Knowledge Distributed Robot Control System using IC Tags

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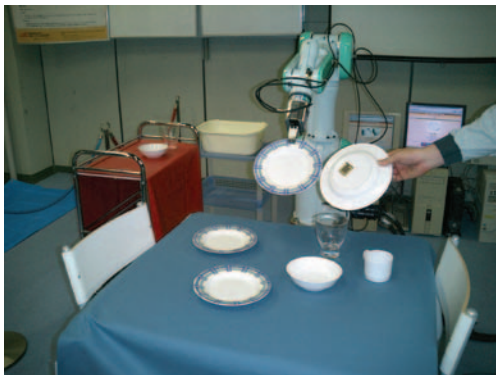
In the present robot industry, not only robots for industrial purpose but also those for serving in the human living environment are being eagerly sought for. The current robot control based on artificial intelligence and image processing technologies cannot support the robot works in the actual environment, because of difficulty in fully recognizing diverse objects placed in the living environment.

We have proposed a distributed knowledge robot control scheme in which every object is posted with an IC tag containing the manufacturer's network address and the knowledge information required for a robot to handle the object concerned. The scheme allows the robot to recognize objects more easily and the manufacturers to have burden of robotic programming reduced. We have successfully demonstrated the effectiveness of the proposed scheme by using available IC tag, image processing and robot control technologies.



Overview of the knowledge distributed robot control system using IC tags

Four-Terminal Driven Double-Gate MOSFET Developed

- Both low power and high speed controllable by Four-Terminal Drive -

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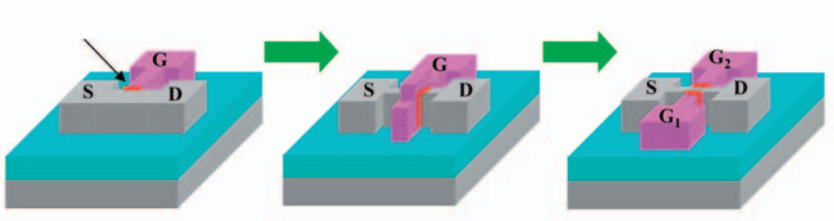
The Nanoelectronics Research Institute (NERI) of the National Institute of Advanced Industrial Science and Technology (AIST), one of the independent administrative institutions, succeeded in realizing a new device technology of 4-terminal drive using two independent gates, in the form of a double-gate (DG) MOSFET which is expected to be a transistor of the new generation. The original 4-terminal drive features including flexible threshold voltage control were systematically verified by the fabricated 4-terminal DG MOSFET with the 13-nm-thick ultrathin fin-channel. The study innovates in the DG MOSFET originally proposed by the former Electrotechnical Laboratory (ETL) and will lead the way to the materialization of innovative LSIs, capable of flexible and dynamic control for optimum power consumption and operation speed.



Evolution of MOSFETs: (a) a single gate MOSFET, (b) a conventional (fin-type) double gate MOSFET, and (c) a four-terminal double gate MOSFET