Intelligent Space for Human and Mobile Robot

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An intelligent environment, which supports both human and robots, is proposed and introduced. The space understands what human is wanting and indicates robots what to do in robot language. We call this space, Intelligent Space. The Intelligent Space is a room or an area which is equipped with sensors, network and computers. If environment gets intelligence, it is no more a independent part of an intelligent mobile systems in the space any more. This situation means it that the space and the robots become an extended shape of robot and human are located inside the robot. Fig. 1 illustrates the concept of our intelligent Space. Robots work as physical agents in Intelligent Space.

We tried to realize Intelligent Space with Distributed Intelligent Networked Devices. DIND is a small device based on three functions.

① the dynamic environment, which contains people and robots, is watched by the sensor

② the processor processes informationto be known easily by the clients

③ the DIND communicates with other DINDs and robots through networks

Fig. 2 shows the basic structure of DIND. By installing this DIND into the whole space, it can be recognized easily and it is enabled to perform informational exchange and informational share by communicating with other DINDs through the network. Furthermore, since such functions are obtained by just attaching DINDs, the space, where people live, is altered into an intelligent environment, without paying a lot of efforts.

In this video, we show our concept about intelligent space and some experimental results to demonstrate features of the intelligent space. Five prototype DINDs were used for the experiments.

References

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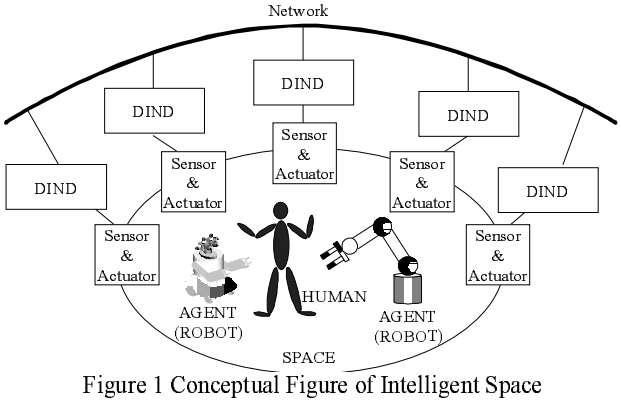

Figure 1 Conceptual Figure of Intelligent Space

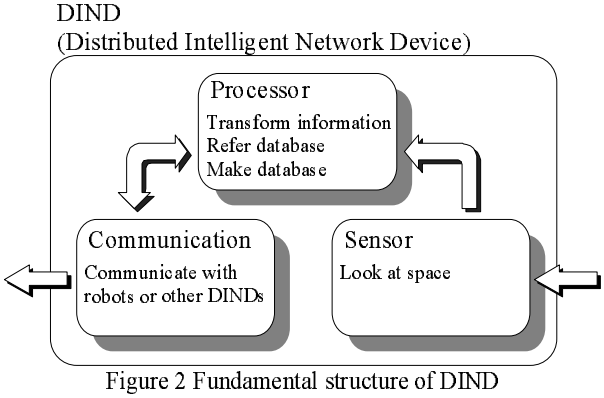

Figure 2 Fundamental structure of DIND