working. If you are anywhere near the node, you should get a response of a time near the current time.