RoboWars: Product Requirements Document

Project: RoboWars
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1. Product Functions and Scope

- Wireless Control of two Arduino boards (in particularly two robots) from one Android device.
- Great demo for Android accessories.
- Addictive game with modern look and feel.
- Potential supporter in the creation of a personal interest in robotics for children and teenagers.

2. General Description

RoboWars is an entertainment accessory and game for a group of people who own Android-powered Tablet device. It's very simple to use and easy to play. The main goal of the game is to strike the marked target on the opponents' robot, using controls on the screen of the tablet. The winner is determined by number of points after 3 or 5 rounds.

3. Implementation plan and Hardware Requirements

This section of the document lists specific requirements for ***RoboWars***.

3.1 Implementation plan

1. Write Android Application containing controls (joystick + button for each player), TextView's for displaying players score. Write all required methods and classes for data (commands) transfer between Tablet and ADK (main controller). Also include support for directing first time users to Android Market to the page from they can install app if it doesn't exist on the device.
2. Flash all 3x XBee wireless modules setting the right id and other metrics for future communication between them.
3. Using protoboard start prototyping one of the robots and writing all logic for Arduino Uno controller to be ready to receive and send through serial necessary commands like movement and touch sensor activities. Write drivers for appropriate motor and servo moves. After finish make the second robot using ready developments.
4. Setup wireless communication between ADK (main controller) and each of the robot and test all commands like movement and receive touch sensor activities.
5. Include in scheme Android Tablet and again test all commands and make final gameplay tune (number of rounds, joystick sensitivity and other).
6. Test all systems with independent power supplies, shock test robots, and bring some polish to their final form and look.

3.2 Hardware Requirements (see pic.2 below)

- Motorola Xoom (Android Tablet)
- ADK (Accessory Development Kit)
- 2x Arduino Uno microcontrollers
- 3x XBee RF modules (for wireless robots control)
- 2x Capacitive Touch Sensors
- 4x Motors (for robots wheels)
- 2x Servo-Motors (for robots hands)
- Material for robots bodies and wheels
- 2x cases for power supply
- other components such as resistors, prototyping board, diodes, batteries, LEDs, etc.

4. Appendices