Famous Fossil Secretly Scanned in Texas

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February 9, 2009 (FPRC) -- The 3.2 million-year-old hominid skeleton, found in Ethiopia in 1974, made a 10-day stop at UTA's High-Resolution X-ray Computed Tomography Facility in September after an eight-month exhibit at the Houston Museum of Natural Sciences.

Lucy, a three-foot-tall, 3.2 million year old skeleton, is pretty fragile and doesn't travel well. But digital CT scanning has put her coveted bones on the desktop allowing scientists to study a virtual specimen.

The government of Ethiopia, where Lucy was discovered in 1974, has joined with the University of Texas in Austin, where Lucy is visiting, to make the first high-resolution computed tomography of her. This CT scan should reveal more information about our most famous ancestor.

Scientists are seeking an answer to the age-old question: When, how, and why did human ancestors come down from trees and start walking on the ground?

The university scanned 80 bones, all that's left of Lucy's skeleton. John Kappelman, an anthropology professor involved in the research, said the scans will help scientists analyse how Lucy's bones were built. Although only 40 per cent of her is preserved, Lucy is the best example of Australopithecus, a pre-human species. Kappelman is expecting the scans to provide more information about how her bones fit together, to determine if she climbed trees as well as walked the earth.

The invention of the CT scan earned GN Hounsfield and AM Cormack the 1979 Nobel Prize for medicine. CT imaging is also known as CAT scanning (Computed Axial Tomography). The original systems only made images of the head. The latest multi-slice CT systems can collect up to four slices of data in about 350ms and reconstruct a 512 x 512-matrix image from millions of data points in less than a second, according to Women's Health Resource.

A CT scan can now be used on all parts of a body â€' organs, lungs, blood vessels, the spinal cord, extremities, and, of course, bones.

In 1991, Siemens Medical was combining CT instrumentation with an intuitive, mouse-controlled Windows interface. Patients must be controlled as well â€' moving during the procedure is prohibited. Software applications enable the clinical use of a spiral CT for organs of the body affected by involuntary or constant movement, such as the heart.

Radiology requires powerful computing because it involves imaging. In addition to the storage required, on-screen resolution must accurately display the actual films. CT scan, mammography, and ultrasound machines require top ability computers.

Siemens explains that a CT scanning system consists of an X-ray unit, which functions as a

transmitter, and a data acquisition unit, which functions as a receiver. The detector system converts the incident X-rays of varying intensity to electric signals. These analogue signals are amplified by downstream electronic components and converted to digital pulses. Density values, especially Lucy's bones, are represented as gray scale values.

Lucy - well, everything we have of her - is in the US as part of an exhibit organised by the Museum of Natural Science in Houston, Texas. In a Reuters interview, Kappelman said, 'It's going to help us fill us in what was one of the earlier stages ... of our evolution to really better understand the behaviours of an extinct cousin. In some ways it's like... being able to tune the time machine back to three million years ago, jump in and pop back and be able to reconstruct what this fossil was doing on a day-to-day basis.'

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