MOVING VEHICLE ROBOT

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Abstract

Robot is a mechatronic construction, which is a combination of mechanical, electronic and software programming, which is capable of autonomous or semi-autonomous operation towards a specified function or goal by the builder or programmer. It has a wide range of uses in different application which including heavy industries, automobile and astronomy area. Commonly, robots are using in industries that required repetitive and advanced accuracy work which error is avoided. One of the best evidence of robot performance is in astronomy field which allows tremendous development in passed decades.

The study of this report, Rescue Robot, which have additional features such as danger surrounding surveillance and victim detection, which are nearly unachievable for human being due to accuracy, effectiveness and life safety. One of the notable functions of rescue robot is widely using in rescuing victims during terrorist attack in United States on 11 September. The main interest of this study is to design a robot that is suitable and has the capability to function in rescue mission, meanwhile, all the functions and performances can be visualized and controlled by user through computer.

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During the initial design stage, knowledge has to be obtained on background of study, mechanical part, electronic components and programming software through literature review and research. Based on the fact that the rescue robot is of relatively small and in trial scale, the selection criteria primary revolve around parts and components are available in workshop and electrical shop. Using qualitative analysis, a comparison of available parts and components were conducted in order to determine the best choice among alternatives. An inclined wheel track design driven by wiper motor outperformed all other alternatives such as straight wheel track or legged rescue robot. On the other hand, a serial port is chosen as an interaction between robot and computer compliance with radiofrequency as the data transmission medium.

The proposed report is sub-divided into five key sections – background study, electronic, mechanical, software and discussion. The background study section primarily involves literature review on technologies and available alternatives parts and components. The electronic hardware design is mainly discuss the components used in the robot and circuits design, whereas mechanical section involves parts and hardware selection, determination of Center of Gravity of the vehicle, roll over angle design and motion simulation. Microchip PIC and Visual Basic Programming with

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flow charts and code explanation are the major components under Software Design. All the sections are discussed in Discussion section to identify the problem encounter, limitation of the study and improvement and recommendation wish can be done in the future. Overall costing analysis is carried out to determine the economic aspect and project schedule work chart is shown in Appendix B for further clarification.