The Frontier between Radiology and Image Processing

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Abstract

It is clear from talking to radiologists that they are very interested in image processing tools as an aid for them to extract additional clinical information form the data that they use on a day to day basis. It is also clear that many such tools are being worked on by the image processing community but which are not currently in clinical use. The manufacturers also act as a filter between the research based groups and the clinical users in particular with respect to regulatory bodies. This presentation is principally concerned with the process of going from the conception of image based analysis ideas to enabling their use in clinical practice. This is based on a number of case histories of both simple ideas (for example spiral/ volumetric acquisition) which revolutionized clinical practice, to great ideas (Factor analysis, Artificial Intelligence?) which have failed to have any such impact, but which might return phoenix-like in the future. It is also concerned with questions of how to establish good collaboration between the image processing or physicist scientist and the clinical collaborator. Finally some issues of clinical governance related to image based research will be presented. The frontier between image proceeding and radiology at times resemble that of the wild west (but with fewer corpses, not so lively bars, and less gold).

Biography

In 1992 Prof. Todd-Pokropek was appointed Full Professor, University College London and Institute of Child Health. His research interests included the extraction of quantitative information from medical images, in particular in nuclear medicine and MRI, registration and fusion of multi-modality images, n-D image and signal processing – including visualization, 3D image acquisition in ultrasound and image management systems, in particular 'PACS' systems. He participated with INSERM U66 in the European project MIMOSA. He also developed a file format for nuclear medicine data interchange (Interfile), used industry wide, and participated in various standards bodies (CEN, DICOM, NEMA). He wrote the Portable Image Processing(PIP) package, which was chosen by the IAEA for its project "upgrading of analogue gamma cameras" distributed in more than 150 copies to more than 40 notably developing countries, marketed by spin-off company 'Leapfrog Technology' Ltd. From 1998-2005 Prof. Todd-Pokropek was Nominated Director of the research unit 494 INSERM, Paris France, Quantitative Medical Imaging, and since 1999 has been Head the Department of Medical Physics and Bioengineering at University College London.

Current active research areas include segmentation and modelling, multi-scale imaging "From microns to millimeters"; in particular with applications in bone cartilage and spine, and analysis of airways in lung and blood vessels in liver..