SYSTEM INTEGRATION

Cooperative Control of Super Open Architecture
Mono-functional Module System

Module robot is defined as a system element which has a specific mono-function like actuator or sensor, addition to architecture and communication parts. The goal of this research is to realize a system which cope various tasks with flexibility, by attaching modules to an object and environment by human and making it intelligent. This means to change a traditional design method to make a specific robot for tasks, to another way which treat specific robot design as location problem of mono-function module.

In this research, a task of system is cooperative transportation of a large object. 1) Attach wheel modules to object to give ability to move, 2) put camera modules on the wall in working area to get environment information and 3) put a marker to recognize the motion of an object by camera modules.

To realize the robot system, it is necessary to solve the problems, 1) acquisition of body and 2) administration of system completeness. 1) Acquisition of body means to identify parameters, e.g. position and pose of wheel modules and camera modules, for cooperative motion of modules by observing marker which moves by wheel modules' warm-up motion. 2) Administration of system completeness means that the system check the location of modules is proper for the task or not, and inform it to human. The goal of this is to avoid the lack of flexibility which is caused by free location of modules by human, and to guarantee ability that the system works. The function to inform the working area is in the range of camera is given as an example.

Wheel modules and camera modules are under developing.
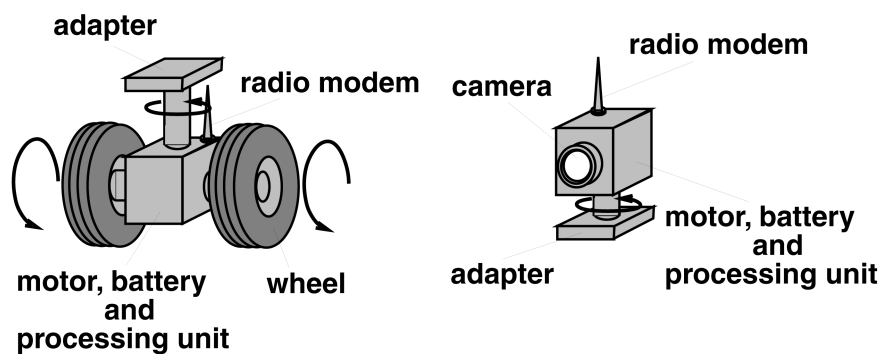
Keywords: Mono-function Module, Acquisition of Body, Administration of System Completeness

Fig. 1 Mono-function module