POLITECNICO DI MILANO

Robotics and Design/ Design and Robotics course

Maintenance Manual

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HATO MAINTENANCE

There are some good precautions that can be adopted in order to preserve Hato in good working conditions:

- First of all, you have to preserve it in a range of temperatures from 6 celsius degrees to 45 celsius degrees.
- It's highly discouraged to put Hato close to heat sources.
- Since there can be parts that can accidentally be damaged by children or hurt children, always use Hato with the supervision of an adult.

Hato is provided of some removable components, to remove any of this parts, first remove carefully the fabric structure, remember the type of screw you have removed to put it in the same place and then follow the next instructions:

- One sound sensor Youmile: detach carefully the cables and remember that the part with the '+' is the upside part, then use a flat-blade screwdriver to remove the screw and a wrench to hold the bolt.
- One Innovate King-EU speaker for Arduino: detach carefully the cables and remember that the part with the '+' is the upside part, then use a

Phillips screwdriver to remove the screws.

- Two red led matrices AZDelivery MAX7219 8x8: detach carefully the cables and remember that the part with the '+' is the upside part, then use an hex key to remove the screws and a wrench to hold the bolt.
- Two Li-ion 18650 batteries, powered with 3.7 V each and power of 3400 mAh: you can easily remove them by free hand.

ISSUES SOLVING

If one or more components don't work as they should, to correctly remove them first remove the component's wires and then remove the screws. The only exception is for batteries who don't have any wire, so simply remove them, paying attention not to damage them and keep them in a safe place far from heat sources.
For the screws removal you should:

1. Use a screwdriver to remove this type of screw and then remove the component.
2. Positionate the new component in that side of the structure.
3. Re-attach the wires.
4. Put the batteries inside the case, switch on the robot and ensure that everything works fine.

If you have a recharger for the Li-Ion 18650 batteries you can easily recharge them and replace them. In the case in which the batteries don't work, substitute them by pulling the tab and place a new pair of Li-ion 18650 batteries, powered with 3.7 V each (with a power of at least 3000 mAh). Subsequently, as before, check that everything works properly.