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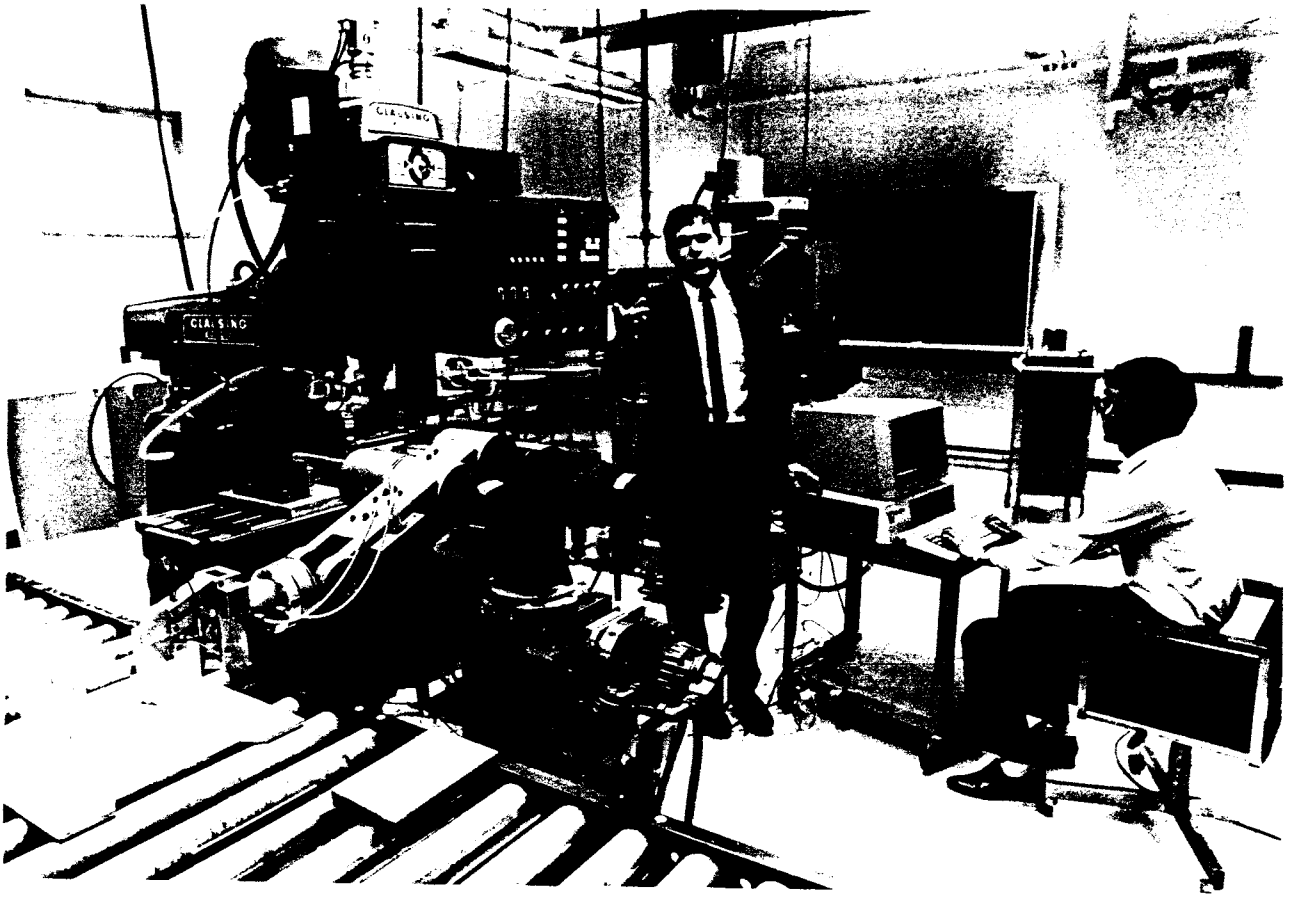

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EASTERN MOVES TOWARD THE FUTURE

CHARLESTON, IL.--Eastern Illinois University technology instructor Ray Richardson (left) and visiting professor Shanlin Hao watch a robot as it retrieves a machine part.

Located in Eastern's computer integrated manufacturing lab, the robot is part of a work cell which Richardson and Hao designed from limited resources. It will be used to teach state-of-the-art technology.

Richardson said Eastern's School of Technology needed a laboratory to teach students the concepts and applications of computer integrated manufacturing (CIM) technology and to educate local industry as they move in the direction of increased automation and CIM.

The CIM concept is that all of the firm's operations related to the production function are incorporated in an integrated computer system to assist, augment, and/or automate the operations.

"Clearly the University needed an integrated manufacturing cell, one of the high hurdles to gaining CIM technology. The budget, like most, could not support the purchase of a 'turn key' work cell nor were funds available to purchase equipment that would readily accept integration," said Richardson.

Incompatibility and the lack of technical support and information were the primary obstacles for the research team. They built a work cell using a personal computer that was selected as the host computer, a robot, prototype gripper, powered roller conveyor, and new milling machine.

"The system chosen was a simple one," said Richardson. Its operation consists of a conveyor that carries pallets with parts to the robot. When sensed by a photoelectric device, a gate rises from the conveyor and the pallet is halted. This signals the computer that a part is present and the host, in turn, signals the robot to retrieve the part and deliver it to the mill.

Once clamped in the pneumatic vice, the part is milled and delivered back to the pallet on the conveyor by the robot. All tasks are accomplished under the watchful eye of the host computer. Once the finished part is placed back on the pallet, the process is repeated.

Richardson and Hao spent considerable time determining the input/output capabilities of the host computer, robot and milling machine. Although the machines had limited capabilities, Richardson and Hao made them compatible by setting a standard for all interface communication.

By using items that already existed, were donated, came from salvage or from the School's in-house inventory, Richardson and Hao completed the project at considerably less cost than if they had purchased commercial equipment.

"Nationwide, I know of very few colleges and universities that have a system like ours. The work cell is a building block for the future with unlimited potential. It will be used to support education, applied research and training in computer integrated manufacturing and associated areas.

"The work cell can be used to demonstrate modern concepts, provide realistic manufacturing experience and integrate technological areas, including management, safety, and electronics," Richardson said.

"It also means the University can better support applied research that will eventually translate to new or improved applications for local and regional industries. The University can also provide training for salaried and hourly employees to upgrade their knowledge and skills in areas related to new manufacturing technologies," he added.

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