

Seminario

Problemas Inversos & Mecánica Matemática

Primera Sesión desde las 14:30 a 15:30 hrs.

Expositor

Dr Luis Pizarro
University College London (UCL)
Department of Computer Science

Title: Image Reconstruction in Dynamic PET Imaging

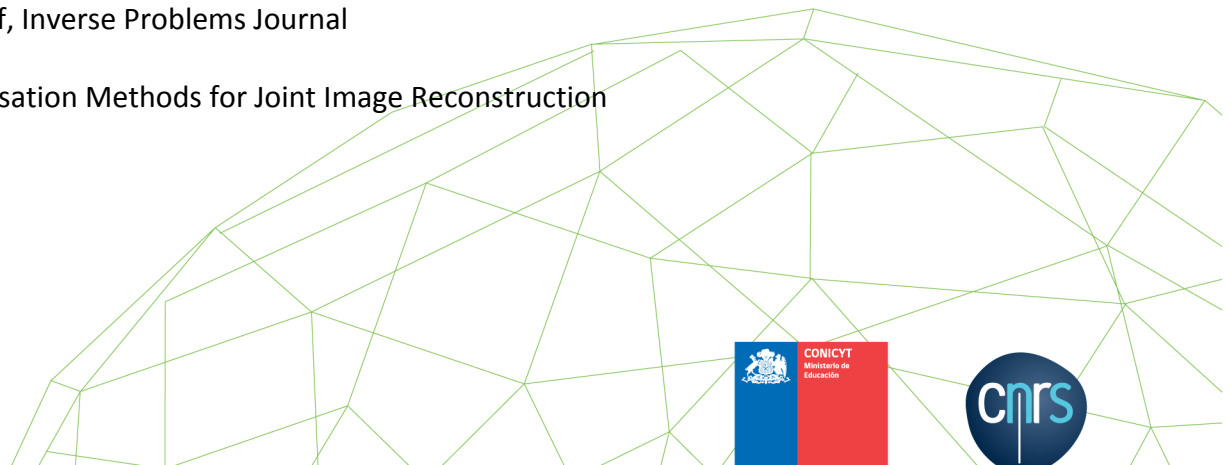
Abstract: Dynamic positron emission tomography (PET) imaging captures temporal information of biological processes in living tissue. This technique can be used, for example, for diagnosis and treatment monitoring of cancers and brain diseases by studying the activity distribution of radioactively-labelled pharmaceuticals injected into the patient's body. Reconstructing time-varying images from a set of physical measurements (photon counts) is challenging due to the low signal-to-noise ratio and low spatial resolution of standard PET scanners. In this talk we present a reconstruction method based on low-rank and sparse priors that exploit the temporal coherence between image frames. Besides the reconstruction, our technique allows for the separation of the signal in its low- and sparse-varying components, which can be useful for the study of the radiotracer's activity distribution in different tissues.

Segunda Sesión desde 15:30 a 16:30 hrs.

Expositor

Prof. Simon R. Arridge
University College London (UCL)
Director, Centre for Medical Image Computing
Editor-in-Chief, Inverse Problems Journal

Title: Regularisation Methods for Joint Image Reconstruction



Abstract : Several imaging problems consider multiple images simultaneously. Examples include colour and multispectral imaging, hybrid imaging in medical imaging (such as PET-MRI, and SPECT-CT), as well as geophysical imaging (electrical and acoustic properties reconstruction). The use of variational regularisation techniques for inverse problems in these applications can treat each image channel separately or jointly. In this talk we consider methods based on the joint information of multiple images in terms of both their geometry, and their statistics. For the former we propose methods based on parallel level sets, and for the latter methods based on both joint entropy, and on multispectral probabilistic diffusion. Examples are shown on model problems and for medical imaging applications.

Martes 06 de Septiembre a contar de las 14:30 hrs, Sala de Seminarios John Von Neumann CMM.

