EL INSTITUTO DE INVESTIGACIONES EN MATEMÁTICAS APLICADAS Y EN SISTEMAS-SEDE MÉRIDA DE LA UNAM LE INVITAN AL

SEMINARIO

RESUMEN. Computer Tomography (CT) is nowadays pervasive and plays a central role in all aspects of patient care. The main disadvantage of CT imaging is that it exposes the patient to a substantial amount of ionizing radiation may be harmful to the patient. Much research has been recently devoted to develop methods to achieve diagnostic image quality with the lowest possible radiation dose. Repeat CT scanning, in which a patient is scanned some time after a baseline scan was acquired, presents significant, untapped opportunities for dose reduction and optimization.

In this talk, we will present a new computational paradigm for on-line radiation dose optimization in repeat CT scanning. The key principle is to use the information of the baseline scan during repeat scanning to significantly reduce the radiation dose without image quality loss. Our approach is unique in that it formulates radiation dose reduction as an adaptive sinogram construction optimization problem in 3D Radon space instead of an image reconstruction problem in image space. We will describe novel methods for registration of the baseline scan to the patient, for low-dose repeat scanning with no information loss, and for and needle tracking in interventional CT.

Joint work with Guy Medan and Naomi Shamul-Kessler

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SEMBLANZA. Leo Joskowicz is a Professor at the School of Computer Science and Engineering at the Hebrew University of Jerusalem, Israel. He is the founder and director of the Computer-Aided Surgery and Medical Image Processing Laboratory (CASMIP Lab). Prof. Joskowicz is a Fellow of the IEEE and ASME and is the recipient of the 2010 Maurice E. Muller Award for Excellence in Computer Assisted Surgery by the International Society of Computer Aided Orthopaedic Surgery and the 2007 Kaye Innovation Award. He has published over 250 technical works including conference and journal papers, book chapters, and editorials. He is a member of the Board of Directors of the MICCAI Society (Medical Image Processing and Computer Aided Intervention) and has served on numerous related program committees. He is on the Editorial Boards of six journals, including Medical Image Analysis, Int. J. of Computer Aided Surgery, Computer Aided Surgery, and Nature Scientific Reports. He is the Co-Chair of the MICCAI 2020 conference in Lima, Peru.

9:00 horas
20 de marzo de 2018

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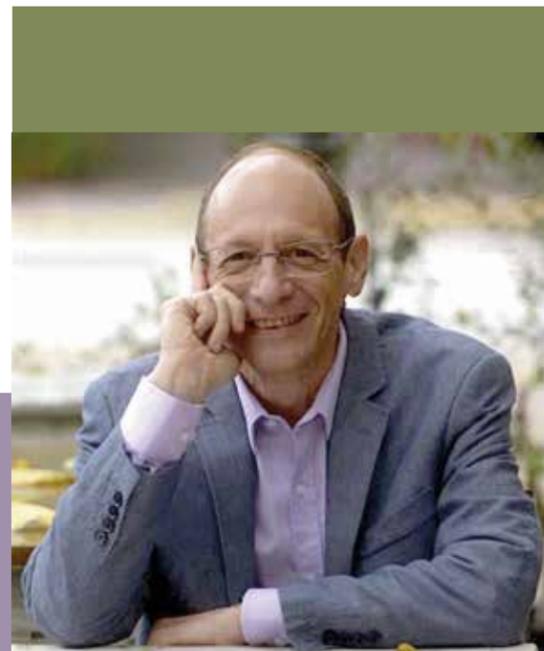
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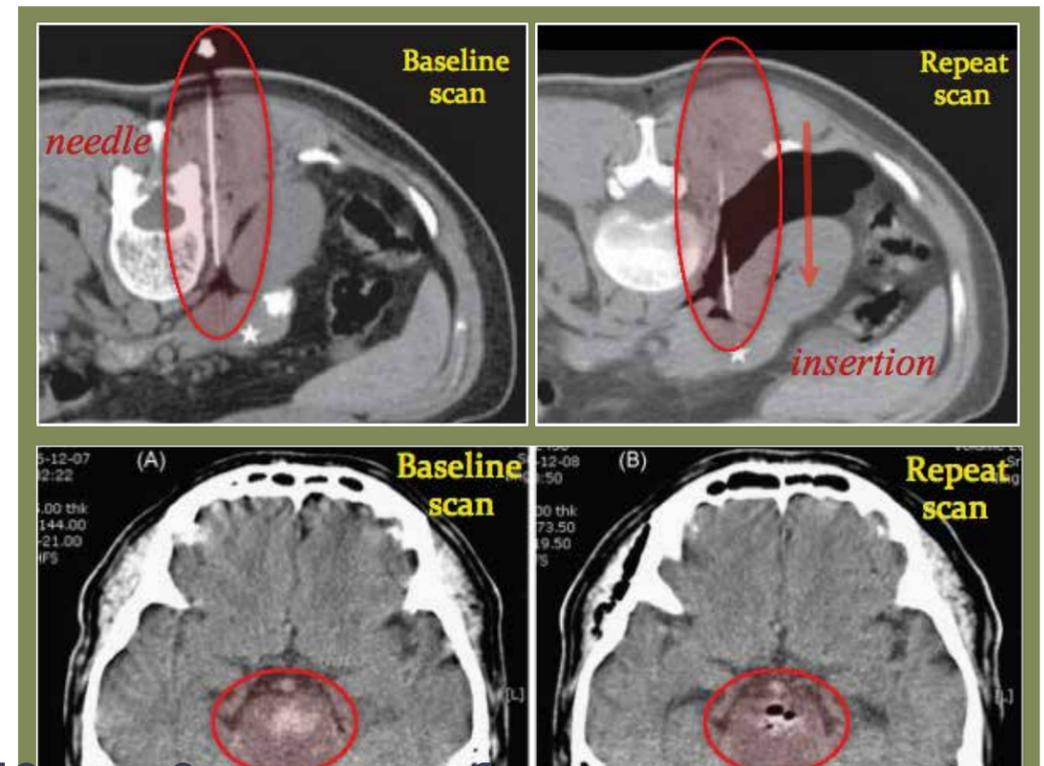Dr. Erik Molino
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Online X-ray radiation dose optimization in repeat CT scanning