

Introduction

Mapping by a team of robots application has been in use and very helpful in many ways. One of the most common areas of application is the military. Others areas are search and rescue teams, transportation department, mining company, NASA and many more. The approach to this idea is quite different from other technologies in the sense that it uses eBox that makes the big difference from what had been done in the past. Many hardware and software will be used to integrate these devices and connect them with the eBox that act as the central point for sharing and analyzing information by means of wireless from each robot in the field. Having said this, it is the ultimate goal of this paper to answer all questions that relate to the commercial applications of this technology, what makes the idea different from other ideas, the backbone of the technology driving this and how they work as a team receiving and analyzing data that each robot collects in the field.

Commercial applications of the technology

Numerous applications of this technology are being used in areas such as the military, mining companies, and NASA. Robots armed with cameras and sensors that are able to go to unknown area in order to map the environment of the enemy and send data back to a computer that is ultimately used to develop a map by the military. Search and rescue teams use robots that map an environment and help create a map that narrow down search efforts. As part of NASA's exploration of Mars and other planets is embarked on sending multi agents of robots out in the field to collect information and to map their geometry that is studied well enough for future works. Mining exploration of areas that are unknown and dangerous.

Underlying technology

Multi-agents system of robots or a team of robots start at a known location with the task of going out and taking data of their geometric location and reporting the information to a computer for analysis and creating a map of the data. Each has sensors attached to them and sometimes cameras for capturing images as well. There are two areas of employing this technology. That is indoor and outdoor mapping of the environment. More accurate results are obtained with the indoor approach than the outdoor one. An example of the

indoor is these multi-agents walk in the hallways and rooms of a building and map the locations of doors, exits and indicate the locations of rooms. This result is better because of the enclosed nature of their environment. On the other hand, outdoors mapping is open that the agents sometimes find it difficult reporting accurate information to the server for proper mapping with the software installed in the server.

Implementing the technology

Implementation requires a number of robots depending on the size of the environment, sensors, cameras, eBox, computer and different algorithms and software that process data that is collected and analyzed. The multi-agents distribution cooperation's algorithm can be implemented using centralized on decentralized coordination. The robots talk to each other using wireless communication that is much easier and efficient, but can also perform the same task with the use of wires. Depending on the sensor that is used, the range of taking data can be short or long.

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