Sensor Programming with using Android Platform

Esra YILMAZ – 201411070
Ahmet KARA – 201611674

Advisor: Sibel TARIYAN ÖZYER

Sensor Programming with using Android Platform

- Definition: Sensors capable of detecting explosives or weapons have vital preventive measures to detect their position, especially in military territories, to prevent terrorists from taking countermeasures against possible terrorist attacks by civilian and military personnel.
  - Available on a variety of devices like Android-based mobile phones, tablets and smart clocks.
  - Data transfer takes place using sensors.
  - Main goal is to detect enemies in the military field.

- Main Features
  - The Robot is controlled by the user via Bluetooth.
  - The user can control the robotics basic movements(move forward, backward, right, left)
  - The user can take the robot in automatic mode and let the car drive its own way.
  - The robotic vehicle can detect whether the obstacles facing the vehicle are human or not. If the obstacle is a living entity, as for that is the human
  - The red led on the robot lights up and it will calculate the shortest distance it can avoid and will proceed in that direction.
  - If any object we are comparing is inanimate, it will calculate the shortest distance it can avoid and will proceed in that direction.

Main Contribution
Pros and cons to similar projects

- Pros:

I. The robot has two modes. Automatic mode and user mode.

II. While the robot is in automatic mode, it measures the furthest distance from the obstacle and escapes from obstacles.

III. Human detection with PIR sensor

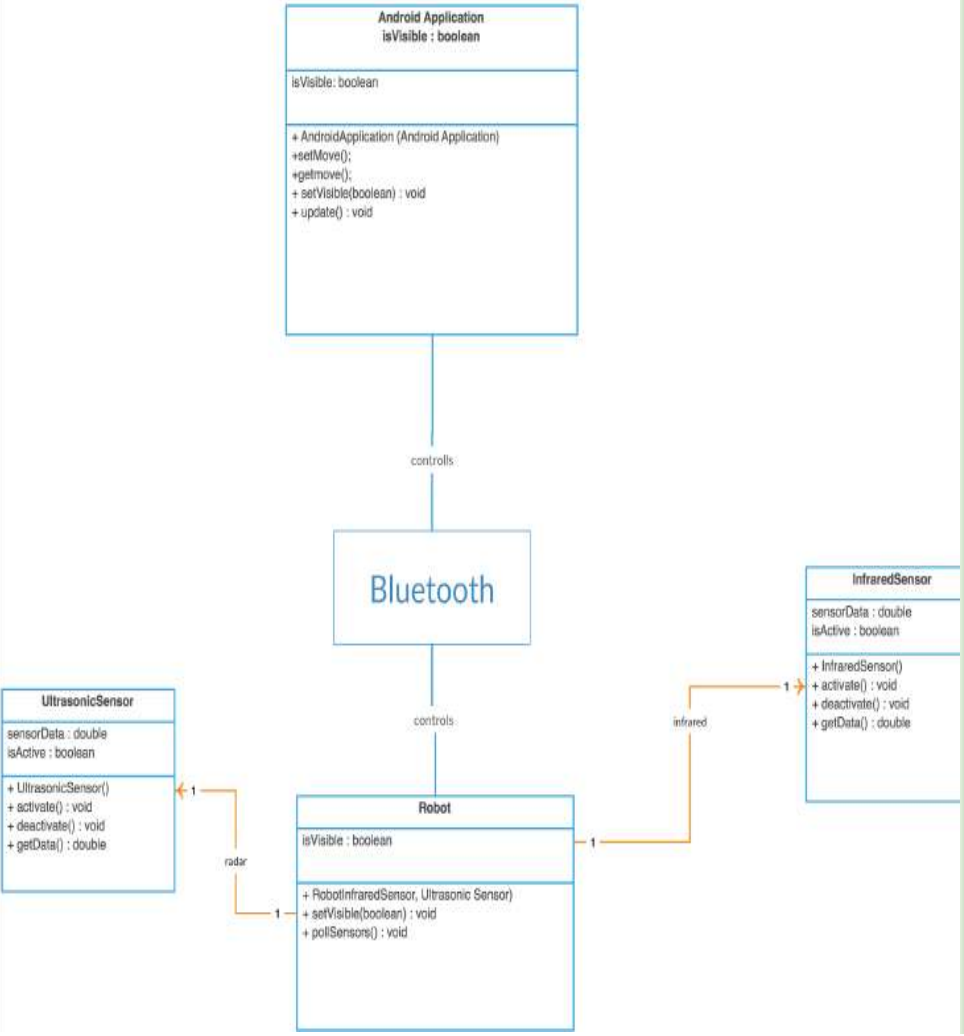
- Cons:

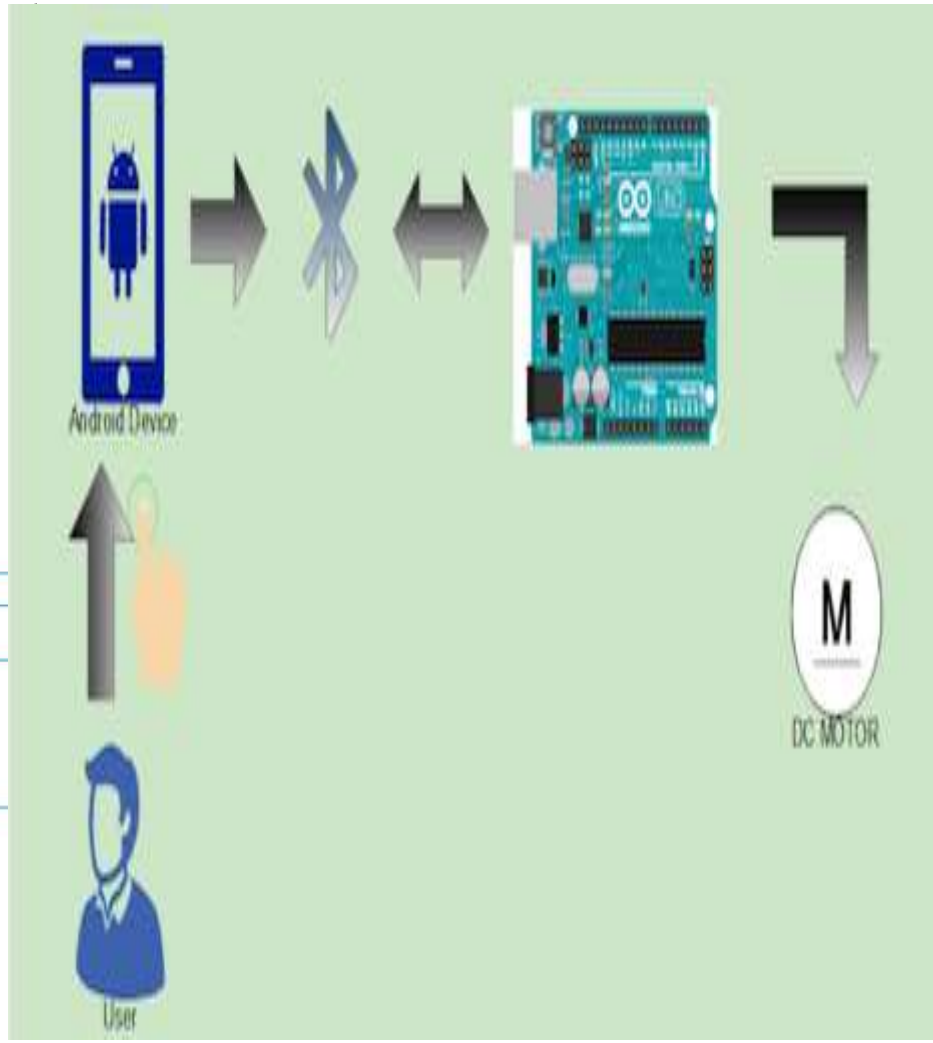
I. Short-range operation of Bluetooth connection.
II. If the robot is far away from a device with a Bluetooth connection, the connection is disconnected.
III. It's a prototype. It can be developed for the military field.
IV. Because power consumption is so high, energy will be insufficient in the long run.

Workplan

			27.02.2018-05.03.2018	06.03.2018-12.03.2018	13.03.2018-19.03.2018	20.03.2018-26.03.2018	27.03.2018-02.04.2018	03.04.2018-09.04.2018	10.04.2018-16.04.2018	17.04.2018-23.04.2018	24.04.2018-30.04.2018	01.05.2018-07.05.2018
Start Date: 27/02/2018			WEEK 1	WEEK 2	WEEK3	WEEK 4	WEEK 5	WEEK 6	WEEK 7	WEEK 8	WEEK 9	WEEK 10
Documentation		week(1-2-6)										
General Research	Team											
Update SRS& SDD	Team											
Design		week(1-6)										
Devices	Team											
Create Application	Team											
Bluetooth Control	Team											
Sensor Entegration	Team											
Implementation		week(3-7)										
Create Sensor Programming(Implementation	Team											
Combination of robot and application	Team											
Testing		week(7-10)										
Design	Team											
Bluetooth Control	Team											
Testing	Team											
Reporting	Team											

Methods

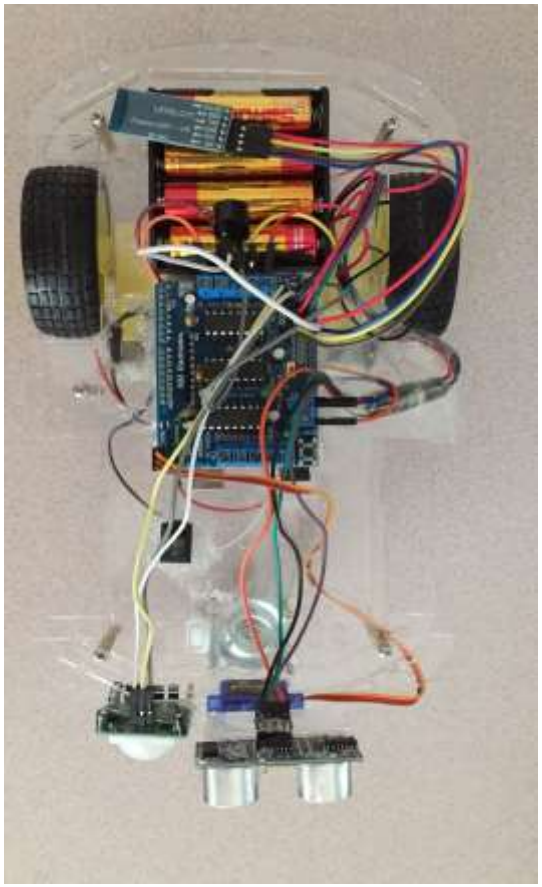

Android Application
isVisible : boolean
isVisible: boolean
+ AndroidApplication (Android Application)
+setMove();
+getmove();
+ setVisible(boolean) : void
+ update() : void
controlls
Bluetooth
controls
UltrasonicSensor
sensorData : double
isActive : boolean
+ UltrasonicSensor()
+ activate() : void
+ deactivate() : void
+ getData() : double
radar
1
1
Robot
isVisible : boolean
+ RobotInfraredSensor, Ultrasonic Sensor)
+ setVisible(boolean) : void
+ pollSensors() : void
infrared
1
1
InfraredSensor
sensorData : double
isActive : boolean
+ InfraredSensor()
+ activate() : void
+ deactivate() : void
+ getData() : double

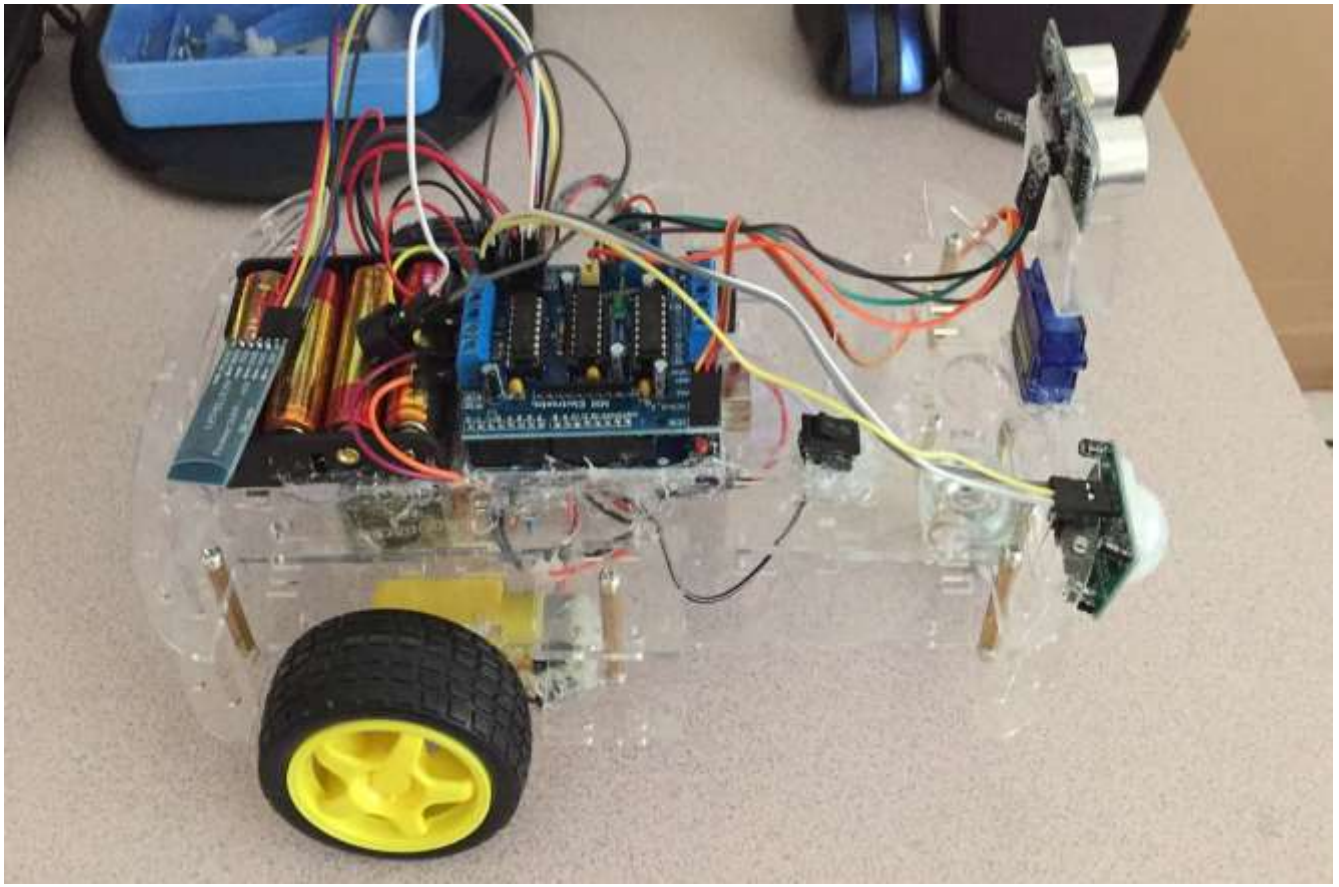

Android Device
M
DC MOTOR
User

Materials

- Bluetooth technology
- Smartphone with the Android operating system,
- The microprocessor (Arduino Uno R3)
- DC Motor.
- Robotic car platform
- PIR sensor
- Red led
- 9V battery
- Ultrasonic Sensor
- Motor Shield
- Servo-motor

Potential Risks and Expected Outputs / Obtained Results





As a result of excessive use, the eyes of the user may be deteriorated and the user may be exposed to radiation.


THANK
YOU