

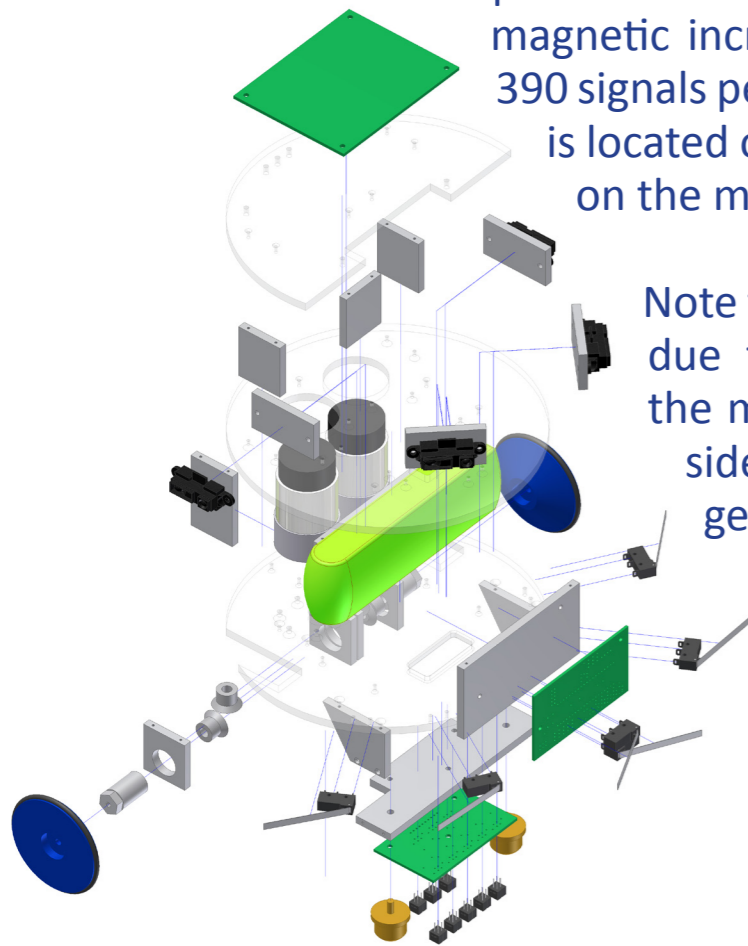
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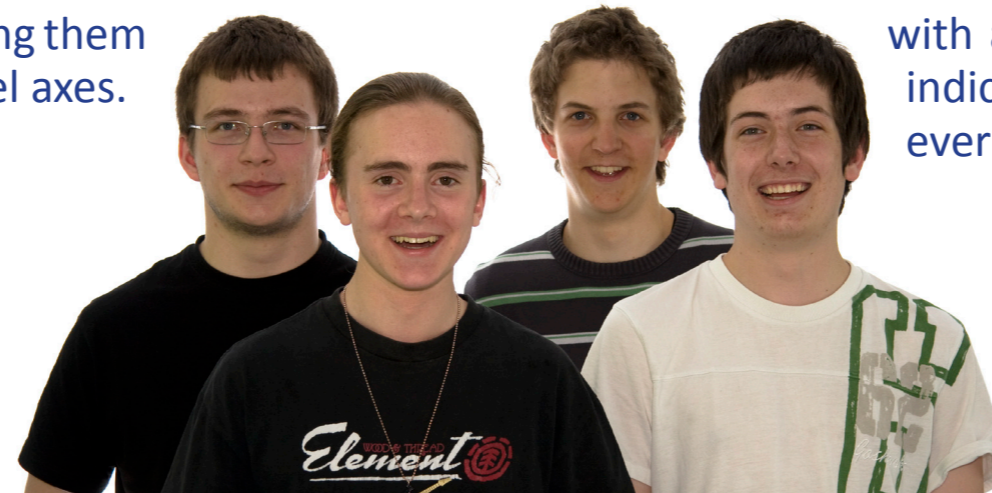
Construction and Design

The robot was first designed completely as a computer model, from which we generated the plans for the custom parts.

Our robot features a high power Lithium Polymere rechargeable battery, two powerful RB35 motors with precise encoders. Each magnetic incremental position encoder produces 390 signals per rotation. The main controller board is located on top of the robot, the slave board is on the middle platform.



Note the unique positioning of the motors: due to the space regulation necessities the motors had to be placed vertically inside the robot, with bevel gears connecting them to the wheel axes.



Electronics and Programming

The robot is controlled by an ATMEL microcontroller. Another controller module is connected to the main board via I2C. The second controller collects data from the lucidity sensors and pressure switches and sends the results to the main board.

To navigate precisely on the field, the robot features five infrared distance sensors, which are directly connected to the main board. The main board registers and analyzes all signals of the position encoders to get an exact image of how far each motor has turned. Along with that, the slave board and lucidity sensors are being used to follow the ground line and find victims.

Additionally, the six pressure switches would register any collision with an obstacle. Four LED indicators will flash whenever a victim is found.

