

MASTER'S THESIS

Real time image processing in optical microscopy

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Real Time Image Processing
in
Optical Microscopy

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ABSTRACT

Low coherence interferometry (LCI) is an interferometric technique using low coherence light for illumination. It has been receiving a lot of attention in many research fields. One of the recent applications of LCI is in optical coherence tomography (OCT).

The OCT technology is inherently non-invasive and can provide high depth resolution rendering it as a powerful tool in 3-D imaging. One of the main difficulties in LCI is in alignment, i.e. the problem in locating the interferograms. Current practice side steps this problem by recording a series of images of a test object and then performs post-processing of the data to locate the interferograms thereby to generate a 3-dimensional image of the test object.

This is not an efficiency way in practice as the result can only be obtained after a length of time in taken to scan the object, which may take several minutes or even hours.

In my project, the interferograms captured with the interferometer is done in real-time. Once interference patterns is detected, the interferograms are then recorded where post-processing of the interferograms can be performed. This made the whole process much more convenient and less time consuming.

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