

The Daily Pennsylv

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DP/Fritz von Bulow

Assistant Computer and Information Sciences Professor Samuel Goldwasser demonstrating a 3-D x-ray

Adding Dimension

SEAS develops computerized X-rays

By CHRISTOPHER DOWNEY

University researchers have created a device which can translate X-rays and CAT scans into detailed, three-dimensional computer images, a development which experts say will be a boon to medical diagnosis and surgical planning.

Created by the Computer and Robotics Lab, the device will break the boundaries of conventional medical imaging technology, said Assistant Computer and Information Science Professor Samuel Goldwasser, who headed the research project.

"The diagnostic potential of this system is virtually limitless," Goldwasser said Wednesday. "When you're viewing the data from an actual patient, you can use the system to look for tumors and other abnormalities not easily visible in standard X-ray images."

The machine, which is actually a sophisticated computer system, uses superimpositions of CAT scans and X-rays to create the three-dimensional pictures.

By rotating, reducing, enlarging and even slicing separate images, the computer can put them together into a detailed three-dimensional picture. In this way, the system

Goldwasser said that he and his associates are now trying to make the system easier to use by working on developing a device similar to the joystick found on video-games to allow the physician to accurately plan delicate surgery using an electronic scalpel and thus never touching the patient.

"Using the system to prepare for delicate orthoscopic or plastic surgery will really prepare doctors better than X-rays ever could," Goldwasser said.

Goldwasser said that his system, co-developed by Medical School researcher Gabor Herman, will allow doctors to plan operation more quickly and with greater control than any device currently under development.

"You're talking about an interactive system that is 20 times faster than any similar hardware system," Goldwasser said. "It's like the difference between watching a slide show and watching a movie."

Herman, chief of the medical imaging section of radiology at the Hospital of the University of Pennsylvania,

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Engineering School develops 3-D X-ray

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said he believes the system may soon be an important weapon in the radiologist's war against disease. But he said the device could never replace doctors in the diagnostic process.

"Some aspects of what the radiologist does might not be necessary through proper development of this system, but the hardware is really an excellent tool for the radiologist because it shows images in ways that are easier to comprehend," he said.

Computer and Information graduate

student Sharon Stansfield is working on an application of the device which will be specifically designed to diagnose heart ailments.

"We're working on a program that has specific knowledge about one domain. This system understands coronary physiology," Stansfield said. "This will be part of a larger system that will perform actual patient diagnosis by searching for narrow arteries in the computerized image."

Goldwasser said he believes the device will soon be an important tool in

many medical offices.

"Five years from now, I can see it in every hospital," he said. "Ten years from now, I can see it on every doctor's desk."

Rita and Helen—

Don't talk to us about real. You're good folks and we're gonna miss you. The 100th