Step 1: Make the legs
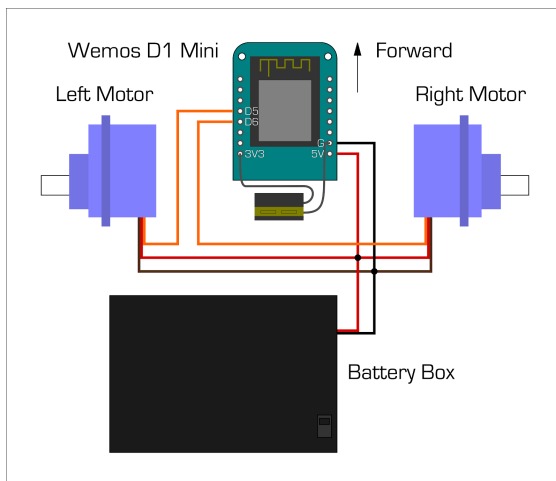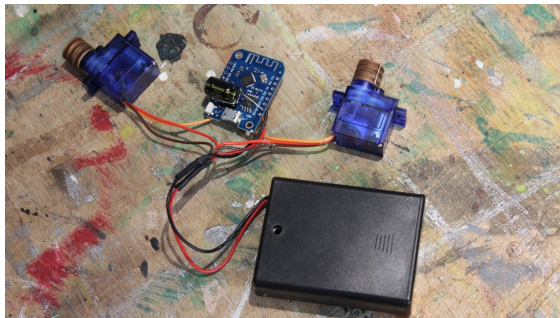
Assemble the strandbeest kit, according to their instructions, into two identical sections each containing 6 legs. You will not need to add the gears or the windmill blades for this kit.

Step 2: Wire the electronics

Cut the motor wires down to half the size, the vehicle is small and you don't need the connectors. Cut the battery wires in half too but keep the off cut.

Bend the wires of the capacitor, fold the long leg right back against the capacitor and put a little bend in the end. Add a small curve to the negative leg.

Solder the long leg into the '3V3' hole on the Wemos D1. Solder the negative leg of the capacitor and the black offcut wire into the hole marked 'G'.

Solder the red offcut wire into the hole marked 5V, these black and red wires will provide power to the Wemos board.

Connect the orange wire from the left motor and solder it into 'D5' on the wemos board, connect the orange wire from the right motor into 'D6' on the wemos board.

Finally connect all three black and red wires together, and solder those to the battery box wires. Cover the join with the heat shrink tubing provided.
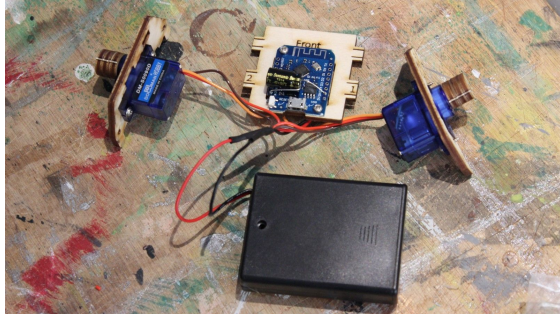
Step 3: Assembling the motor unit

Screw the Wemos D1 onto the small bar using the M2x6mm screws.

Screw the motors onto the motor plates using the flanged self tapping screws.

Screw the hubs onto the motor shafts using the tiny No2 gauge screws.
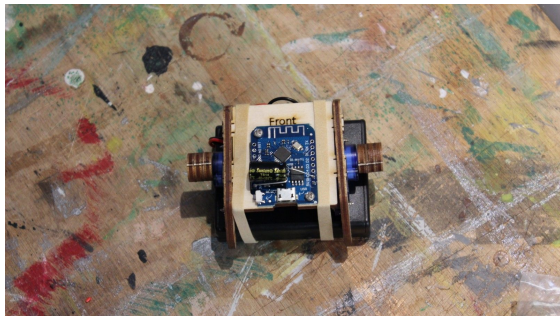

Step 4: Add metal bars

Use the two long metal bars from the strandbeest kit to hold the motor panels in place. This is a friction fit and should be tight on the bar. They may need some gentle persuasion.

Once the two mounts are close enough to each other, fit the control board in between the mounts and slides the sides up tight to hold it in place.

Use the two rubber bands to wrap around the motor unit and secure the battery box into place underneath. The bands should avoid the power switch on the box.
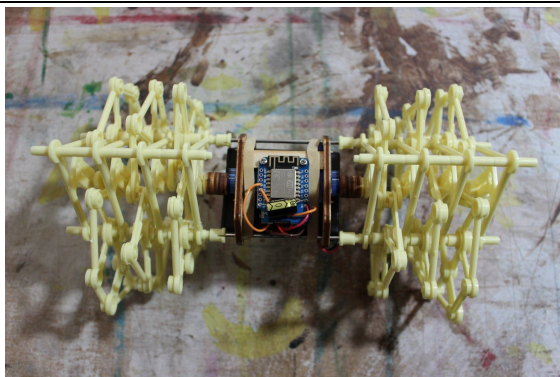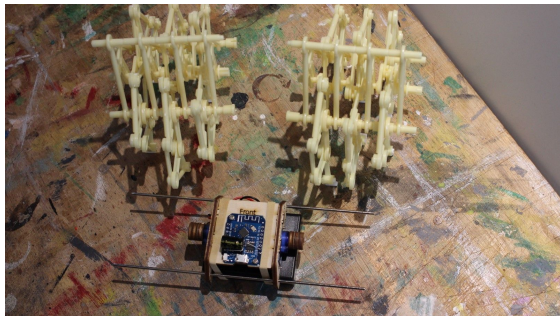
Step 6: Fit the motor unit to the legs

The two metal bars from the motor unit should now slide into the strandbeest legs. Take care to align the motor hubs with the strandbeest camshaft when closing it all up.
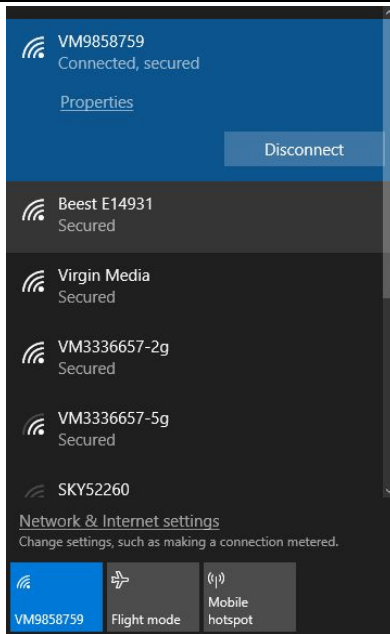
Step 7: Connect to the WiFi

Once powered up the ESP8266 device will start it's own WiFi access point. Connect to the kit using your mobile device. The default password is 'password' the SSID should be "Beest xxxxxx"

Once connected the device should hijack your browser and steer you to the correct page but if it doesn't, open your browser and navigate to 'http://beest.local/'. This page will present you with a joystick control to drive the vehicle.

If your device is unable to resolve the DNS name for the strandbeest you can go direct to the IP address 'http://192.168.4.1/'
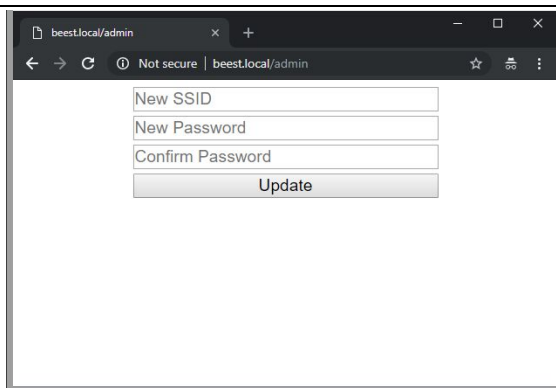
Step 8: Changing the WiFi

It is possible to change the WiFi name and password of the device and it is recommended to do so ('password' is a terrible password).

Navigate the browser to 'http://beest.local/admin/' and you will be presented with a page that allows you to change the SSID and the password.
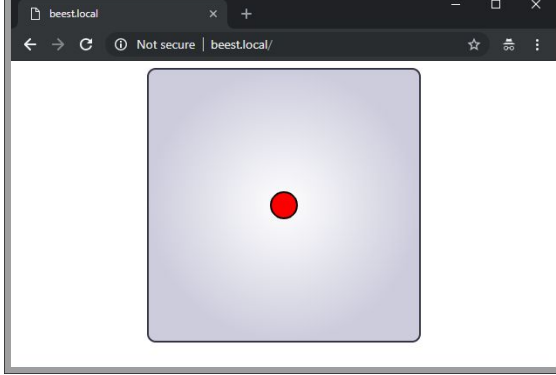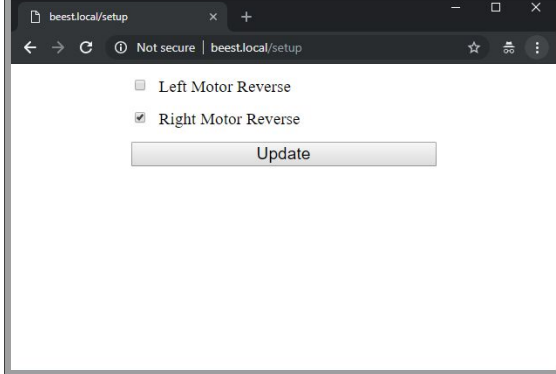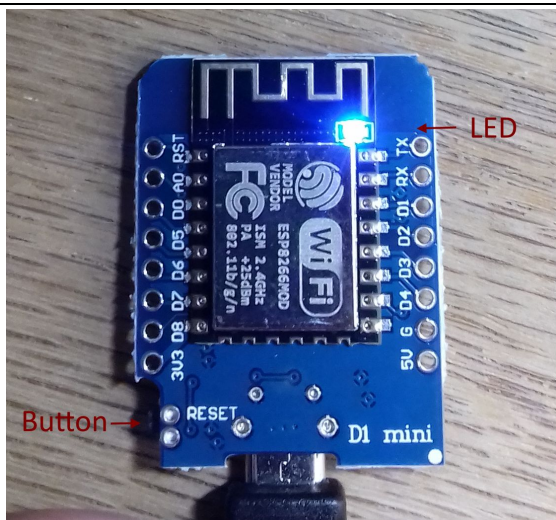

Step 9: Reset the WiFi values

If you ever forget the WiFi details it is possible to connect to the device without knowing them. There is a blue LED on the ESP device which flashes for 2 seconds upon start up. If you push the reset button, or cycle the power while this LED is lit the strandbeest will create a new network with the name 'AP Config'. This network is unsecured allow you access to the admin page without any password.

If you restart the device normally it will return to the stored SSID and password (or any new one that you set)

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Step 10: **Driving the strandbeest**

The main page for the strandbeest is a simple joystick control. The red dot represents the position of the joystick and this can be dragged around on a touch screen or by mouse. Simply move the joystick upwards and the strandbeest will drive forward.

Step 11: **Adjusting the strandbeest**

There is a chance that the strandbeest will not drive forwards immediately, it appears some of the motors are wired in the wrong direction. If this occurs on your device then simply visit 'http://beest.local/setup'.

The checkboxes will allow you to reverse the direction each of the motors can turn in. The changes will not take effect until you press the update button.