Abstract

Using robots to assist rescue personnel in mine rescue missions is an active area of research. We are going to develop a robot to send it into the mine to gather information about the environment inside a mine and to search for victims. Coal mine is a dangerous place in which many fatal factors are dangerous for human life, especially when blasts occur. Rescue persons usually don't know the actual situation of the mine tunnel under such circumstances. Therefore it can be very dangerous for rescuers to go into mine tunnels to search survivors without detecting environmental information beforehand. To solve this problem, the coal mine detect and rescue robot can be developed for assisting people to do the rescue work. The coal mine detect and rescue robot is used for detecting the explosion environment of coal mine and
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rescuing miners who are trapped in the underground coal mine after gas explosion. We will develop prototype of a fully autonomous robot which can be used to indicate presence of harmful gases inside a mine for mine rescue operations in case of emergencies caused by natural calamities such as explosion. Coal mine rescue robot is a kind of mobile robot. It can go into explosion environment and detect gas content. This paper designs a coal mine detect and rescue robot. It has many characters suitable to mine tunnel. It is composed of mechanical, electrical, computer, control, communication, sensor, etc. There are three major parts in constructing the robot and they are mechanical, electronic and software design. In this paper, the implementation of embedded control system based on the microprocessor is presented. The embedded control system can achieve many tasks of the robot, such as motion control, environmental information acquisition communication with the remote control system and executing complex control algorithms.

References

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Index Terms

Computer Science
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Keywords

rescue robot coal mine embedded mobile robot