Utility Vehicle for Search version IV: UVS IV

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Abstract. We introduce ourselves with description of team background, image of robot system, photos of member, the outline system and specification of robot as a participant of RoboCup 02 Rescue Robot Competition.

1 Introduction

On January of 1995, Great Hanshin-Awaji Earthquake hit our Kobe area and over 6500 peoples were killed. This disaster taught us there was no useful rescue robot in Japan, the highest robot population density country in the world. After that we started to study on utility robots for rescue. Many activities were made like gathering information from Rescue team of Kobe Fire Station and people who is actually closed in the debris for long time and so on. Figure 1 shows the image that we plan to make. To use in this system, utility vehicle for search version 4, UVS-IV is currently developed. Students of Kobe University and Kobe City College of Technology are studying and working together on this project. Beside of the delegation team, many students who are graduated contribute this activity. Many thanks to them, especially thanks to Mr. Atsusi Shimonaka.

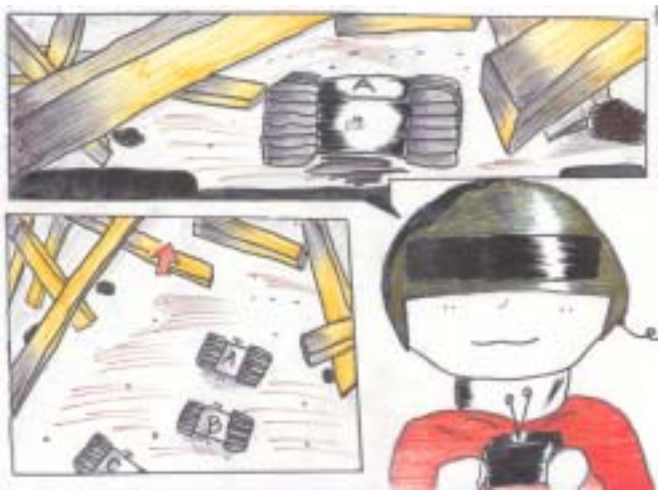


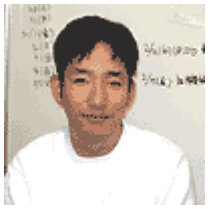
Figure1 Image of Rescue Robot System

2 Team Member

Team Leader Toshi Takamori

Staff Shigeru Kobayashi

Student **Masayuki Takashima**



Student **Akihiko Ikeuchi**

Student **Masatoshi Yamada**

3 Base Robot

At the time this paper is preparing, the robot is still under developing and has a possibility to make major specification change. Table1 shows the target major specification of this prototype robot UVS-IV.

Table 1. Target major spec. of UVS-IV

Dimension [mm] L x W x H	550 x 450 x 150 (Without extension crawler)
Weight [kg]	10
Min.Clearance[mm]	15
Battery Unit	12V 1700mA x 4
Drive Unit	Twin Motors (24W)
Search Sensors on board	CCD Camera, IR, Ultra Sonic
Drive Sensors :	Encoder, Gyroscope

4 Man-Machine Communication System

How to control the robot, especially how man and machine cooperate together is the key technology of this type rescue robot. Communication and integrated sensing system is the essential. Figure 2 shows the outline of UVS-IVís wireless LAN communication system and Figure 3 shows the photo of sensing units

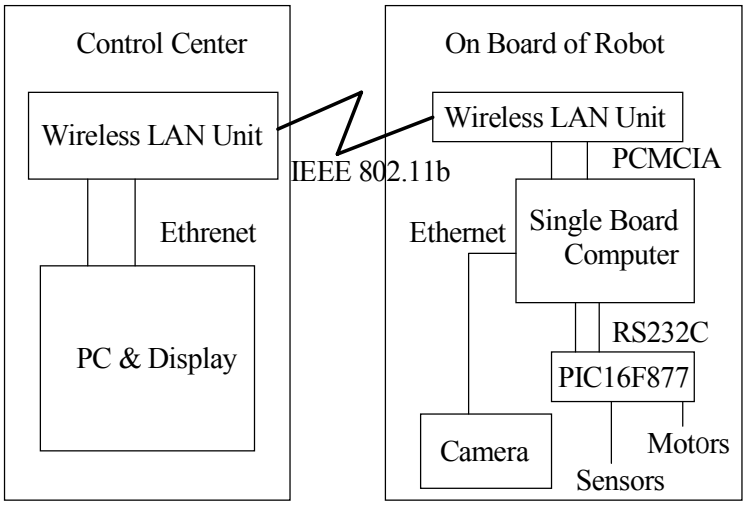


Figure 2 Communication and control system

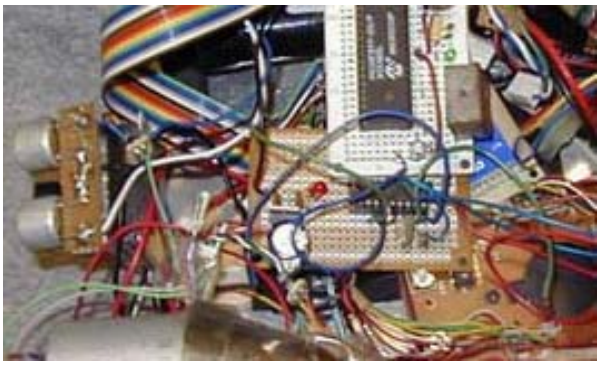


Figure 3 Sensing units