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Control functionality of DAQ-Middleware

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DAQ-Middleware is a software framework for a network-distributed data acquisition (DAQ) system that is based on the Robot Technology Middleware (RTM). The framework consists of a DAQ-Component and a DAQ-Operator. The basic functionalities such as transferring data, starting and stopping the system, and so on, are already prepared in the DAQ-Components and DAQ-Operator. The DAQ-Component is especially used as a core component to read, transfer, and record data. And the DAQ-Operator is used as controlling the DAQ-Components. The system works as a state machine and it has four states, i.e., LOADED, CONFIGURED, RUNNING, PAUSED states. The states changed by the command to be transferred from the DAQ-Operator. The DAQ system can be easily implemented with using the framework. But the control functionalities, such as transferring parameters from DAQ-Operator to DAQ-Components, were not prepared, except when the state changes from LOADED to CONFIGURED. Then we developed the functionality to transfer data from DAQ-Operator to DAQ-Components at any time.

The new functionality enables us to transfer any parameters that are stored in a configuration file on the DAQ-Operator to each DAQ-Component. In order to add this functionality, the new state, SET, is introduced. The DAQ-Operator transfers the specified configuration file to the specified DAQ-Components in this SET state. On the other hand, the DAQ-Components receive the configuration data from the DAQ-Operator in the SET state.

Any parameters can be transferred and set with the DAQ-Middleware without restarting the system with using this functionality.

Summary

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