

Multi-scale modeling for engineers: the site-bond method

John R. Yates
University of Manchester, UK

Image registration, i.e., the process of transforming an image so that the structures represented are properly adjusted to the homologous structures represented in a second image, has been a topic of huge research in Computational Vision. Such transformation has been frequently applied on static images, but also on image sequences. For example, in Medicine, computational methods of image registration have a crucial role in supporting efficient image-based diagnosis, by fusion the information conveyed in images acquired by different image modalities, at distinct time instants or from several viewpoints. Hence, the computational registration of images has been a remarkable tool for clinicians and researchers since complex image based tasks, such as the comparison of a given clinical case with previously studied ones, the automatic identification of regions of interest in images (i.e. image segmentation) and information fusion, are facilitated and can be achieved automatically and without subjectivity.

Usually, associated to the topic of image registration issues regarding image matching, i.e. the searching for correspondences between two related images, and image interpolation, specially due to the application of the transformation found to one image in the discrete domain, are found.

During this presentation, the topic of image registration is going to be introduced, automatic computational methodologies to matching and registering static images and image sequences that we have been developing are going to be described, and application cases involving static images, image sequences and images acquired by different imaging modalities are going to be presented and discussed.

Biography

John Yates completed his Ph.D. in 1987 at the University of Sheffield after undergraduate studies at Cambridge and a Masters degree from Cranfield. He spent a further twenty three years at Sheffield, gaining his Chair in 2000, before joining the University of Manchester in 2010. He is the Director of the Modelling and Simulation Centre, working closely with EDF R+D in France. He has published more than 90 papers in international journals, was Editor in Chief of an international journal for many years and acts as scientific advisor and assessor to many international organizations.

john.r.yates@manchester.ac.uk