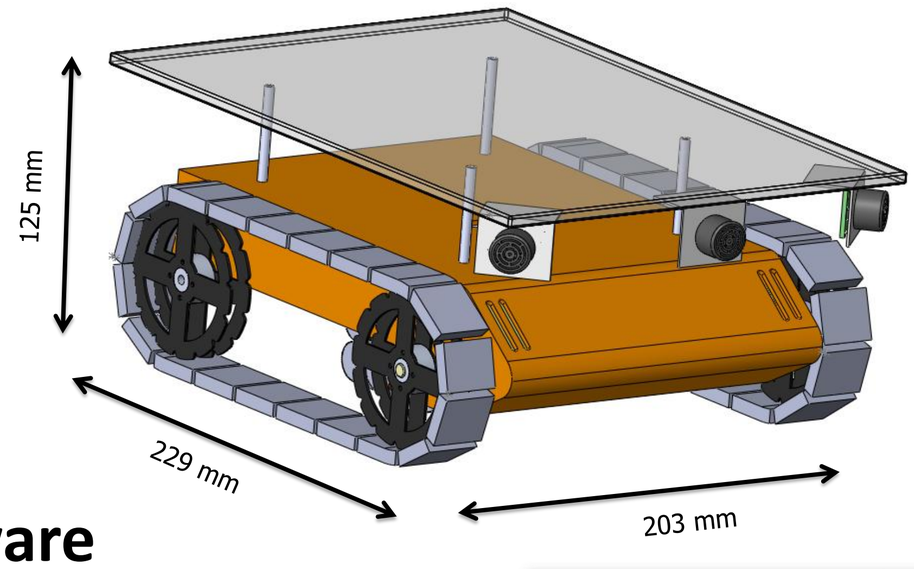
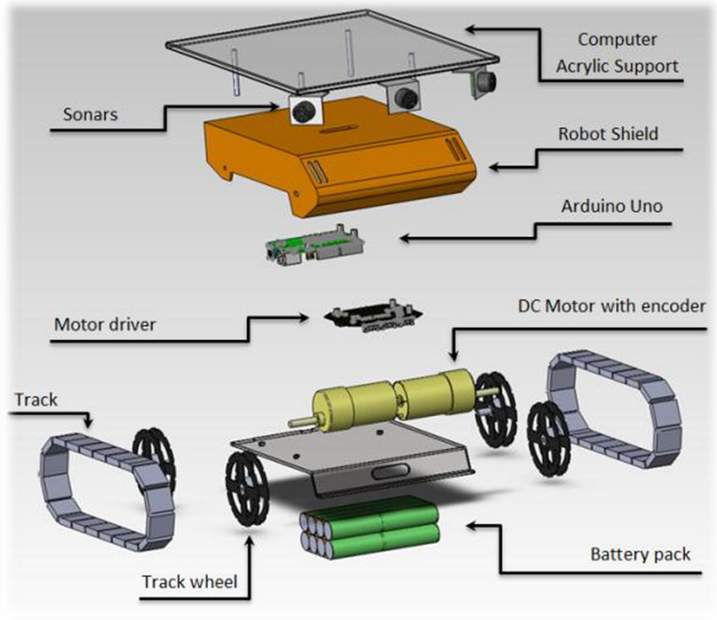
TraxBot

Assembling and Programming of a Mobile Robot Platform



Hardware

TraxBot is a differential compact mobile platform, equipped with two powerful DC gearhead motors, which grants a large amount of traction to the tracks, with high resolution quadrature encoders. On the top of the platform there is an acrylic support for a 10'' netbook or other sensors extensions. TraxBot is powered by a 12V battery pack at 4600mAh under the chassis.

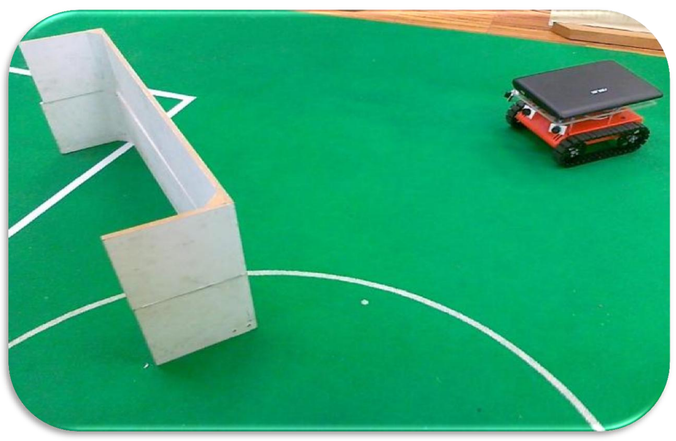


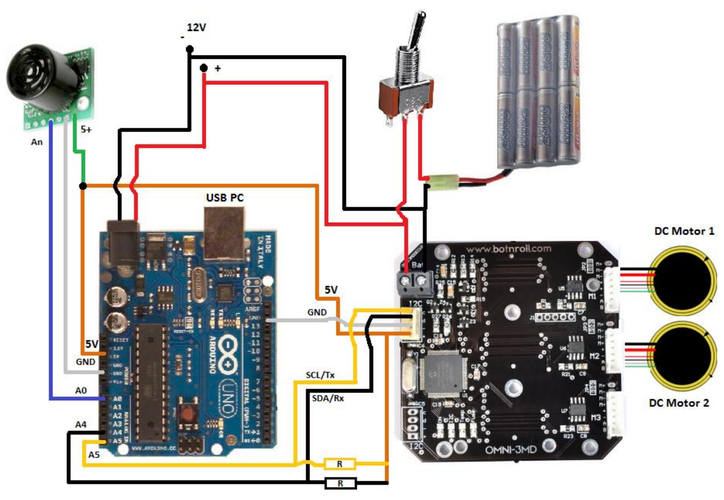
Processing

Hybrid design, works with an Arduino UNO board equipped with an Atmega 328 microcontroller. For more demanding processing, a notebook with 1.66Ghz can also be used.

Sensing

Capable of point to point reactive navigation, equipped with three precise ultrasonic range sensors, with a maximum range of 6 meters.





Main System

The internal processing unit consists of an Arduino Uno, which monitors the sonars input data and controls output platform's motion, through the use of the Bot'n Roll OMNI-3MD board driver.

Highlights

- Low Cost;
- Compact, robust with aluminium and stainless steel body;
- Ability to maneuver in different terrain and surface topographies;
- Rubber tracks with full powerful traction;
- Hybrid design with internal or external processing unit;
- ZigBee and WiFi 802.11 b/g/n wireless connection;
- High resolution encoders;
- Accurate ultrasonic obstacles sensing;
- Flexibility for new extensions and components;
- 2 to 3 hours autonomy.

Future Work

- ROS: Robotic Operating System integration;
- Multi robot system interaction (*e.g.*, swarm foraging, patrol tasks);
- Navigation and map construction using Kinect;

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