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Development of an AUV with a manipulator

-An underwater manipulator based on motion simulation and modular concept-

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Summary: We have been developing an autonomous underwater vehicle (AUV) with a manipulator aiming at underwater operations using AUVs. At first, we describe an underwater manipulator which is designed based on motion control simulation and the modular concept. From the results of simulation, the specifications of the manipulator such as maximum torque and velocity are decided. As the waterproof mechanism of the manipulator, we introduced the magnet coupling structure to transfer motor torque from inside motor to outside gear. And the modular concept is introduced to realize reliability and good maintenance. Each link of manipulator has the same structure and includes a motor and a motor driver inside. Multi degree of freedom manipulator can be realized by combining same link modules. The modular concept is introduced into the AUV design, such that a functional device can be plugged into a motherboard to be less-wiring. Finally, the experimental results using an AUV with a manipulator are discussed.

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