

Modified virtual semi-circle approach for a reactive collision avoidance of a mobile robot in an outdoor environment

ABSTRACT

There are numerous numbers of methods that have been introduced to the Unmanned Ground Vehicle (UGV) to find its optimal path. The purpose of this paper is to navigate a cost effective UGV known as MG-TruckS with optimal path planning in an outdoor environment. A Modified Virtual Semi Circle approach is proposed based on situated-activity paradigm. This approach is divided into two phase to compute a free collision path planning; detection and avoidance phase. Implementation of five ultrasonic range finder sensors with a very small blind zone created on purpose and the formation of three layers of influence zone shows the optimized path planning without making any unnecessary obstacle avoidance being computed.

Keyword: Obstacle avoidance; Outdoor environment; Path planning; Sensor; Unmanned ground vehicle