RoboCupRescue 2010 - Robot League Team <NIIT BLUE (Japan)>

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This robot have 4 arm.It moves by power of passive.This robot can get over an obstacle by power of the passiveness when arm came in contact with an obstacle.And it moves by actively too.This robot put hardware in 4 arms. In using these arms, the robot can run surely even in a stricken area. We performed miniaturization of a body to run at the small place.

1. Team Members and Their Contributions

- Katsuji Oogane Advisor, Director
- takeo igarashi Maintenance of robo
- kentaro shimaoka Maintenance of robo
- kenta yuuki Maintenance of robot
- kyohei takiwazaki Maintenance of robo
- takafumi inomata Maintenance of robot

2. Operator Station Set-up and Break-Down (10 minutes)

Setup

1.Hardware

・Connection of battery

・Operation check of a robot

・Check of wireless camera and camera monitor

2.Software

・Boot computer

・Connection of wireless communication.

・Check of sensor information.

Break-down

We stop all systems and bring them back to staff room.

3. Communications

Rescue Robot League		
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MODIFY TABLE TO NOTE ALL FREQENCIES THAT APPLY TO YOUR TEAM		
Frequency	**Channel/Band**	**Power (mW)**
5.0 GHz - 802.11a	W52,36,40,44,48 W53,52,56,60,64	10(mW)
2.4 GHz - 802.11b	1-14ch	10(mW)
2.4 GHz - 802.11g	1-13ch	10(mW)
1.2 GHz (Camera)	7,4,1,3,10,16	

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4. Control Method and Human-Robot Interface

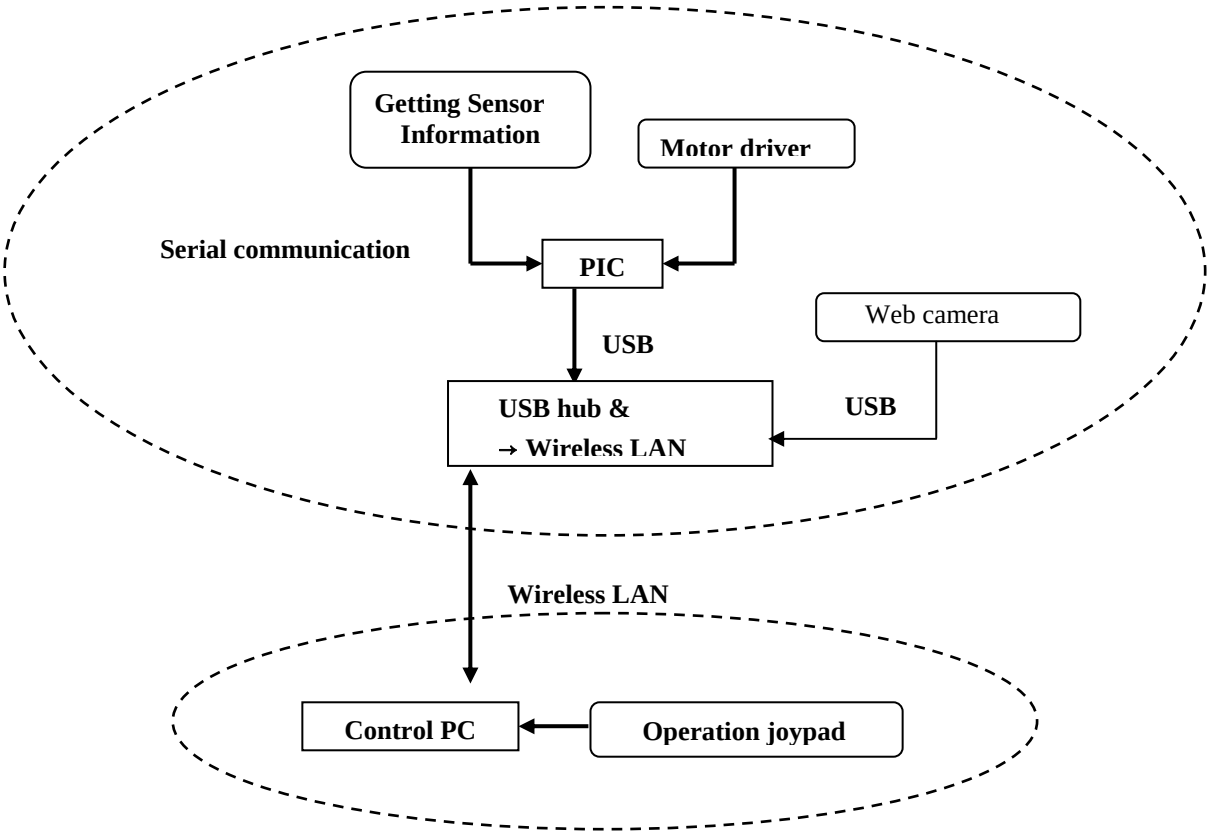


Fig.1 The Control Method

5. Map generation/printing

We use “handwriting” by information from web camera and sensor.

6. Sensors for Navigation and Localization

Fig. 1 Angle **sensor**

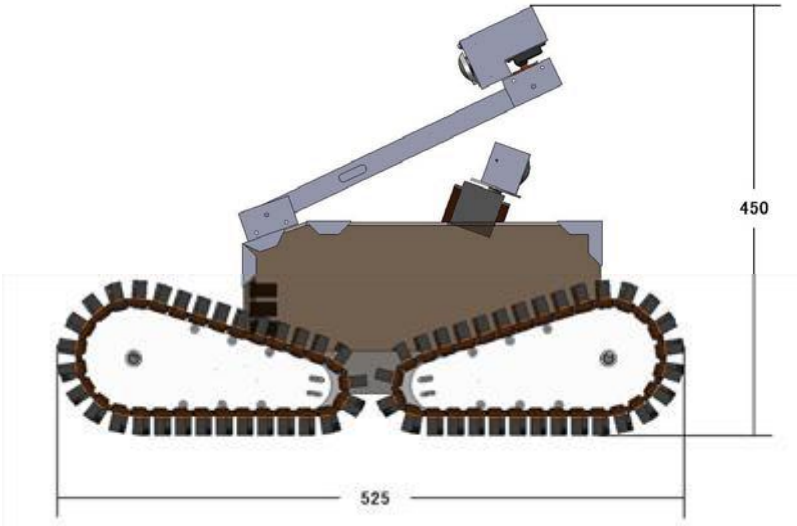
Angle **sensor**:
For know the situation of robot.

7. Sensors for Victim Identification

Fig. 2 Temperature sensor

Microphone:For catch a information of a victim such as groan, crying and tapping.

8. Robot Locomotion



9. Oher Mechanisms

Nothing.

10. Team Training for Operation (Human Factors)

This robot can passively transformation.
If it is a small step, the vehicle driver can run going straight only.
If big step, robot is get over by doing arm move.

11. Possibility for Practical Application to Real Disaster Site

In real disaster site, it is hard to operate this robot. But we think that if two people, a robot driver and a leader move a robot , a rescue operation becomes easy.

12. System Cost

Total cost is about 550000 Japanese yen.

13. Lessons Learned