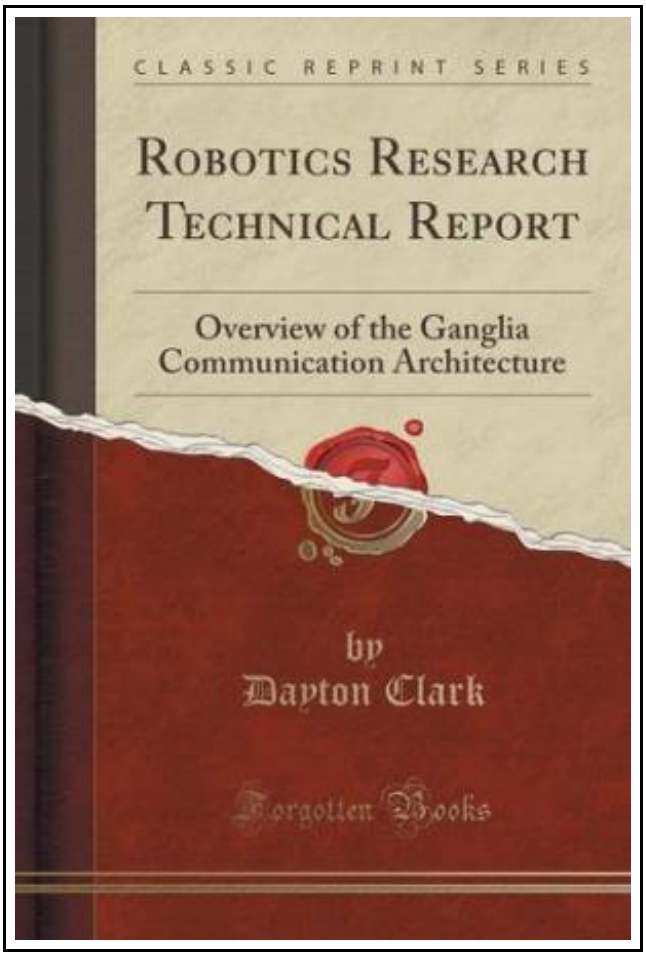
Robotics Research Technical Report: Overview of the Ganglia Communication Architecture (Classic Reprint)



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Reviews

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(Prof. Kacey O'Hara)

ROBOTICS RESEARCH TECHNICAL REPORT: OVERVIEW OF THE GANGLIA COMMUNICATION ARCHITECTURE (CLASSIC REPRINT)

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Forgotten Books, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****.Excerpt from Robotics Research Technical Report: Overview of the Ganglia Communication Architecture Robot control systems typically consist of cooperating micro-computers. Frequently the processors use shared memory on a common bus for communication. This is particularly true when the processors must cooperate in executing low level tasks, such as, servo loops. This architecture has great appeal: construction of the controller is easy, using off-the-shelf busses and boards; the system can be quite modular and expandable for the same reason; shared memory is conceptually simple and flexible for the programmer; and shared memory is a reliable and fast communication medium. Problems arise as robot systems get more complex. There are mechanical and electrical limits to the expansion of shared memory systems which put rather small bounds on the number of boards that can be in a system. Centralized processing in a single box requires extensive cabling to the various sensors and actuators. This is often awkward, constraining the placement of a robot and the inhibiting expansion. Complex sensors, now in development, such as tactile sensing arrays compound the problem because of the multitude of connections required. An approach to the problem of cabling between sensors, actuators and processors is to put the processors near to the devices. This, though, poses a communication problem between the various processors, among the processors controlling the devices and between these processors and higher-level control processors. Ganglia is a robot controller architecture and communication protocol meant to address these issues. Distributing a robot controller within the robot presents many problems, for instance, those related to weight, size, packaging, power-distribution, and software tools. The current research on ganglia is focused on the communications problems and...

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