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Cross-Platform Communication and Device Control

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Poster Presentation 32

CROSS-PLATFORM COMMUNICATION AND DEVICE CONTROL

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The Illinois Wesleyan Shelley Project was faced with the obstacle of communication between three IBM PC's, which each were connected to a Robix control box and a Sun Ultra SPARC, which would pass the commands to the PC's. The Ultra SPARC and the PC's are connected via a 10 Base-T hub and ethernet network cards in all the machines being used. The obstacle's solution lies in an application that would allow the Ultra SPARC to pass commands to the three PC's from three sockets on the Ultra SPARC to the socket and socket driver on each of the PC's. In reference to the Open Standards Interface (OSI) seven layer model, the program would include the traversal of all seven layers of the model, starting at the application layer on the Ultra SPARC and finally ending in the application layer on the PC level after traveling down and back up all seven layers. This was accomplished through the use of the Waterloo Transfer Control Protocol package and a Robix control software driver. An application was developed on the Ultra SPARC that opened three sockets and allowed connections from each of the three PC's. This would allow data to either be passed as a string of characters or from an input file across the network to the PC's. Once the Ultra SPARC determined where the data was to be sent, the corresponding PC would allow the data to be passed and executed as a Robix command. The basis for this project would allow for another program to calculate the coordinates for both 2D and 3D movement in space to be passed to the server program on the Ultra SPARC and thus moving the attached Robix motor on the corresponding PC. Further use of cross-platform would include the control of many types of machines including robots used for assembly of product or robots that are used in hazardous situations to eliminate the danger of human interaction.