Batoru Shitī: The Tank Game

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Project website: https://bitbucket.org/rasmus_soome/batoru_shiti_public/

The Game

Tanks (each with 30 lives/health points) enter the battlefield with a mission to blow up the opponent. Each tank has a cannon (laser) to aim and hit enemy's hitboxes until he or she is out of lives.

Tanks will have two sensors: front and back. It's a well-known fact that tanks have a stronger armor in front. Therefore the front sensor has a maximum damage value of 5 and the sensor at the back has a maximum damage value of 10. It should make the game more fun and challenging. Damage values are not static. Instead, they are generated per hit basis. For example, the sensor detects a hit and generates a random value with normal distribution in the range from 0 to 5.

The round will continue until only one tank has health left. Once the tank has run out lives, it stops, does a 720-degree turn to signal defeat and disables itself.

The Tank

Each tank is composed of a raspberry pi, gopigo platform, an arduino, a laser cannon, a servo controlling the position of the cannon, lasers for shooting the opponents' hitboxes and light sensors covered by red ping-pong balls acting as hitboxes.

The server

Game is coordinated by a central server, which keeps track of how much health each of the robots have and notifies the robots when they are out of health.

Software

Most of the software is written in Python(yet, some C for programming the arduino and a little bit of shell scripting to set the robot up).

The approach taken while programming the robot is to keep different functionalities in different modules so adding/swapping functionality would be as easy as possible.
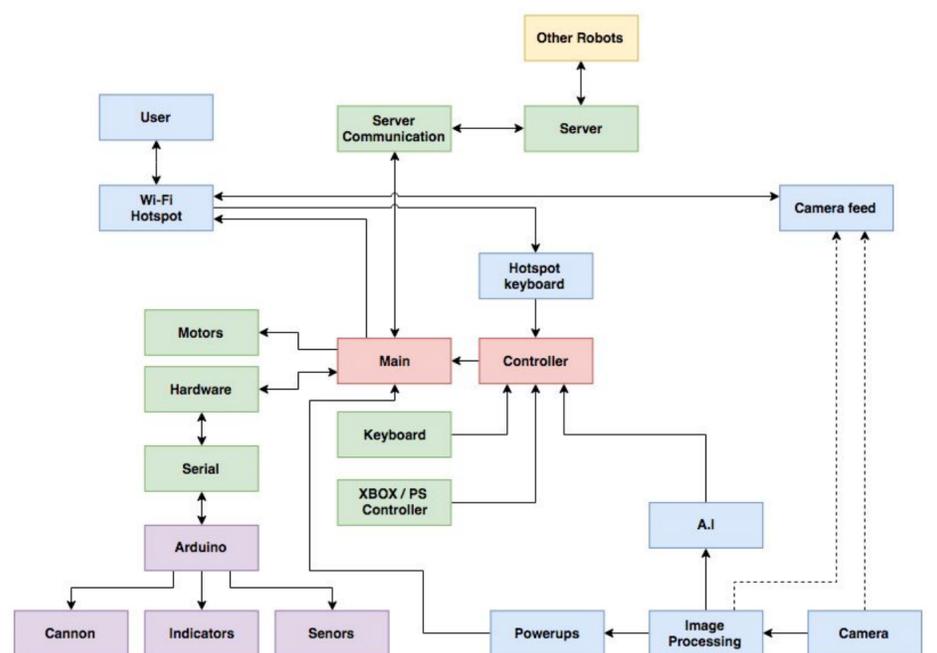

Figure 1. *Diagram of the modules illustrating the robot software*

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