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OPTICS & PHOTONICS
UNIVERSITY OF NOTTINGHAM

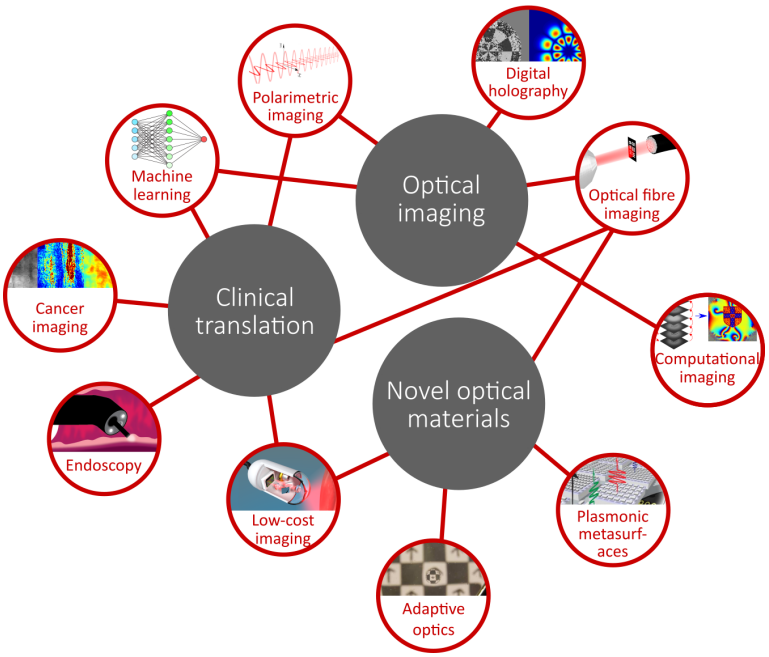
Optics and Photonics Group
Lunchtime Seminar

"Meet the researcher: Terry Wright"

Dr Terry Wright

Optics and Photonics Group

OPTIM Optics and Photonics for clinical Translation, Imaging and Materials



13:30 Wednesday 28 June 2023
Coates Building - C24
All Welcome

Add to Calendar

http://optics.eee.nottingham.ac.uk/wiki/Seminars_2022-2023

“Meet the researcher: Terry Wright”

Dr Terry Wright

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All Welcome

MS Teams link

I recently completed a PhD at Imperial College in adaptive optics applied to light-sheet microscopy. An Alpao deformable mirror was used to remotely refocus and volumetrically scan a light-sheet microscope at video frame rates (approx. 26 volumes/sec) whilst retaining a resolution close to the diffraction limit, over a 200x200x100 mm2 volume. This was used to study the generation of calcium sparks by cardiomyocytes (muscle cells) in heart tissue.

I then worked as part of a collaboration between the Pulver Lab, University of St. Andrews, and Cairn Research on STRIMM (Synchronous Trace Recording in ImageJ and Micro-Manager). This is a tool based on the Micro-Manager / ImageJ / SciJava ecosystem, designed to control advanced microscope systems in a simple manner without needing to undertake significant programming. A typical application of STRIMM is to automate an electrophysiology system – sending pulses and recording data from probes whilst at the same time independently controlling cameras, possibly at high-speed. STRIMM is similar to LabVIEW but without awkwardness of LabVIEW! Applying STRIMM to a particular setup is simply a matter of writing a simple text-file. Open source and written mostly in Kotlin (a dialect of Java), STRIMM is easy to modify and tailor to specific experimental contents. It combines the advantages of the Akka-framework which makes it easy to control multiple processes and threads, with Micro-Manager drivers which are available for most configurations of hardware.

This was followed by a postdoc at Cambridge University developing a prototype high-speed 3D light-field flow cytometer for a spin off company Zomp. This involved a combination of microfluidics along with 3D imaging and processing.

In my current post-doc at Nottingham University, I am part of a team trying to create an ultra-thin endoscope based on a multimode fibre; with the modes of the fibre carrying the image information. The main issue with this is that bending of the fibre causes the modes to couple which scrambles up the image information. The thrust of the work is to create a robust and fast way to characterise at run-time the transmission matrix of the fibre which would allow imaging – regardless of how the fibre is bent.