Title	
Author(s)	,
Citation	
Issue Date	2007-03
Type	Thesis or Dissertation
Text version	author
URL	http://hdl.handle.net/10119/3575
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Description	Supervisor: Defago Xavier, ,

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The study of Collision Avoidancs for multiple mobile robots

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February 8, 2007

Keywords: Mobile Robots, autonomous, distributed, collision avoidance, cooperation.

In there years, it began to hot studying topics for cooperating between multiple mobile robots. To move controlling the mobile robots is the one of important thing when we use high quality cooperation between robots. One of the basic tasks for multiple robots cooperation is collision avoidance between robots.

In this paper, we will consider the collision avoidance system between multiple autonomous mobile robots. The collision avoidance systems can be categorized for 2 ways. One is the sensor based system. Another is the network communication based system.

The Sensor based system can avoid collision with as timely. However, the leached distance for sensor is sort. Then the mobile robot can fined each other is just before collision and some time they make collision. And sensor based system is weak for being overcrowd.

On the other hand, Network communication based system uses wireless networking. Wireless networking has too big delaying than the sensor based system. The timely working like as the sensor based system is impossible for networking based system. But leached distance is bigger than sensors. And network based system can separate collision problem between mobile robots and others objects. The separation make easy for collision avoidance.

Our approach uses networking based system. The system has to avoid from collision with other robots. And mobile robots reserve the there own moving path using network communication. To reserve the moving path can block the moving path. If one of the robots reserves there moving segments then no other robots can reserve the location until the path will be released. Every robot has to be agreed there reservation by the reservation management system.

The reservation management system can categorized as centralized system and decentralized system. The centralized system is weak for single point of failure. If the reservation management system get clash then all of system get damages. In our approaches use the active replication for the reservation management system. All of replicas have to get same message and they need same orders when we consider the active replication. Total-order broadcast can assure the keeping message order when some of robots want to broadcast.