

3D in Forensics: TIM Synthetic MRI and Virtobot Forensic Workflow of the Future

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Abstract

Imaging has changed the world and greatly influenced modern medicine. For the past 15 years, the Forensic Institute of the University of Bern has been concerned with imaging problems in forensics. In 2009 the robot-supported automated system integration of 3D surface scanning and multislice CT with postmortem biopsies was successful as a "Virtobot" developed. After what is now 5 years, the over 100 postmortem angiographies show impressive results from the research activities at the IRM Bern. In the early part of 2010, our Total Imaging Total Matrix TIM-MRI system that has been in operation since 2009 could be extended with the so-called synthetic MRI software. The advantage of this TIM synthetic MRI system lies in the fact that in one examination step various MRI sequences (such as T1-T2-PD, etc.) could be performed from tip to toe without any change of the surface traces. In the daily forensic service applications it has become evident that through applying this approach an increase in quality and an improvement in the forensic diagnostics can be achieved and the examination results based on the imaging are often quicker and, thanks to a more visual 3D reconstruction, can be displayed in a way that lay persons can understand and comprehend. Momentarily, in terms of workflow and process, this Virtopsysystem integration is the only forensic examination track in a forensic institute that has brought together all the modalities and technologies in this form for daily use and research. With "Axon Shadow", the interdepartmental forensic IT structure, now being developed at our Institute, which comprises the functionalities of "ERP", "LIMS" and document management, the forensic processes of all the IFM departments are displayed and supported in a workflow-oriented manner.

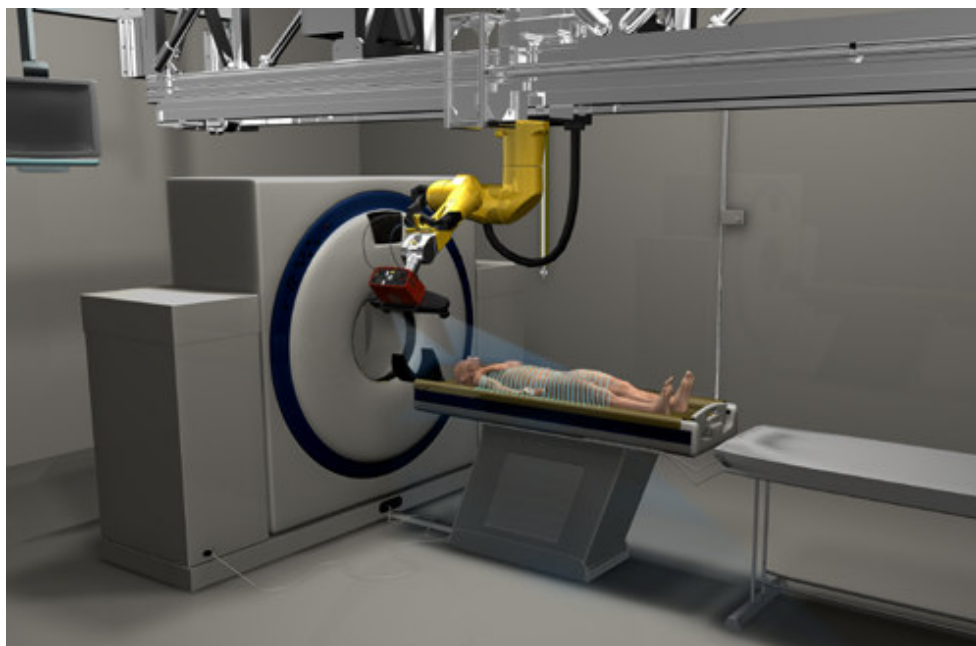


Fig. Virtobot

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