

Prof. Marcel Van Herk

Prof. Marcel Van Herk has been active in radiotherapy and worked at the Netherlands Cancer Institute (NKI) since 1982. As a medical physics student he started on the development of a liquid ionization imaging device that later became the Varian PortalVision system for electronic portal imaging. During his PhD at the NKI, the detector was further developed and commercialized and the focus of the work shifted to image processing, correction procedures and margins. Starting during a Postdoc at Harvard Medical School, USA in 1992, his work incorporated 3D image processing, first CT-MR image registration for treatment planning, later measuring organ motion and other uncertainties in radiotherapy such as delineation variability. Much of this work has been integrated in the Elekta Synergy cone-beam CT image guidance system developed jointly in a consortium with Elekta and David Jaffray. For the past 10 years, he also held a part-time teaching role as a Professor at the University of Amsterdam working amongst others at the integration of microscopic optical imaging into radiotherapy treatment planning.

His goal is to do research to improve the clinical practice of radiotherapy in Christie, UK and the world. To achieve this he feels we need to perform first class research, speedy clinical implementation and collaborate with industry to bring our ideas to the market.

Dr. Seán Walsh, MAASTRO Clinic, Netherlands

Seán is a medical physicist with key expertise in data science and a decade of experience in the fields of radiology and radiotherapy. He has a proven track record of managing patient data from multiple international cancer centers throughout the world computer assisted theragnostics network. Seán is primarily focused on clinical data mining, along with the data warehousing and semantic web technology for the implementation of distributed learning. He is also active in the area of machine learning and radiomic signature discovery. Seán obtained a PhD from NUIG before becoming a postdoctoral scholar at the University of Oxford, University of Sydney, and MAASTRO Clinic. He is currently a senior scientist at The D-Lab headed by Prof. Philippe Lambin.



"The rise of radiomics, the high-throughput mining of quantitative image features from (standard-of-care) medical imaging for knowledge extraction and application within clinical decision support systems to improve diagnostic, prognostic, and predictive accuracy, has significant and substantial implications for the medical community. Radiomic analysis exploits sophisticated image analysis tools and the exponential growth of medical imaging data to develop and validate powerful image-based signatures/models for precision diagnosis and treatment in medicine. Research focuses on the process of radiomics and its capacity to improve clinical decision making (presently primarily in the care of patients with cancer, however, all imaged patients may benefit from quantitative imaging). Additional emphasis is given to the need for rigorous reporting and evaluation criteria through the radiomics quality score."

Dr. Cormac McGrath, Northern Ireland Regional Medical Physics Service

Cormac did his Ph.D. in Atomic and Molecular Physics at Queen's University Belfast and continued with post-doctoral work there and then at the University of Windsor, Ontario, Canada. Switching tack in 2003, he re-trained in Medical Physics and is now the lead MRI Clinical Scientist for the Northern Ireland Regional Medical Physics Service and Magnetic Resonance Safety Expert for the five NHS trusts in NI. He is a previous chair of the UK Institute of Physics and Engineering in Medicine Magnetic Resonance Special Interest Group, and is currently a very active corresponding member. He formed and chaired the IPEM working party that aimed to produce a freely available set of MRI Safety Notices, and is a member of the MRI site planning and MRSE accreditation working parties. He was a founding member of the American Board of MR Safety (ABMRS) and sat on the Board of Directors as an international member. His current interests are MR safety, MR quality assurance, quantitative MRI, MRI and radiotherapy planning, 3D printing and Virtual Reality in medicine.

Cormac will present his work on a Virtual Reality app of a child's MRI journey at the Children's Hospital in Belfast. The aim of this app is to reduce the fear factor of MRI for paediatric patients, improve the patient experience and reduce anxiety, with the additional benefits of increasing throughput and reducing the need for general anaesthetic. The VR app has six 360° videos embedded, including the very difficult first person perspective from within the MRI scanner, and can be viewed in headset and tablet modes. Assessment of the impact of the app, with feedback from patients, parents and staff has been incredibly positive.