Preliminary Configuration of the Electronic Parts

Parts needed

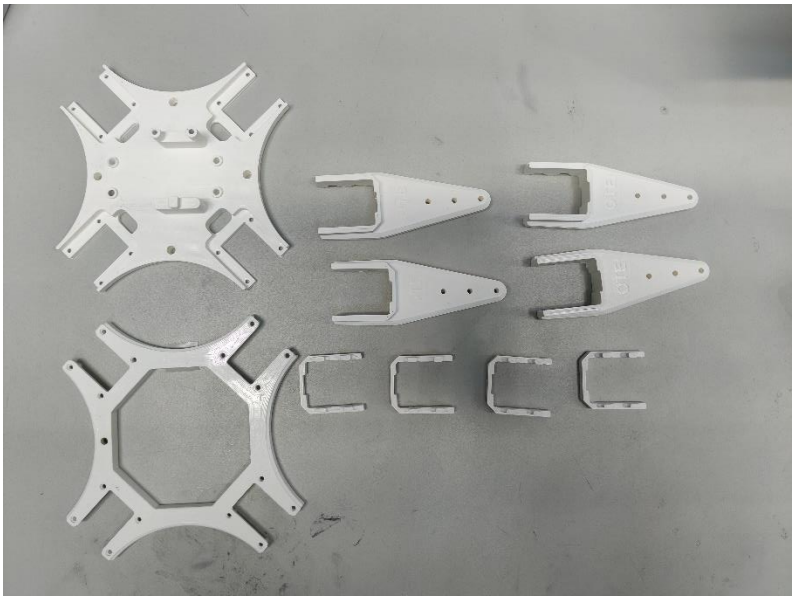
1.

Step 1 Configuring the Actuators - The actuators need to be set up so that they have IDs ranging from 1 to 8 and no set limits. This can be done through...

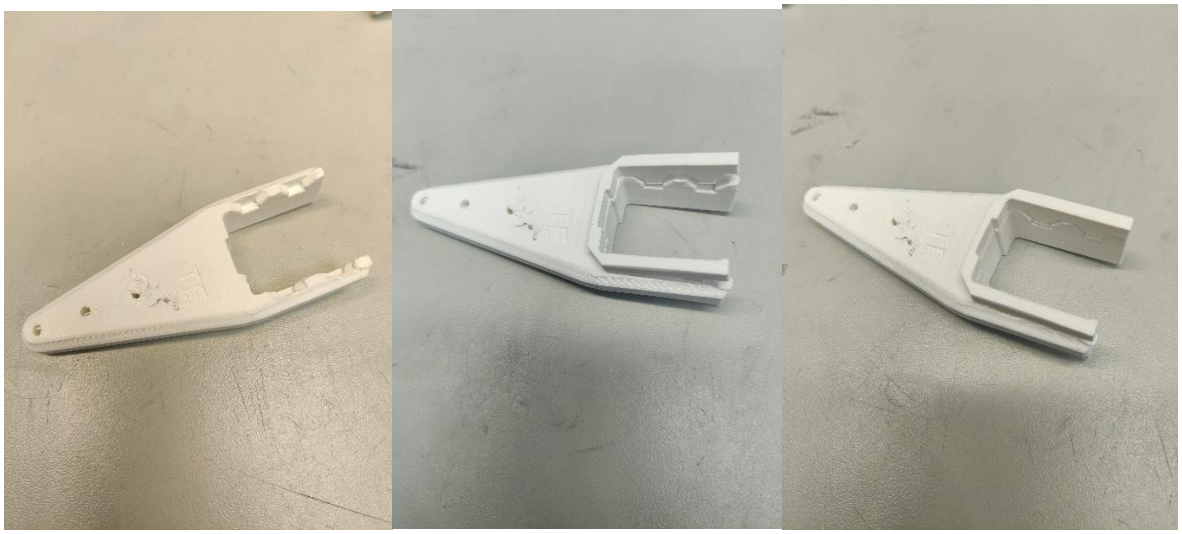
Step 1 Configuring OpenCM board - Install Arduino and setup Robotis OpenCM9.04 board support, and then upload the OpenCM9.04 firmware from ant11_cmd_dxl folder.

Construction

Parts needed

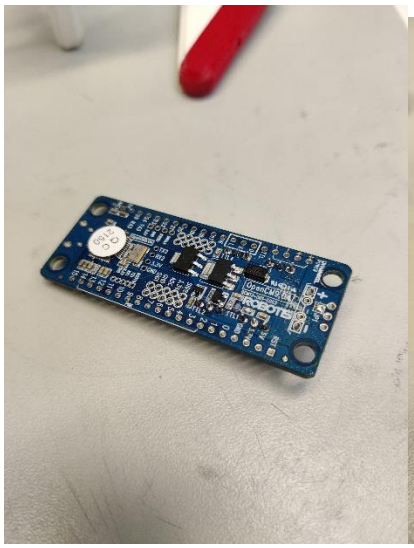
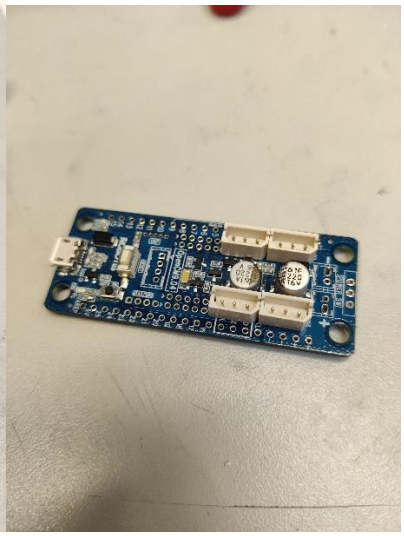


Step 1 Priming the Legs - The leg spacers need to be attached to the legs. To do this you may need to sand down the grooves in the leg and use a mallet to push the spacer into place. Don't apply too much force however as it may break the print. A smooth connection between the two needs to be ensured so that there is enough space to slide onto the actuator. This is done for all 4 legs.

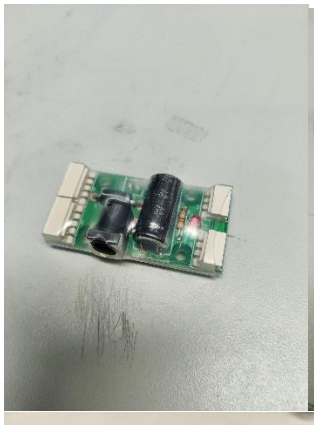
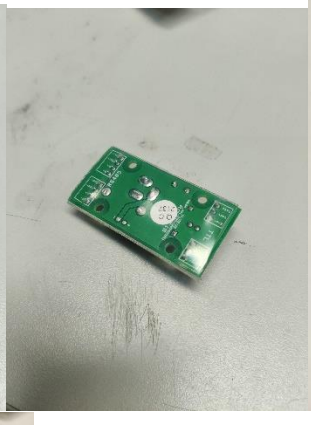


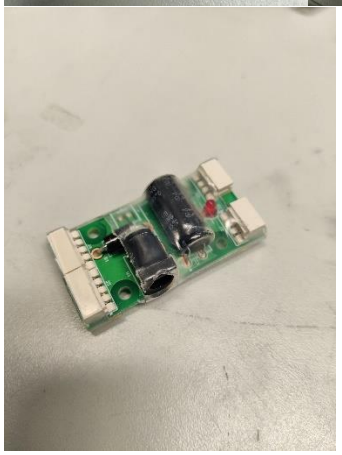
Step 1.1 (Optional) Fixing the soft parts - If you have opted for the soft legs, this is where the attachments are fitted on.

Step 2 Priming the OpenCM Board - Solder on the TTL headers onto the OpenCM Board.

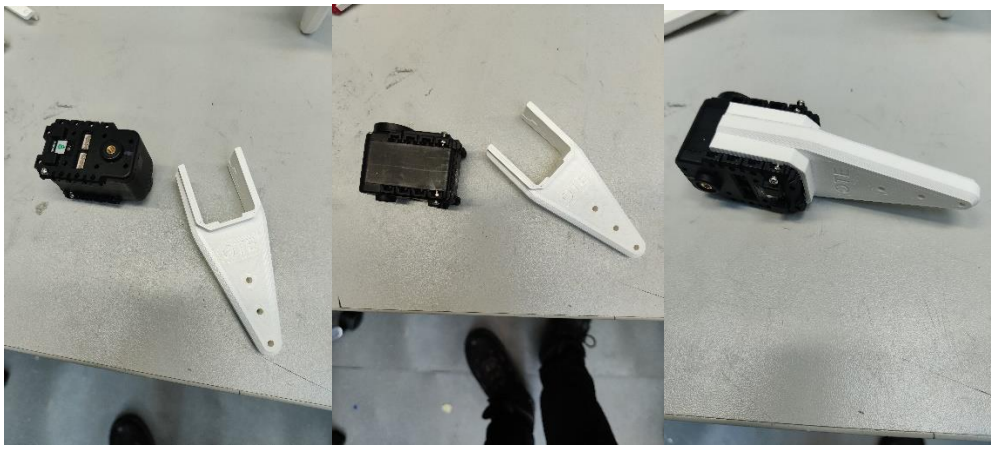



Step 2 Priming the SMPS2Dynamixel Board



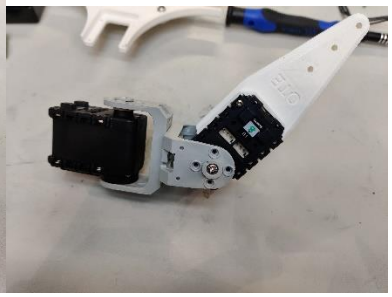
Step 3 Attaching the Legs to the Actuators - The legs are attached to the actuators through friction. The legs should slide onto the actuators with a bit of force. If the grip seems too loose then screws can be used to add more friction. This is done for all 4 legs.



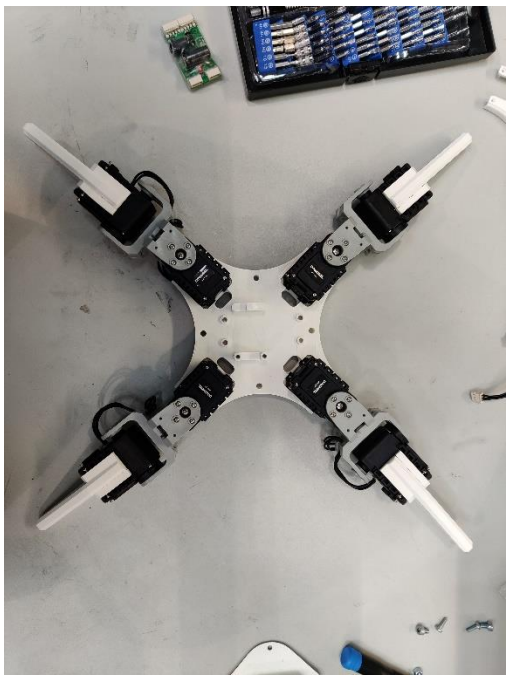
Step 4 Connecting the Support Frames - Support frames are provided with the AX12's, along with screws. These first need to be connected together with screws and bolts, 4 for each 2 supports for 1 leg. 16 screws and bolts are used overall for each leg.

Step 5 Final Construction of the Leg - Next the support frames are connector to the actuators, this is done once again with screws. Each connection requires 1 bigger screw and washer one one side and 4 smaller screws on the other. This is done for all 4 legs.

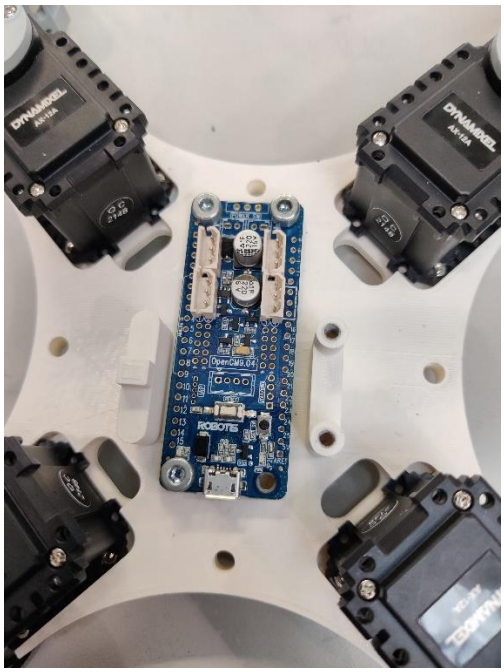




Step 6 Fit the Bottom Plate - The bottom plate is fitted by simply by screwing it in the top actuators with screws provided by AX12's.

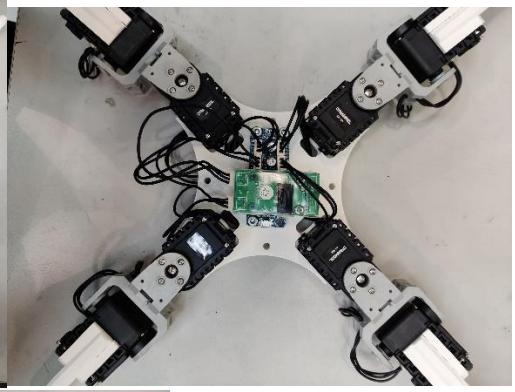
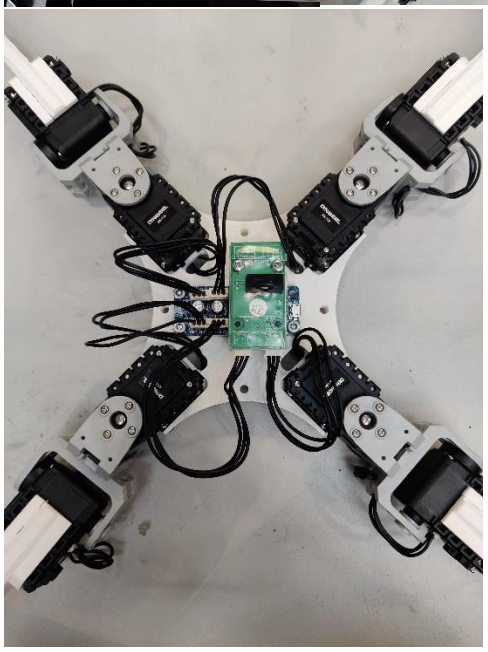


Step 7 Fit the OpenCM Board - The OpenCM board is fitted with 4 10mm M4 screws. To screw the board in a bit of force is required to drill into the 3D printed holes.

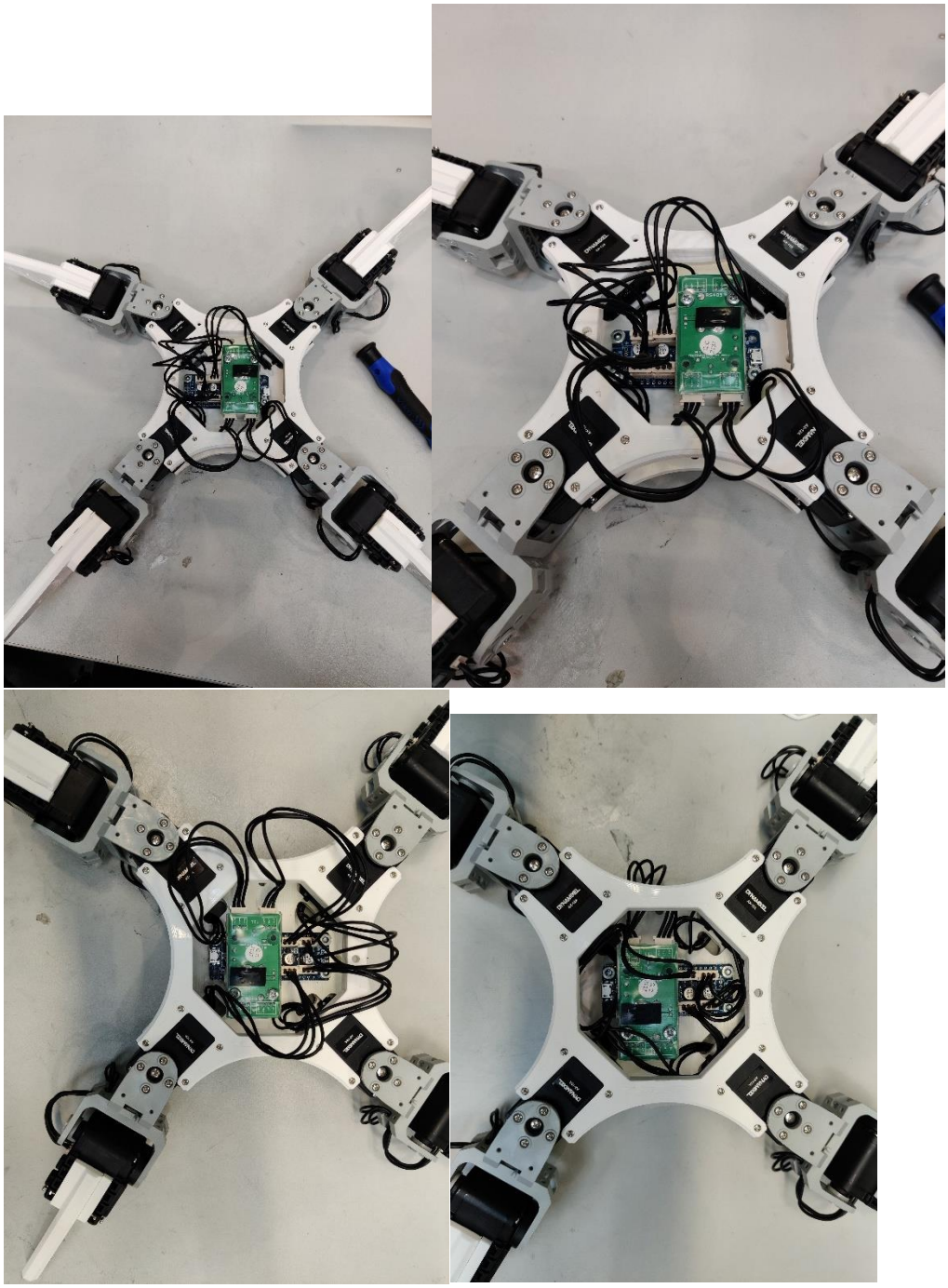


Step 8 Fit the SMPS2Dynamixel Board - Next the SMPS2Dynamixel Board is fitted on top. Ensure it is facing the right direction and has the right orientation. Screw it in with 2 10mm M3 screws, it may require a bit of force to drill the screws into the drill holes.

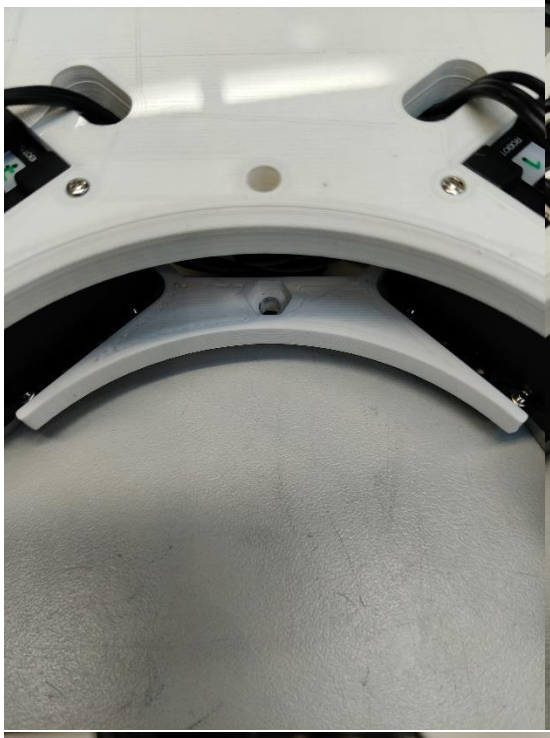
Step 10 Wire up the Robot - Now the main structure is made, the wires can be connected in a neat orderly fashion. The Dynamixel AX-12A's are linked in a daisy chain fashion, it does not matter with port is used. One cable needs to be connected from the SMPS2Dynamixel board to the OpenCM Board, again it does not matter which port is used. Another cable is connected from the SMPS2Dynamixel board to an actuator (does not matter which as long as it is one at the top of the leg) and then all other top leg actuators are connected to the OpenCM board.

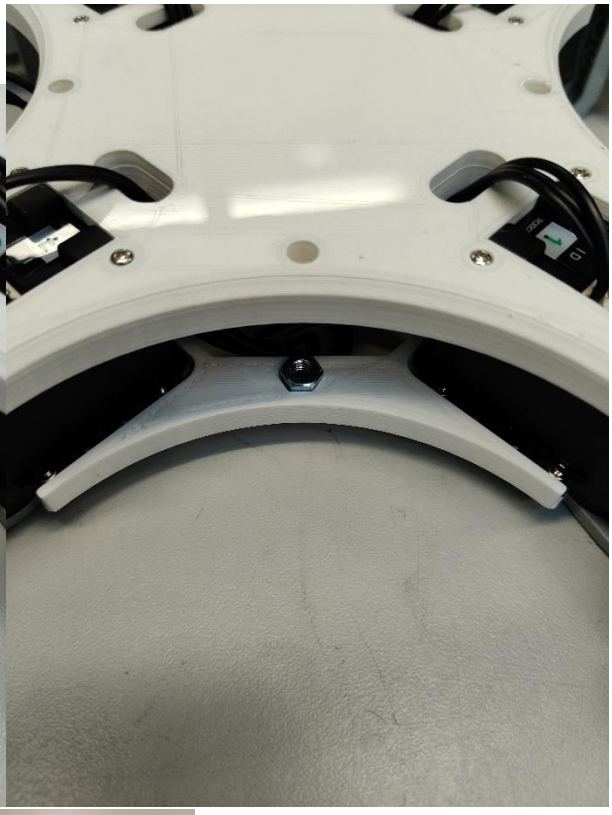




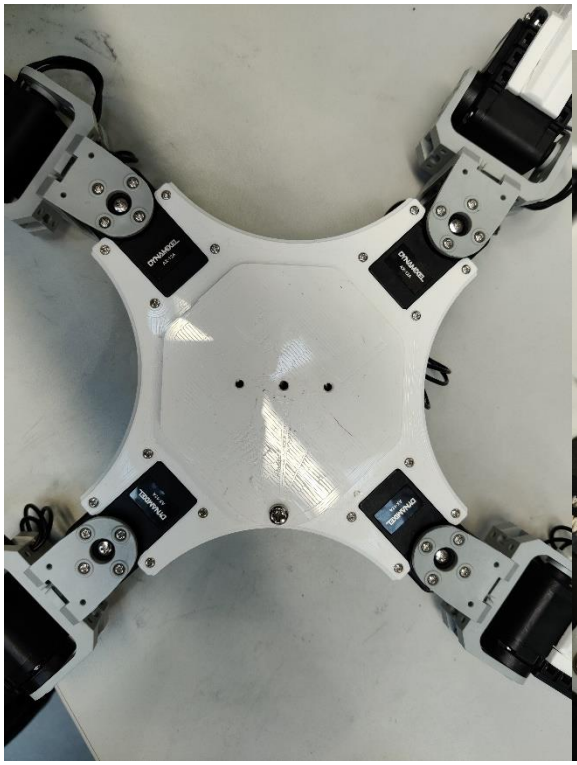
Step 9 Fit the Top Plate - The top plate is fitted by simply by screwing it in the top actuators with screws provided by AX12's.



Step 11 (Optional) Adding the Lid - The lid can be added by screwing it in with a 1 10 mm M4 screw and a M4 Nut.








Step 12 (Optional) Adding the Stand - The stand can be added using a 10 mm M3 screw, some force may be required to drill into the screw hole.