IQSE AMO QO Seminar Series

Tuesday, May 23th, 11:30 am ZOOM & IQSE seminar room (MPHY 578)

Pizza will be served for IQSE members at 11:00 am. The talk will start around 11:30 am

Dr. Alexander Doronin

(Victoria University of Wellington, New Zealand)

Monte Carlo method for light transport in complex scattering media and its practical applications in Biomedical Optical Diagnostics, 3D Computer Graphics and Sensing

ABOUT THE SPEAKER: Dr Alexander Doronin (AlexD) is a Senior Lecturer/Associate Professor in Computer Science at Victoria University of Wellington, New Zealand. He completed his PhD between Department of Physics and Department of Pathology, University of Otago, New Zealand and went on to a semi-industrial postdoctoral fellowship to Computer Graphics laboratory at Yale University, USA before returning to New Zealand to assume a faculty position at Vic. His research interests are interdisciplinary and lie at the interface between Biophotonics, Computer Graphics, and most recently Artificial Intelligence focusing on development of algorithms for simulating light transport in turbid media and their practical applications in novel optical diagnostics modalities. His work also extends to physically-based rendering, acquisition and creation of realistic light-material interaction models, colour perception, translucency, appearance and biomedical visualization.

EVENT DETAILS: In silico modelling of photon transport in biological tissues is a key ingredient in the development of novel optical medical imaging, therapeutic, 3D computer graphics and sensing modalities necessitating accurate simulation techniques. Monte Carlo method has long established itself as a gold standard and is widely adopted for simulating complex light-matter interactions. In this talk we are going to delve into modern solvers for (vector) Radiative Transfer Equation and Rendering Equations focusing specifically on turbid media and their practical applications in Biophotonics, Photo-realistic rendering and Sensing. The advantages and limitations of the developed algorithms will be discussed, formal comparison with analytical solutions and experiments will be presented. Finally, we will demonstrate how recent advances in Machine Learning could assist and aid with the challenges in light transport calculations.

ZOOM information:

https://tamu.zoom.us/j/98156251523?pwd=QVdSdGxtL1UyY0g1L083SU5QR0QrUT09

Meeting ID: 981 5625 1523
Passcode: 297578

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