Design Of A Multi-Threaded Distributed Telerobotic Framework

Al-Mouhamed, M. Toker, O. Iqbal, A.; Coll. of Comput. Sci. & Eng., King Fahd Univ. of Pet. & Miner., Dhahran, Saudi Arabia;

Electronics, Circuits and Systems, 2003. ICECS 2003. Proceedings of the 2003 10th IEEE International conference;Publication Date: 14-17 Dec. 2003;Vol: 3,On page(s): 1280- 1283 Vol.3;ISBN: 0-7803-8163-7

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Summary

A telerobotic system consists of master (client) and slave (server) stations which are usually connected by a computer network. A reliable real-time connection between master and slave systems is proposed using Distributed Components (.NET Remoting). This has a number of benefits such as software reusability, ease of extensibility, debugging, and data encapsulation. It is based on most advanced software tools like NET Framework that promise definite advantages over DCOM (Distributed Component Object Model) and RPC (Remote Procedure Call), previously used for distributed applications. The components communicate with each other using NET Remoting and SOAP (Simple Object Access Protocol) that automatically handle the network resources and data transfer while isolating the components from network protocol issues. This enhances the data security as well as facilitates easy deployment. Implementing telerobotics using the proposed approach gives the advantage of a multi-threaded execution needed to effectively realize multi-streaming of force, command and stereo data over a LAN.

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