

A state-of-the-art pipeline for postmortem- CT and MRI visualization

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A recent addition to the autopsy workflow is the possibility of conducting postmortem imaging (PMI) using computed tomography (CT) and magnetic resonance scanners (MRI). Interactive visualization of these 3D data sets from these modalities can provide valuable insight into the corpses and enables noninvasive diagnostic procedures. Center for Medical Image Science and Visualization (CMIV) at Linköping University Hospital in Sweden, in collaboration with the Swedish National Board of Forensic Medicine, is now using postmortem imaging routinely (mostly homicides) since 2003. A state-of-the-art computed tomography scanner is being used in both single- and dual-energy modes that allows additional information about the elementary chemical composition of CT-scanned material to be obtained and postmortem angiography can be optimized. Regarding postmortem MRI examinations it is difficult to generate good contrast MRI images on dead, cold bodies as the body temperature influences the MR relaxation times of all tissues, and hence clinically established protocols need to be adjusted for optimal image quality at any given temperature. This problem has been solved by measurement of the absolute MR tissue parameters for tissue characterization, T1, T2, and proton density (PD). Since this can be difficult to implement on a clinical MRI scanner, a new approach has been invented at CMIV called synthetic MRI. In this approach, the three absolute parameters are translated into ordinary MR contrast images. Especially for postmortem imaging, this is important, since the image contrast may vary dramatically with temperature.

Biography

Anders Persson is the Director of the Center for Medical Image Science and Visualization (CMIV) and Professor at Linköping University, Sweden. He has a solid clinical background as a radiologist and has worked actively as Senior Physician since 1993. He is an internationally recognized pioneer in medical imaging, in particular regarding advancing the state-of-the-art of clinical work with Computed Tomography, Magnetic Resonance Imaging and Post-Mortem Imaging. He has held over 400 invited talks and written seven book chapters on related subjects. He has authored or co-authored more than 130 refereed academic publications.

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